## AMEE 2017 Abstract Book

( Including dates, times & location of presentations)

### Sunday 27 August

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1600-1730 Session 5 Simultaneous Sessions

| 5A | Symposium | Validity Revisited |
| 5B | Symposium | Postgraduate Medical Education Across Borders |
| 5C | Symposium | What Keeps You Awake at Night? |
| 5D | AMEE Fringe | Fringe 1 |
| 5E | Research Papers | Selection and Prediction |
| 5F | Doctoral Reports | Doctoral Reports 1 |
| 5G | Symposium | Do we Really Need Cadavers Anymore to Learn Anatomy in Undergraduate Medicine? |
| 5H | Short Communications | Selection 1 - Widening Access |
| 5I | Short Communications | Clinical Reasoning 2 |
| 5J | Short Communications | IPE 2 - Evaluation of IPE |
| 5K | Short Communications | Simulation |
| 5L | Short Communications | CPD 1 - CPD and Revalidation |
| 5M | Short Communications | Humanities |
| 5N | Short Communications | Management & Leadership - Accreditation |
| 5O | Short Communications | Programmatic Assessment |
| 5P | Short Communications | eLearning - Virtual Patients |
| 5Q | Short Communications | Student in Difficulty |
| 5R | Round Table | Teaching about Research and EBM |
| 5S | Workshop | Advancing Social Accountability Worldwide |
| 5T | Workshop | Making the Transition from Clinical Practitioner to Health Professions Educator |
| 5U | Workshop | The Impact of Developmental Milestones for Learning, Assessment and Feedback |
| 5V | Workshop | Student Development for EPAs |
| 5W | Workshop | BarCamp - a space to think - set the agenda yourself, discuss & explore recent work & topics emerging from the conference (continued from 4W) |
| 5X | Workshop | Student Engagement at its Finest - A Coachability Curriculum for (and by) Medical Students |
| 5Y | Workshop | The Excellent Medical Teacher |
| 5Z | Workshop | Designing & Optimizing Healthcare Simulation Training for Self-Regulated Learning |
| 5AA | Workshop | Qualitative Methods for Health Professions Educators |
| 5BB | Workshop | Putting your CPD on the Map: Curricular Mapping for Faculty Development and CPD Programming |
### AMEE 2017 Abstract Book

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SESSION 1
Sunday 27th August: 1730-1950

#1A Plenary: The Magic State of Mind
Location: Hall 1

Peter Wardell, award winning magician and speaker, UK

The greatest magicians in the world are fantastic storytellers. They possess incredible technical skills that must remain invisible in order to create the illusion of the impossible. Magic is not about manipulation and misdirection - it is more about guiding an audience towards a meaningful experience. In this talk Peter shows why tricks and secrets are only a small part of the experience of magic. He discusses and demonstrates how thinking like a great magician can elevate our day-to-day interactions and allow us to have more meaningful and engaging interactions.
SESSION 2
Monday 28th August: 0830-0945

#2A Plenary: What can medical education learn from the Finnish experience?
Location: Hall 1

Pasi Sahlberg, Finland

Finland is the poster child of education and therefore a destination for tens of thousands of education tourists seeking inspiration to improve education in their own countries. Since the mid-2000s educators around the world have been asking what makes some education systems perform better than others, and why some countries seem to be stuck in mediocracy. There are numerous theories of change and related programs to betterment of education. Some of them have proved to be successful while some of them have not. In this presentation I explore some myths and present a set of established facts for those present ready to learn from the Finnish experience. Some characteristics of Finland's educational culture are not easily transferrable but there are many aspects in this Finnish experience that could benefit medical educators. Necessary requirements are an open mind to accept ideas that at first might seem strange and initial ability to understand the difference between facts and myths in educational change.
#3A Symposium: Simulation in Healthcare: Sharing stakeholder perspectives

**Location:** Hall 1

- Participants will get a first hand impression, what modern simulations and debriefings look like.
- Participants will get ideas on how to place simulation onto the agenda in their institutions and countries.
- Participants will gain an impression of the potentials and barriers of simulation.

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**Organised by AMEE Simulation Committee:**

- Peter Dieckmann, Copenhagen Academy for Medical Education and Simulation (CAMES), Denmark
- Kirsimarja Metsavainio and team, Kuopio University Hospital, Finland
- Ross Scalese, University of Miami Gordon Center, USA
- Jan-Joost Rethans, Skillslab, University of Maastricht, Netherlands
- Anne Lippert, Copenhagen Academy for Medical Education and Simulation (CAMES), Denmark

Simulation is a valuable complement to medical education, as it allows for hands-on practice, combined with reflection. It can address different objectives, ranging from skills drills, to more complex skills, non-technical skills, and to reflections of actual care in established healthcare systems. However, there are many barriers for including simulation into basic education and advanced training in healthcare. Those include cost, a certain reputation of being complicated, neglected training of simulation faculty. Thus simulation is not implemented as far spread as its (proven) promises for improving care, quality, and education might suggest. Therefore, we offer this symposium that also showcases a typical conduct of modern patient simulation.

We will first demonstrate a typical simulation scenario of an acute care situation, involving a manikin-based patient simulator. This session will be run by an international team of simulation experts under the guidance of Kirsimarja Metsavainio. We will demonstrate a short version of a typical debriefing. Using a simple audio-/video set up, the audience will be able to see and hear the actions during the simulation. This set-up was tried in several conferences and works. After the demonstration Ross Scalese, from the Gordon Center, one of the original simulation training labs in the world, will offer perspectives on how to bridge the gap between the simulation world and the “real” world (of traditional health professions education and clinical medicine). Jan-Joost Rethans, University of Maastricht, will then describe the potentials and challenges with integrating simulations into a curriculum for health professionals. Anne Lippert, Head of one of Europe’s largest simulation centres, which had a leading role in making simulation a mandatory part of the specialist education for anaesthesiologists in Denmark (the first country in the world to achieve this) will discuss on who to place simulation onto the political agenda.

**Who should participate in the symposium?** AMEE participants, who are interested in simulation, but do not really know how to start it.

What will they gain from participating?
Who should participate in the symposium? Curriculum developers, faculty and students in basic and medical sciences will benefit from participating in this symposium.

What will they gain from participating? Participants will receive specific, evidence-based recommendations and guidelines grounded in theory for developing an adaptive learning curriculum for medical students. The ideas and recommendations will span the continuum from preclinical through clinical years of training.

#3C Symposium: “Cut the Eduspeak” says the clinical educator to the researcher:
How can we facilitate their collaboration?
Location: Hall 3b

Perspectives of AMEE Associate Fellows:
Rashmi Kusurkar, VUmc School of Medical Sciences, Amsterdam, Netherlands
Marjo Wijnen-Meijer, University Medical Center Utrecht, Netherlands
Leila Niemi-Murola, University of Helsinki, Finland
Olanrewaju Sorinola, University of Warwick, UK
Jonathan Rial, Health Education England (Wessex), UK
Sara Mortaz Hejri, Tehran University of Medical Science, Iran
Daniel Richard Kambeey, Indonesian Young Health Professionals' Society
Kazunobu Ishikawa, International University of Health and Welfare, Tokyo Narita, Japan
Ian Wilson, University of Wollongong, Australia
Sue Murphy, University of British Columbia, Canada
Nancy Posel, McGill University, Canada
Ricardo Tjeng, University of Beira Interior, Portugal
Luís Patrão, University of Beira Interior, Portugal

Educators perceive researchers’ talk as “Eduspeak”. There is a huge divide between researchers and practitioners, but their collaboration is crucial for implementation of educational innovations and translating educational research into practice. This symposium will bring together insights from all over the world into how we can we propagate this and also illustrate the role of AMEE’s new AFAMEEs.

Who should participate in the symposium? Educators, researchers, administrators, students

What will they gain from participating? Participants will be able to contribute best practices from their own contexts and take away a global best practices summary.
### #3D Short Communications: Leadership

**Location:** Hall 3c

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#### #3D1 (3381)

**Developing leaders in healthcare: challenging medical students to apply lateral thinking**

*Silvia Lizett Olivares Olivares, Tecnológico de Monterrey, Monterrey, Mexico*
*Mildred Vanessa López Cabrera, Tecnológico de Monterrey, Monterrey, Mexico*
*Jorge Eugenio Valdez García, Tecnológico de Monterrey, Monterrey, Mexico*

**Background:** Clinical judgment is no longer enough to face healthcare problems in Mexico. Medical education must develop creative skills on students to keep up with epidemiologic transitions through innovation. The Research and Technology Innovation Park (PIIT) is a science and technology park considered a benchmark on innovation in Mexico.

**Summary of work:** A program was designed to challenge students to find solutions to epidemiologic problems by applying knowledge from non-medical backgrounds with experts from PIIT. This instructional model was based on lateral thinking. The students prepared healthcare solutions for poster presentations working in a group conformed by classmates, faculty members and experts.

**Summary of results:** A total 85 projects were developed within 13 centers and assessed in a poster presentation by experts considering originality, feasibility and social impact. Each poster was graded 3 examiners scoring 1) regular, 2) adequate and 3) excellent. The overall mean was 2.42; 2.53 for originality, 2.45 for feasibility and 2.30 for social impact.

**Discussion:** The triple helix model (government, academia and private sector) at PIIT was transformed into a learning scenario. Denial reactions emerged against learning and private sector) at PIIT was transformed into a learning environment. Furthermore, the implementation was successful in trying to address a skills gap that exists in medical practice. Fellows appear to positively benefit from and are enthused by their experiences from working in varied health settings which provide novel and valuable learning opportunities.

**Conclusion:** The lateral thinking process requires education and training to develop creative thinking skills. Self-direction on students is required to overcome frustration to transfer knowledge from a different field into biomedical disciplines. The next step for this project is to encourage students to orient their projects considering the social impact.

**Take-home message:** The implementation was challenging for administrators, faculty and students considering legal aspects, time and costs. It is required to encourage students to apply lateral thinking.

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#### #3D2 (2861)

**Fellowships in Clinical Leadership for Postgraduate Doctors in Training - an evaluation of Fellows’ experiences from a national UK Programme**

*Ahmad Moolla, Imperial College London, London, UK*
*Peter Lees*
*Jo Horsburgh*

**Background:** Training fellowships in clinical leadership for postgraduate doctors usually employ a situated learning approach with Fellows embedded within a host organisation under the supervision of a senior medical leader, partaking in authentic quality improvement projects. Fellowships are intended to equip participants with key skills in health policy, leadership and management.

**Summary of work:** This project evaluated use of the situated learning approach in the context of clinical leadership education. Using semi-structured interviews, we reviewed the experiences of four Fellows who had completed a national clinical leadership fellowship in the UK using the situated learning approach and explored their learning during the programme.

**Summary of results:** Fellows highly valued the situated learning approach and found that it facilitated access to high-quality learning environments. Furthermore, Fellows greatly appreciated the flexibility Fellowships offered for personal reflection and development, opportunities to engage with senior leaders and interactions with a broad range of professionals within the wider healthcare environment.

**Discussion:** There is currently limited information available on the relative value of the situated learning approach used by clinical leadership programmes for postgraduate doctors. Our work helped identify how these programmes benefited participants, the types of clinical leadership skills acquired, and how these have benefited Fellows and in turn the NHS.

**Conclusion:** Clinical leadership fellowships employing the situated learning approach appear to be broadly successful in trying to address a skills gap that exists in medical practice. Fellows appear to positively benefit from and are enthused by their experiences from working in varied health settings which provide novel and valuable learning opportunities.

**Take-home message:** Postgraduate doctors should be encouraged to partake in authentic clinical leadership educational programmes, and these should be more widely available so doctors may benefit from such opportunities. This will help foster a renewed clinical leadership culture within the future medical workforce and potentially be of good benefit to healthcare systems.
From leaders to leadership: an integrated approach to leadership development in psychiatry training

Clare Morris, Barts & The London School of Medicine and Dentistry, Queen Mary University London, UK
Lesley Thoms, West Midlands Postgraduate School of Psychiatry, Birmingham, UK

Background: Clinical leadership is integral to high quality care: historically, leadership development opportunities have taken the form of short courses, targeting doctors approaching the end of their clinical training. We report on an integrated, longitudinal and early career leadership development programme [1] combining formal and workplace based learning.

Summary of work: This was a prospective, longitudinal, qualitative study exploring trainees conceptions of leadership at the start and end of the first programme year (n = 61 and 55). We also conducted 15 in-depth interviews with trainees to explore their lived experiences of the programme. Data was content coded and thematically analysed.

Summary of results: Initially, trainees saw leadership as goal-driven, task-orientated behaviour enacted in management roles. The programme leads them to talk about leadership in embodied ways, requiring self-awareness and using their personal influence to positive effect. This extends beyond providing good clinical care to improving services in line with identified needs.

Discussion: Trainees in this study are re-thinking leadership, seeing it as integral to their work with patients and teams. They attribute this to programme design. E-learning elements provide a structure for reflective activity: facilitated group work enables them to explore workplace challenges with their peers and consider strategies to adopt.

Conclusion: An early career, integrated approach to leadership development has the potential to promote leadership at every level in healthcare systems. Trainees in this study report changes in the ways they think about leadership and how it is enacted. This is influencing the ways they work with patients and colleagues.

Take-home message: Leadership development can take place throughout a medical career
Open access e-learning materials (e-learning for health) provide a structure for reflection
Peer learning in facilitated groups helps trainees make connections between concepts of leadership and their everyday practice.

The use of a high fidelity course to prepare physicians in leadership and decision making in more senior roles

April Dianne Buazon, Royal Brompton and Harefield Trust, London, UK
Lydia Spurr
Mavin Kashyup
Amy Downes
Martin Carby
Joanna Szram

Background: The UK medical speciality training is divided in two parts: core training (CT1-CT2) and speciality training (ST3-ST6). The transition between CT2 to ST3 is the most difficult with a significant increase in responsibility. A high-fidelity simulation course has been designed to better prepare trainees for this transition.

Summary of work: The course was delivered five times in two sites. Participants (n=40) were recruited nationally and consisted of CT2s as well as ST3s. Perception of preparedness for the transition was quantitatively assessed using a pre-course questionnaire. A further questionnaire determined whether the course improved perception of preparedness.

Summary of results: Of the submitted pre-course questionnaires, 80% they were not prepared for the transition. 95% of participants ‘strongly agreed’ or ‘agreed’ they were more prepared after the course. 70% and 83% ‘strongly agreed’ or ‘agreed’ that the high-fidelity simulations increased their clinical knowledge and awareness of human factors respectively.

Discussion: The course was well received, as it identified and addressed a gap in the UK medical speciality training programme. A significant number of trainees enter ST3 feeling underprepared for the responsibilities that they are required to take on. More needs to be done to prepare CT2s in greater leadership roles.

Conclusion: High-fidelity simulations, using common clinical scenarios complicated with human factor issues have a vital role in medical speciality training. This course has shown that simulations can help prepare physicians to transition to roles requiring more responsibility; in both clinical decisions and leadership skills required to deal with human factors.

Take-home message: High-fidelity simulation courses can help bridge the gap in speciality training, between CT2 and ST3, which is regarded as the most difficult transition. High-fidelity simulations not only increase clinical knowledge, but more importantly it increases awareness of the importance of human factors and the need of leadership skills.
#3D5 (1522)
Training qualified leaders in clinical education

Mats Wahlqvist, Res & Dev/ Education unit, Sahlgrenska university hospital, Region Västra Götaland, Sweden, Gothenburg, Sweden
Anders S Johansson
Catharina Tennerhed

**Background:** The clinical learning environment is pivotal in physician's learning of clinical skills and professional competences. There is a need to organise and support learning at clinical workplaces. In Sweden, there is no established pathway to become a qualified leader in clinical education.

**Summary of work:** In 2014, a new pilot programme was launched in the Region Västra Götaland "Leader in clinical education", covering three areas: Leadership and professional development, Higher education and workplace learning in medicine, and Quality improvement in health care. 1 d/week during 2.5 year. In evaluation, participants’ learning experiences were used.

**Summary of results:** The quantitative evaluation displayed that goals were met and relevant to future work; a functional learning process and examination. In qualitative evaluation, a main theme emerged, “By participative learning I developed competence and confidence as leader in education”. Six months after examination, 4/7 were employed as part-time leaders.

**Discussion:** Leadership training created group cohesion and facilitated learning. Future improvements include co-teaching, working in pairs and more introduction of reflection portfolios. A qualification as a leader can change the value of education, on a system level. Strategic support from the Region Västra Götaland compensated loss of income during specialist training.

**Conclusion:** The three main areas and a prolonged process appears to support and facilitate learning to be a leader in clinical education.

**Take-home message:** A pilot programme to train and qualify leaders in clinical education was functional and feasible.

#3D6 (3164)
VICTEAMS: a virtual environment to train medical team leaders

Marie-Hélène Ferrer, French Armed Forces Biomedical Research Institute - IRBA, Bretigny sur Orge, France
Charles Verdonk, French Armed Forces Biomedical Research Institute, France
Christian Bay, French Military Health Service Academy, France
Sebastien Ramade, French Military Health Service Academy, France
Domitile Lourdeaux, Sorbonne Universites, Universite de technologie de Compiègne, CNRS, Heudiasyc UMR 7253
Marion Trousselard, French Armed Forces Biomedical Research Institute, France

**Background:** Health care delivery in military conflict, in peacekeeping missions or in the aftermath of disaster, implies stress environments with danger exposures, life-threatening events and high levels of work demand. In this context, the rapid response of emergency medical teams has an important role to play in preventing serious adverse events.

**Summary of work:** Research has shown that medical errors can be related to non-technical factors, including ineffective team leadership, nonstandardized communication and lack of situation awareness. The VICTEAMS project aims at building a virtual environment for training non-technical skills of rescue team leaders, such as communication, stress management and leadership.

**Summary of results:** In this interactive learning environment, virtual characters play the role of the team members. Twenty stressors from five domains have been identified. The leader learner must be able to adapt. This work is still in progress and a first insight of the virtual environment and characters will be presented.

**Discussion:** To produce unpredictability and stimulate the learner, depending on the training goals, different types of errors should occur, both on the technical level (e.g. bad material preparation or bad process) and on the non-technical level (e.g. miscommunication, tunneling, etc), in coherence with the virtual characters skills and their stress level.

**Conclusion:** The learner is immersed in an unpredictable virtual environment and interacts with the virtual characters. While he can directly act on the environment and the victims, he has to learn how to manage stress but also the team and how to delegate actions, perform supervision operations and collect information.

**Take-home message:** First, the conception of an immersive environment dedicated to medical simulation requires the work of a multidisciplinary expert team implying multiple skills (Virtual Reality, Artificial Intelligence, Cognitive Psychology, Ergonomics, Pedagogy, Algorithmic, Motion Capture, Military and Emergency Medicine). Second, immersive virtual reality could be a tool for future medical team training.
The need for strong clinical leaders: Transformational and transactional leadership as a framework for resident leadership training

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Introduction: Outstanding patient care depends on a health-care workforce which is trained in clinical leadership. Despite evidence suggesting a strong relationship between clinical leadership and patient safety, there is a lack of clinical leadership training. Transactional leaders exert influence on followers based on exchanging benefits for outstanding performance and defined goals[1]. Transformational leadership refers to leaders with an appealing vision for their team who intellectually stimulate others in a way that is demanding and appreciative of team members’ needs[1]. The objective of the study was to measure whether a leadership training focusing on transactional and transformational leadership enhances clinical leadership skills.

Methods: A volunteer sample of 57 residents from postgraduate year one to four was recruited across a range of medical specialties. Residents from the control group (N=23) received no training. Participants took part in an interventional controlled trial. Residents from the intervention group received the four-week long IMPACT clinical leadership training. It provided specific tools for leadership within the clinical environment, focussing on transactional (active control, contingent reward) and transformational leadership skills (e.g. appreciation, inspirational motivation). Transactional and transformational leadership skill performance was rated from leadership simulation scenarios (1) on the Performance Scale by an external evaluator blinded to the study design and (2) self-assessed transformational and transactional leadership skills. Both measures contained items of the Multifactor Leadership Questionnaire[2], with higher scores indicating greater leadership skills.

Results: The Performance Scale and the Self-assessment scores were significantly different between the IMPACT group and the control group, with the IMPACT group outperforming the control group in the post-tests. In the IMPACT group, the Performance Scale increased 15% in transactional leadership skill performance (2.10 to 2.86) (intervention effect, 0.76; 95% CI, 0.40 to 1.13; p<.001, eta2 = 0.31) and 14% in transformational leadership skill performance (2.26 to 2.94) (intervention effect, 0.68; 95% CI, 0.27 to 1.09; p<.001, eta2=0.22). The self-assessed transactional skills revealed a 4% increase (3.83 to 4.03) (intervention effect, 0.20; 95% CI, 0.08 to 0.33; p<.001, eta2 = 0.18) and a 6% increase in transformational leadership skills (3.54 to 3.86) (intervention effect, 0.31; 95% CI, 0.02 to 0.40; p<.001, eta2=0.53).

Discussion and Conclusion: Our study supports the utilization of the concept of transactional and transformational leadership for postgraduate leadership trainings. Behavioral change depends on trainings embedding simulation-based practices, one-on-one feedback and addressing transactional and transformational behaviors alike. Future research should conduct whether behavioral changes are adopted in daily clinical work, potentially incorporating leadership training as a starting point for mentoring programs within specialties. Best practice strategies for leadership programs specifically tailored for residents will be presented on the conference.


Can team handovers be valuable learning experiences?

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Introduction: The team handover process represents an important means by which patient safety is maintained, and the importance of this has increased as junior doctors’ working hours have decreased. Paediatric team handovers involve medical professionals and students at different levels of experience. Their cyclical nature provides predictable, repeated opportunities for learning to occur (Klaber & Macdougall, 2009). There is limited published research that has examined the way in which learning has occurred within team handovers (Hilligoss & Cohen, 2011). The research question was, “to what extent do learning opportunities exist within paediatric team handovers in New Zealand secondary hospitals?”

Methods: A qualitative, two-site case study was performed within two New Zealand paediatric departments in 2014 and 2015. Semi-structured interviews were undertaken, with purposive sampling of 29 participants, including medical students, junior doctors ranging from those in their second post-graduate year to senior registrars and consultants. The interviews were transcribed verbatim, and thematic analysis using a general inductive approach was undertaken. Data were coded iteratively, using ATLAS.ti for Mac qualitative data analytical software. Identification of themes occurred following a detailed analysis and themes were further substantiated and clarified alongside exemplar quotes. Approval for the study was obtained from the University of Auckland Human Participants Ethics Committee, and
How do residents learn to deal with high-value, cost-conscious care? A study about non-formal workplace-based learning

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Introduction: Increasing costs of health care are a cause of concern to patients, governments, health economists, and the medical profession worldwide. Physicians are considered to be in the lead to reduce costs of health care services without compromising care. However, medical curricula do not formally include training in the delivery of high-value, cost-conscious care. High-value, cost-conscious care is care that assesses the risks, benefits and costs of health care services and consequently delivers care that adds value to patients. Residents’ decisions influence the delivery of patient care on daily basis. The learning process of residents, in the absence of formal education, is unknown. Therefore we explored how residents make decisions regarding health care delivery in clinical practice and how the environment interacts with their learning process.

Methods: A constructivist grounded theory approach (CGT) was chosen to generate a potential theory towards the social phenomenon of learning how to provide HVCCC in the workplace. We organized homogeneous focus groups with residents-in-training of different specialties. All residents of the selected departments were invited for participation. Selection occurred through purposeful sampling. To get a general idea of non-formal learning, we invited resident from primary, secondary and tertiary health care institutions. A semi-structured interview guide, informed by educational literature on high-value, cost-conscious care, was developed to stimulate the reflection and discussion on the learning process of the participants. Sessions were organized within the department and took 90 minutes in total. Data-collection was done iteratively, where data-analysis occurred alongside and data-collection. Data was collected until saturation was met. Through constant comparison and discussion within the research team theory was developed.

Results: 6 Focus groups with residents-in-training were held (internal medicine (n=6), family medicine (n=5), surgery (n=6), dermatology (n=5), elderly care medicine (n=8), and orthopedic surgery (n=6)). High-value, cost-conscious care is seen by residents as ‘next level’ care, and a task of physicians in health care delivery. Their norms and values are the foundation of a personal and professional identity. This identity is further developed through interaction with their environment and based on patients they’ve encountered throughout their career. Further along the training-program more residents are aware of dilemmas in healthcare and careful selection of staff members helps residents to deal with these dilemmas. Additionally, residents identified barriers for learning; such as lack of time, fear of legislation, and lack of uniformity of staff members.

Discussion and Conclusion: Although non-formal learning theories show resemblance with the data emerged from
our study, there are a few factors that are characteristic for the learning of residents in this area of medicine. Firstly, there are no incentives for residents to provide high-value, cost-conscious care besides their professional and personal identity. Secondly, although residents receive feedback on the delivery of high-value, cost-conscious care, the content of these lessons is incoherent as a result of lack of uniformity on department-level. Finally, residents do not refer to formal training that supports the delivery of high-value, cost-conscious care. Support in the environments is a strong and undervalued aspect of physicians’ training.


#3E4 (239)
Evidence of Threshold Concepts in Pediatric Clerks’ Reflective Practice Essays

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Introduction: Threshold concepts have not been explored in the undergraduate medical education. Threshold concepts have been identified as transformative (change the viewpoint of the student about the world and about themselves), irreversible (cannot forget), integrative (help explain other aspects of the field of study), and troublesome (are conceptually and emotionally difficult to grasp and may create a state of un-ease within the student.) They are ideas that enable the student to “think like a doctor.” These ideas are not formally taught, but are developed by the student through their own experiences. Although described in other disciplines (economics, engineering, physics, and architecture) there are only a few studies looking at threshold concepts within the field of healthcare and none regarding medical students.

Methods: We analyzed 135 pediatric clerks’ reflective practice essays using the grounded theory approach of qualitative analysis. Students responded to the questions: "How have you changed since beginning your clerkship year? What is the most important concept you have understood since beginning medical school that enables you to think like a physician? What is the most difficult concept about being a physician you have encountered? Describe any new approaches to life, medicine, or learning that you have developed this year. The essays were coded by 2 researchers and disagreements in coding were resolved by discussion. One of the researchers was always a medical student. The codes were then rolled into subthemes then into themes which were examined as to whether they met the criteria for a threshold concept. The medical students provided insight and authenticity to the development of the codes and themes.

Results: Analysis has demonstrated 4 threshold concepts: that medicine is ambiguous; that they are responsible for their own lifelong learning; that life isn’t fair, and that patient-centered care is a necessity. Students grasped the idea that medicine is not black and white, but often grey, and that mistakes can be made. "We’re really busy and everyone does make mistakes.” They realized that they themselves were responsible for knowing. "I felt guilty because I missed two simple signs”. Confronting illness and death led them to understand that life isn’t fair, and that despite one’s best efforts, patients will die. "seemed unbearable to think about, but this was the reality”. They also understood the responsibility and intricacy of patient-centered care. "a patient has their own perspective”.

Discussion and Conclusion: Threshold concepts were defined that help us understand the students’ grasp of ideas required for them to “think like a doctor”. As educators, we can help students who struggle with their encounters/acceptance of threshold concepts by normalizing the angst, by giving them a safe place to discuss the concept and their experiences, and by giving words to what they may not be able to name. Students who are struggling may be cynical, depressed or withdrawn and question whether they should be in medicine. It is during these struggles with threshold concepts that a student’s personal identity is forged. The views expressed are those of the authors and do not necessarily reflect the position of the USUHS nor of the DoD.


#3E5 (270)
Assessment for critical thinking: A qualitative study in Indigenous health education

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Introduction: Assessments which promote critical thinking necessary for sustained learning beyond university are highly valued in higher education (Boud & Falchikov, 2006). However, the design work required to achieve these types of thinking skills and dispositions to act in specific areas of health professional practice has received little attention. In Australia and New Zealand, significant health inequalities exist between Indigenous and non-Indigenous people and this pattern is apparent globally. Indigenous health education represents an important but sometimes marginal and resisted component of health professional training to address this
health problem. This research examined how teachers navigate teaching and assessment in the context of Indigenous health education and explores the intersection between higher education principles of assessment design and the realities of academics’ experience.

**Methods:** We used a qualitative methodology drawing from a social constructivist framework to explore how academics interpret their role in designing and developing assessment tasks to achieve their learning goals in Indigenous health education. Participants were purposively selected on the basis of their experience and involvement in teaching Indigenous health education. Forty-one academics (from 9 health disciplines) involved in teaching Indigenous health content across Australia and New Zealand participated in a semi-structured interview. The full interview transcripts were analysed using both thematic and content analysis. Learning goals were developed into themes based on participants’ descriptions of the types of knowledge, skills and attitudes they were aiming to achieve through both their teaching and assessment. Assessment tasks were categorised according to participants’ descriptions of the type of cognitive work they hoped to facilitate.

**Results:** The results demonstrated some misalignment between learning goals and assessment tasks. Commonly expressed goals were to shift students’ attitudes to be more disposed to think and act critically in providing Indigenous healthcare, and to develop a deep and reflexive understanding of factors influencing the health of Indigenous people. In contrast, assessment tasks were more narrowly focused on foundational knowledge of the social determinants of health. Some tasks aimed to unsettle and then scaffold student thinking so that they might better distinguish between their own and Indigenous perspectives and positions. However, the majority had defined parameters set by the educator, leaving little room for students to achieve stated learning goals of creatively and independently critiquing their practice and monitoring its impact in workplace settings.

**Discussion and Conclusion:** The participants identified learning goals of transforming students’ understanding, and developing a professional identity and dispositions to act and think critically, creatively and responsively to Indigenous health issues and people, aligned with the amended 5th level (Cruess et al 2016) of Miller’s pyramid. Assessment tasks matched the lower levels of knowledge acquisition and some analysis. Identifying such a discrepancy is an important step towards developing strategies to close this pedagogical gap, relevant beyond the Indigenous health education arena. If assessment tasks are to drive practically relevant and sustained learning for future Indigenous health practice, and more closely represent the assessment reform agenda (Boud & Falchikov, 2006), academics will need to align their learning and assessment goals and include criteria for judging quality in this work.

#3F1 (4) Conflict between clinician teachers and their students – the clinician perspective

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Introduction: The relationship between clinician teachers and their students is of major importance in medical education. However, there is very little known about the effects on clinicians when conflict occurs between these parties. What do clinicians perceive to be major causes of these conflicts? How do they react when and after conflict occurs? What are their motives for staying involved in teaching even after these conflicts occur? This phenomenological inquiry was undertaken in order to explore these questions.

Methods: A phenomenological inquiry exploring the lived experience of 12 clinician teachers in medical schools was performed. The clinicians were selected using purposeful sampling and snowballing techniques. Semi-structured interviews were performed and an analysis based on the methods described by Hyener was undertaken. The interviews revolved around discussions based on episodes of conflict with medical students that the clinicians considered significant. The analysis and emergent themes were partially constructed around and informed by theories of conflict, conflict management and role conflict.

Results: A number of themes emerged which describe the phenomenon from the clinicians’ experience. These themes included the following; clinicians perceived that many of the major student/clinician conflicts involved students with significant psychological and behavioural problems; the conflicts had a significant emotional impact on clinicians; though the responses to conflict varied, “avoidance” was a mechanism commonly used by clinicians and; the assessment of attitudinal and behavioural professional issues in the workplace was problematic for many clinicians. However, despite these issues clinicians remain deeply committed to the education of medical students.

Discussion and Conclusion: This phenomenological inquiry brings a clear clinician perspective to challenging student/clinician encounters which may help medical schools and medical educators better understand the lives of clinician teachers. It offers some insights as to how clinicians might be assisted in their teaching role.

#3F2 (105) Disturbers, Observers, and Team Members: What medical students learn as they negotiate power and hierarchy in the clinical learning environment

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Introduction: Power use is a key part of the hidden curriculum of medicine, influencing a learner’s socialization into professional culture. Clinical learning environments are typically rule-bound, and medical students may struggle to understand how to succeed in these environments, leaving them particularly vulnerable to the influences of power. This qualitative study addressed the questions: how do clerks experience power in clinical learning environments and how do these experiences affect their learning? The objective of this research was to trace the ways in which medical students shape their learning activities, responses, and energies in response to power.

Methods: We used an adapted form of constructivist grounded theory to collect 66 hours of ethnographic observational data and 12 interviews from medical students engaged in their clinical clerkship. Mindful of the power imbalances between the research team and research participants, we employed anthropology students to collect observational data and conduct interviews. Data collection focused on medical student interactions with their preceptors, colleagues, and other staff members as they completed the core rotations of their clinical clerkship. We analyzed the data using grounded theory techniques, including constant comparative analysis. Multiple coders provided insight on the data from different professional and disciplinary perspectives. French and Raven’s foundational work on power bases was used as a sensitizing concept to ensure that we were alert to both positive and negative uses of power.

Results: We describe a theory of how clerks actively negotiate power use in clinical settings to maximize their learning priorities. Clerks act both reactively and proactively, responding to and anticipating power use in their efforts to maximize their priorities. For example, when clerks feared a negative response, they might hesitate to engage with a preceptor, which could have detrimental effects for their learning, patient care, and system efficiency. Preceptors who found effective ways to disarm power structures created an opportunity for students to demonstrate vulnerability. This was often most effective when preceptors demonstrated strategies for sharing power (e.g. humour), or diffusing the power differential (e.g. focus on patient experience rather than medical tasks or knowledge).

Discussion and Conclusion: Power is an important component of the social culture of clinical learning environments; identifying the ways in which clinical clerks experience and react to power can help educators
optimize learning opportunities. The ways in which clerks describe the incentive structures of clerkship may be foreign to researchers and experienced clinicians, but attention to these perceptions can improve our understanding of how clerks choose to spend their time and energy. For instance, the efforts clerks make to project an air of competence and knowledge may obscure important opportunities for learning, support, and professional growth. By examining preceptors’ exercise of power and learners’ perceptions of empowerment, the health profession education community is afforded a clearer understanding the formation of resilient health professionals.

Prevention of harmful stress amongst doctors

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Introduction: Contributory factors to high stress levels amongst doctors and the need for resilience are well documented. Less is known about educational interventions that may help doctors to recognise and manage the harmful effects of stress in their own practice. This paper presents findings from a thematic synthesis of international literature concerning pedagogy for educational interventions to combat stress for doctors, which can be offered as continuing professional development or as part of medical curricula. The synthesis was conducted as part of a mixed methods study which included focus groups with medical educators and an online Delphi exercise.

Methods: The systematic literature review involved searches of key databases: Medline, PsycINFO, ERIC, PubMed, Web of Science, and Proquest. Keywords searched included intern, resident physician, doctor, surgeon registrar, psychiatrist or general practitioner and stress, burnout resilience or fatigue. A protocol defined the search and the quality of the results to be evaluated. The thematic synthesis was guided by the following research questions:

- What are the pedagogic features of successful educational interventions to manage the harmful effects of workplace stress for doctors?
- What are the contextual factors affecting learning and outcomes?

The first stage of study selection and exclusion included screening of title/abstract. At stage two, articles were rejected that were not relevant to the review i.e. wrong intervention or professional group. The third stage appraised the quality of the literature. Data was extracted from the final selection of studies using a standardized template for the purposes of thematic interpretation.

Results: From 1355 papers initially retrieved, 38 studies were included in the synthesis. Interventions reported on in these studies used numerous pedagogic approaches to managing stress:

1. Learning to relax/personal stress reduction, with mindfulness based approaches often featuring.
2. Support groups (including Balint groups).
3. Curricula, training or tutorials for medical trainees/staff
4. Cognitive Behavioural Coaching including individually and group delivery.
5. Personal therapeutic interventions.
6. Reduction of external stressors through identification and seeking to reduce them through problem solving. Interventions spanned several specialisms and were provided for trainees, qualified doctors and multi-professional team members. Interventions were offered at three levels: primary (to prevent harmful stress from occurring), secondary (targeted at ‘at risk’ doctors) and tertiary (support services for those experiencing difficulties) (Dyrbe and Shanafelt 2016).

Discussion and Conclusion: Following on from the description of the types of intervention discovered, the paper considers in more detail what can be learnt about which types of intervention appear to work well for whom (e.g. more experienced staff versus medical trainees) and in what ways (e.g. reduction in measured stress levels versus improved work satisfaction), reflecting on the differing foci and associated outcomes of various pedagogic approaches. Only a small number of UK based interventions were included in the review, interventions offered within the US, Australia and Scandinavia were more frequent. The paper reflects on whether the geographic spread of included interventions may be linked with wider societal narratives about the nature of stress, wellbeing, the caring professions and about who should care for doctors themselves.


Unravelling Intersubjectivity in residency training: It does take two to tango

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Introduction: Workplace learning results from a balance between what is afforded to residents and how they decide to engage with such affordances, a balance difficult to strike. Crucial to finding this balance is intersubjectivity: the shared understanding between residents and supervisors towards accomplishing common goals. It is like dancing the tango; synchronized dancers must understand each other and share a dancing repertoire to respond to each other moves. However, little is known from the medical education literature about how residents
Residents and supervisors develop intersubjectivity when dealing with patients. Unraveling intersubjectivity could help us understand how social interactions ignite workplace learning.

**Methods:** To this purpose, we conducted a constructivist grounded theory study taking place at the Universidad Javeriana Anaesthesiology Department, at Bogotá, Colombia. We conducted focus groups with residents (n=11) and supervisors (n=18) to determine how they experienced their supervisory interactions at the workplace, and how they achieved a mutual understanding regarding how to provide patient care. Preliminary categories from focus group analysis allowed us to guide observations in the workplace. We performed observation sessions over a five-month period in varied workplace settings and with residents from different levels of training. Observations lasted at least 6 hours at a time, two to three times per week. Constant comparison between focus groups and observation analyses allowed us to elevate key codes into major categories. Five follow-up semi-structured interviews with residents and supervisors helped us refine the emerging categories. Through theoretical sampling and iterative data collections and analysis, we reached theoretical sufficiency.

**Results:** Residents and supervisors achieved intersubjectivity by adapting to each other while providing patient care. As resident and supervisor teams changed continuously, actors were exposed to a lot of variation in dealing with patients because each of them had their unique way to work. Consequently, residents and supervisors developed various adaptation processes to reach agreement on how to provide patient care. Those processes included following protocols, complying with supervisors’ principles, negotiating supervisor’s preferences and sharing decision-making. Experiencing repeated adaptation processes resulted in intersubjectivity reifications that we called working repertoires: a set of action-reaction combinations that each team of supervisors and residents uses to work together, and that helped them overcome challenging patient care situations.

**Discussion and Conclusion:** Residents and supervisors tried to understand each other’s preferences and needs while providing patient care to work efficiently together. Because of asymmetrical levels of competence and continuously changing supervisory arrangements, residents and supervisors developed various adaptation processes to come to agreements. In such processes, we observed how the resident gained an increasingly central role in the team, progressing from following supervisors’ directions up to sharing decision-making with them. Thus, achieving intersubjectivity in supervisory interactions resulted not only in improving team work but also in easing the conflict between providing supervision and allowing resident autonomy. Future research should explore how teams maintain intersubjectivity on the long term and how residents’ peers influence its development.

monolithic. As shown, students borrow and reject bits and pieces of different identities they encounter in different social contexts. Clerkship is one of the most important places for them to do this and the place where they can act-play borrowed parts of identity to see whether it suits their imagined identity as a future physician. Furthermore, an environment where clerks are allowed to practice their imagined doctor’s identity seems to support the construction of a professional identity which is coherent with students’ sense of self. In contrast, feeling unsafe to express ones imagined doctor’s identity results in socially accepted behavior inconsistent with ones self.

#3G Point of View 1
Location: Hall 3f

#3G1 (162)
The Prato Statement on Cost and Value in Professional and Interprofessional Education

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Scott Reeves, Kingston University and St Georges University of London, London, UK
George Rivers, Monash University, Melbourne, Australia
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Jonathan Foo, Monash University, Melbourne, Australia
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The issue of cost and value in health workforce training sits at the interface of educational design and workforce planning. The efficiency and effectiveness of workforce training is essential in a climate of straining educational resources, health workforce shortages, an aging population, and where issues of health workforce migration undermine the universal provision of quality healthcare.

“The Prato Statement” proposes that the goal of economic analyses in education is to create an evidence-base towards education that delivers maximum value for a given spend – that drives education that is sustainable, accessible, and able to meet future healthcare requirements. We provide several recommendations aimed at guiding the agenda of cost and value in education, across the domains of knowledge, policy, and culture.

[Knowledge]
Cost and value in educational research has often been done haphazardly, and at times incorrectly. Economic evaluations have not historically featured in curriculum for health professional education or research training.
Recommendation: 1. Develop resources to promote basic economic literacy in creators and users of health professions education research. 2. Establish minimum standards for published literature

[Policy]
Consideration of cost and value is an expected component of many health policy and planning decisions. We propose that similar considerations be applied to education, that educational evaluation should include measures of both learner competency and resource consumption.
Recommendation: 3. Develop the expectation for measures of cost and value alongside educational studies. 4. Consider multiple perspectives of cost and value in decision making.

[Culture]
There is a historical divide between those who deliver teaching and those who allocate resources. Educators who harness evidence-based economic arguments may be better positioned to influence sector change, as well as demonstrate their own value to their organisation.
Recommendation: 5. Encourage academics to use economic reasoning to advocate for change, and demonstrate their educational worth.

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#3G2 (457)
Can Critical Thinking be Taught?

Colleen Halupa, East Texas Baptist University/ A.T. Still University, Marshall, TX/ Kirksville, MO, USA

Michael Halupa

The concept of critical thinking has been discussed since the time of Socrates. Yet, there is no universally accepted definition of critical thinking. Generically, it is the ability to make accurate decisions in the face of changing events leading to the best possible outcome. In the late 1990s organizations, such as the American Association of Colleges of Nursing, began a movement to attempt to achieve critical thinking in health professions education. Yet almost 30 years later, faculty and healthcare supervisors still lament new graduates lack critical thinking skills, and even some experienced practitioners still cannot critically think.

Can critical thinking skills truly be taught? Some research studies indicate it can, while other research indicate it cannot be taught. In the classroom faculty use things such as evaluative assignments, laboratories and case studies to try to instill critical thinking in students. In clinical training students are often limited in the tasks they can perform independently. Because of the concentration on standardized testing in health professions education for certification and licensure are we really assessing if students can critically think?

In this session, the point of view presented is critical thinking cannot definitively be taught in an academic setting alone. The best teaching and assessment strategies do not always result in a health provider who can apply and evaluate the facts presented to him or her when assessing patients or evaluating diagnostic results. Critical thinking is something that can be developed over time by both experience and education, yet some people never really attain these skills. However, in many health professions clinical training time is being reduced and replaced by simulation. Without effective real-life experience, the critical thinking skills of new health professional will continue to be found lacking.
#3G3 (539)
OSCEs are outdated. Clinical skills assessment should be centred around workplace-based assessments (WPBAs) to put the ‘art’ back into medicine

Hamed Khan, St Georges, University of London, London, UK

Decades ago clinical skills were mainly examined through ‘long cases’, with relatively open-ended instructions and significant case and assessor variation. Over time these evolved into OSCEs, which have become mainstay of undergraduate clinical skills assessment—largely because they are objective, consistent and reliable.

But the OSCE format is so structured and well established that students now know what to expect. They prepare strategically to pass OSCEs, often adopting a robotic ‘tick-box’ approach, rather than use them as a tool to learn and improve clinical skills to become safe competent practitioners.

Thus although OSCEs facilitate technical competence, they do not prepare students for the unique nuances that make medicine an ‘art’ as well as a science. Several variables intertwine with pathology-the clinical context, psychosocial factors, patient perspectives, time and resource pressures, in addition to natural variation amongst individual humans.

I fear that OSCEs no longer prepare students sufficiently for these nuances, which often come as a shock to newly qualified doctors. In our quest for achieving consistency and reliability, we may be sacrificing validity and not preparing future doctors for the innate nuances and variability that make medicine so unique.

In contrast workplace based assessments (WPBAs) such as CEXs and CBDs are used extensively for postgraduate assessment, but less so in undergraduate assessment. They are effective and allow us to assess the ability of students to adapt their skills in real life situations and think outside the box.

We need our future doctors to be not just technically competent, but also adaptable and able to vary their practice depending on the clinical and biopsychosocial context. To assess them accordingly, in my opinion we need a paradigm shift in medical education and assessment. WPBAs should now take centre-stage in undergraduate clinical assessment, and OSCEs significantly scaled back.

#3G4 (1101)
Medical students as a vital part of the job interview and hiring of future professors and faculty staff and curriculum making at the University of Copenhagen

Pernille Linde Jellestad, University of Copenhagen, Faculty of Health and Medical Sciences, Denmark

Andrea Daniela Maier, University of Copenhagen, Faculty of Health and Medical Sciences, Denmark

Ulla Wewer, Dean of Faculty of Health and Medical Sciences, University of Copenhagen, Denmark

Thomas Fahrenkrug, University of Copenhagen, Faculty of Health and Medical Sciences, Denmark

At many universities around the world professors and the faculty staffs are hired by their peers. The logic is that they know best when it comes to curriculum making, didactics and students need. In Denmark, the university legislation ensures that students are represented in all committees—including hiring committees. Thus, at the Faculty of Health and Medical Sciences, students are involved in both development and management on different levels— influencing decisions on administration, policy and academic content.

Student engagement is vital in the faculty’s development and the making of the university of tomorrow. Therefore, we—the medical students of the University of Copenhagen—participate in both the hiring of professors/course leaders/faculty staff. Staff who have a vital part in our education and make sure that we develop as doctors to be. They encourage and inspire us to keep chasing our passion, the medical science.

As students we also participate in the development of curriculum, accreditation processes and the establishment of policy guidelines. We take part in the changes made to the physical space at the university and the evaluation board. And the list goes on.

This responsibility will encourage us—the students—to make use of dialogue and involvement in our future job. And it will inspire us to be an integrated and active part of solution and decision making using our notion for creativity and eye for involvement when solving the problems of the future. In other words the benefit of student involvement transcends the university for the benefit of patients, colleagues and society.
#3G5 (1232)
Ethics in Health Professions Education - is the tail wagging the dog?

Gerda Reitsma, Faculty of Health Sciences, North-West University, Potchefstroom, South Africa

There is globally a rising awareness of ethical implications for research, not only in biomedical sciences, but also in educational research. Research ethics guidelines and rules have emerged from biomedical fields of study. The way in which institutions approach ethical applications for educational research differ from country to country, and from institution to institution. Medical and health professions education researchers are mostly based in medical or health professions institutions or departments. Some ethics boards (ERBs) view educational research as very low or no risk research, and they seldom require full ethical applications. In my opinion educational research can never be no or low risk, due to the vulnerability of students as participants in an environment where there is a power relation between the lecturer (who may also be the researcher) and students, and where issues regarding anonymity and confidentiality may arise. On the other hand, some ERBs expect educational researchers to go through the same rigorous ethical application process as medium to high risk clinical research. Yes, educational research must adhere to the ethical and scientific criteria as all scientific research, but there may be a lack of understanding of the context and approach of educational research by (non-education) ethics committees. The problem arises when ERBs criticize educational research methodologies and prescribe methodologies that are more appropriate to clinical research. This may compromise the scientific quality of educational research. Some critical areas that need to be viewed differently from clinical research is voluntary participation of the students in a class, the informed consent process, the insider position of the lecturer as researcher, the time framework especially for action research and the lack of control groups. ERBs need to collaborate with educational researchers to find the ideal framework for health education research without compromising on scientific quality or ethical requirements.

#3G6 (266)
Incorporating oral health into medical and other health education

Jaana Gold, University of Florida and AT Still University, Gainesville, USA

Oral health is an integral part of the general health, and if left untreated, can affect us not only physically, but also socially and psychologically. Good oral health is important for healthy development and healthy aging, however, dental caries is the most common infectious and chronic disease in children. In the United States (U.S.), millions of children and even adults do not receive needed clinical and preventive dental services. The U.S. health care system is fragmented and continues to struggle to provide optimal, affordable and accessible patient-centered care. Dental care is commonly provided in private practices. Many barriers, such as lack of dental coverage, and limited financial means create barriers to receiving optimal care. Safety net organizations that provide dental services to uninsured, low-income, and vulnerable populations are not able to meet growing demands for dental care for all. New innovative ways to provide early prevention for risk populations are needed to improve the health. One model is to develop interdisciplinary education programs to increase the oral health education and training in medical and other health professions. Medical and other health professionals can be trained to identify oral health issues, educate and provide preventive services for their patients. The purpose of this point of view is to discuss the recent curriculum changes in medical, dental and other health sciences and provide global perspective for future innovative ideas to improve the oral and general health for all. Models used at the University of Florida and AT Still University will be presented and discussed.
Are We Too Soft on Our Trainees? Leveraging Desirable Difficulty to Enhance Learning

Teri L Turner, Baylor College of Medicine, Houston, Texas, USA

Over the past several years there has been an increasing emphasis on promoting and providing a supportive learning environment. We have been taught as educators to present information as simply as possible and to support our trainees to help them perform to the best of their ability. Students too want learning to be quick and easy. When our learners easily recall what we have just taught, we feel good that we have done our job as teachers and the students feel good because they believe they learned the material. What if we are both wrong? What if by being too soft on our learners, we are actually hindering the learning process? Over the past decade there has been an interest in the concepts of a growth mindset, grit, and the power of overcoming adversity. Although counterintuitive to some, research has shown that a certain level of difficulty actually increases performance. Robert A. Bjork first coined the term “desirable difficulty” and described it as conditions of instruction that pose challenges for the learner which appear to slow the learning process but can improve long term performance and retention. A key distinction is the word desirable, this cognitive strain is only desirable if it’s not too difficult. With effort the student will be successful in learning. The goal is struggle, not failure. It is time to leverage the concept of desirable difficulties to enhance long-term retention and transfer of knowledge. This includes spacing out material to be learned, interleaving or mixing topics together, testing, reducing and delaying feedback, teaching students how to actively read (SQ3R technique), and introducing unpredictability into our learning environments. We and our students need to accept the necessity of forgetting, struggling, making mistakes, and stumbling as a sign of progress (not failure) toward the ultimate goal of learning.

To disclose or not disclose information about graduating students to health services: A contemporary problem for medical education

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Eleanor Flynn, Melbourne Medical School, The University of Melbourne, Melbourne, Australia
Jeanette A. Lawrence, Melbourne School of Psychological Sciences, The University of Melbourne, Melbourne, Australia

Medical educators often face problems about transferring information on graduating students to health services. One pressure comes from concerns about graduating students’ readiness to meet the demands and expectations of medical practice. Hospital managers expect work-ready doctors who come accompanied by personal information that can ensure patient care and professional support. Hospitals often pressure medical schools to provide information currently accrued in university procedures. An opposing pressure comes from educational responsibilities to preserve student privacy. Graduates expect to begin their professional roles unhampered by student baggage. Medical educators many of whom are clinicians are torn between opposing responsibilities to colleagues and students. Overarching concerns are the safety and wellbeing of patients and the rights and well-being of students. This perplexing situation is exacerbated by twenty-first century changes in student populations and by the complexities of person by institution rights and interactions. For example, student mental health issues have burgeoned, and medical schools now monitor student progress and performance intensely. Potential employers are aware of this and request such information to inform their decisions. Faced by conflicting loyalties, some medical educators retreat to the ‘old boy network’; some to parentalism. Any resolution however, must address the juxtaposition of individual and institutional rights and responsibilities. Patient and student rights are at the core. Medical educators caught between the goals and concerns of health services and young doctors need to be aware of the legality and ethicality of student privacy and how this impacts medical professionalism for all parties. In their professionalism teaching, medical schools must emphasise the need for students to take the initiative and not deny potential employers the information that can provide them with a supportive environment. They also need to instantiate the ethics of inter-institutional communication.
#3G9 (1181)
Ticking boxes: ideology, policy and the medical learning environment

Catherine Regan, University of Newcastle, Newcastle, Australia

My medical education odyssey began as a PBL student four decades ago, progressed through undergraduate tutoring and postgraduate CPD provision, followed by twenty years of conferences, PhD and educational leadership positions in GP training. I have observed ideology influencing learner experiences but, more recently, I have taken issue with the effect of policy on GP training. Am I just a grumpy old educator?

Educational philosophy and ideology have influenced delivery with constructive tensions around curriculum, learning objectives, lectures versus small groups, performance versus Power Point. This is the micro learning environment. Overshadowing all is a macro environment which has adopted a managerial ideology that values accountability, numbers and minimum levels of competence over trust, quality and aspirations to excellence. It disempowers educators, prioritises non-educational outcomes, prefers training to education and measures effectiveness by box ticking. Decisions are made by bureaucrats and interactions are depersonalised. It affects quality issues such as training length, flexibility and scope of clinical experience. I care about how this policy environment impacts on learners, teachers and, potentially, the “product”.

The ambience of the training system no longer models the values and attitudes we wish to instil: compassion, nurturing, mentoring, adaptability, capability, relationship, responsiveness and person-centredness. Does the way students are taught affect their future practice and how they go on to teach? Are we concerned or merely hoping each generation learns in spite of their learning environment?

We should consider the influences on our training systems. The current context would have us fulfil our tasks as functionaries but educators need to look beyond this. It is part of our professional responsibility to consider the total environment and if the effects are detrimental we should not be acquiescent.
#3H Patil Teaching Innovation Awards:
Patil 1
Location: Hall 3g

#3H1 (2691)
Using Curriculum Mapping to build and fortify Primary Care Curricula

Joy Checa, AUC School of Medicine, St. Maarten, Netherlands Antilles
Heidi Chumley
Mark Quirk

Background: Curriculum maps present all of the important aspects of curricula. According to Harden: "The windows through which the curriculum map can be explored may include: expected learning outcomes, content, areas of expertise to be covered, student assessment, learning outcomes, locations, resources, timetable, staff, curriculum management, and students." (2001, p123).

Summary of work: The Curriculum Positioning System (CPS) is a novel interpretation of an interactive curriculum map offering a dynamic view of medical education experiences. It shows the variety of routes to reach the destination, effects of detours, and competencies achieved, and can be used to primary care curricula to fit student needs.

Summary of results: Engaging the CPS, faculty and learners establish and make transparent, learning destinations and milestones, plot the direction for new learning based on needs, create personalized alternative routes based on individualized performance data and evidence of ability, reflect on their academic journeys and, based on feedback, update teaching and learning plans.

Discussion: A dynamic CPS allows faculty to analyze the curriculum and how it can be improved or adapted for cohorts of students as well as individual students. Preceptors can review what students have or have not learned about a specific topic, thus allowing preceptors to influence the student's education and outcomes.

Conclusion: CPS captures learner performance and links it to objectives and competencies. It is constantly updating and repositioning, allowing students and faculty to adjust their paths. It enables students to identify strengths and weaknesses, targets learning resources, and allows faculty to make changes that improve performance and achieve competencies.

Take-home message: Creating and using a dynamic CPS to integrate curriculum can improve teaching and student learning. Faculty and students can review progress through the CPS and reinforce areas of weakness and seek more opportunities in other areas to achieve goals or desired specialty preparation.

#3H2 (672)
REVISE - a restorative and behavioural approach to prevent unethical behaviours amongst medical interns

Shekhar Kumta, The Chinese University of Hong Kong, Hong Kong
Ng HK, CU Medicine, Hong Kong
Paul Lai, CU Medicine, Hong Kong
Yan Jin, CU Medicine, Hong Kong

Background: The mere teaching of ethics does not reduce unethical behaviours in the workplace. A behavioural & restorative approach enables us to understand the underlying reasons and conditions thereby providing opportunities for strategic and preventive interventions. The support of offenders may have a lasting impact on their future careers.

Summary of work: We engage our interns using a framework defining Moral-Ethical Behavioural expectations proactively. REVISE is a preventive intervention primarily Reminding(RE) interns of their ethical responsibilities vulnerabilities. Visibility(VI) is a structured workplace intervention to support guide and monitor behaviours. Self-engagement(SE) is a professional commitment from interns that fosters ethical behaviour.

Summary of results: This intervention has reduced unethical behaviours by 30% over a 5-year period and has also increased self reported lapses and possible errors by 15%. The REVISE strategy supported 38 interns who had been flagged for unethical behaviours allowing them to reflect on their actions and complete their internship successfully.

Discussion: We intuitively judge people for their ethical transgressions without realising that environmental structural organisational and situational factors may have contributed. A preventive approach succeeds in identifying possible vulnerabilities and constant and timely reminders of one's ethical responsibilities along with heightened visibility may reduced such behaviours in large organisations.

Conclusion: Environmental conditions and lack of support often pushes junior doctors to indulge in unethical behaviours. Our strategy enables us to address the offender and the structural conditions partly responsible. The framework of behaviours expected is generic and easy to understand. The non-punitive approach has improved self-reporting of undesirable behaviours.

Take-home message: The mere teaching of ethics does not reduce unethical behaviours. Systemic and environmental factors may be partly responsible. A proactive and strategic intervention has preventive effects. A generic framework to identify moral-ethical behavioural expectations promotes such behaviours. A restorative approach has reduced unethical behaviours and increased self-reported violations.
Smart learning with the smartphone-connected TYM otoscope- a novel ENT learning tool

James Schuster Bruce, University of Bristol, Bristol, UK
Angharad Davies, University of Bristol, Bristol, UK
Henry Conchie, University of Bristol, Bristol, UK
Angus Waddell, University of Bristol, Bristol, UK

Background: Many doctors will regularly require otoscopic skills yet with limited ENT undergraduate teaching and postgraduate training, the skill is rarely well developed. This study describes a regional undergraduate teaching module that used the novel smartphone connected Cupris © TYM otoscope, as an ENT otoscopy learning tool.

Summary of work: A short module was delivered to 61 medical students. One group (26) used traditional otoscopes and discussed an image of an eardrum. The intervention group (35) used TYM to visualise their own eardrums and discussed anatomy with the instructor. Data was gathered through pre and post assessment and evaluation questions.

Summary of results: TYM feedback had a 97% response rate. 73.5% wanted TYM to be used in future learning. Students felt it was ‘good to know you’re looking at the right thing,’ and that it was ‘memorable since own ear.’ There was also an improvement in Eardrum labeling from 1.43 to 2.21.

Discussion: TYM otoscopy received a positive response from the students who used it, citing an enhanced learning experience from the ownership and shared visualisation of the TYM enabled image, and although larger samples are needed to evaluate their significance, these responses could explain the improvement seen in TYM groups quantitative scores.

Conclusion: Whilst this novel device is in its infancy, this preliminary study suggests that it has potential to improve education in an arguably under-taught specialty that sits within an ever increasingly busy undergraduate medical syllabus.

Take-home message: 1) TYMs’ contemporaneous visualisation overcomes uncertainty around identifying the right feature, leaving fewer learning opportunities wasted. This has potential in the clinical setting. 2) TYM creates ownership of the image, which can make learning experience more powerful.
#3H5 (2169)
The Development of Empathy Teaching Strategies: Six-year’s experience on “Disease Lottery”

Gin-Hong Lee, Fu Jen Catholic University, New Taipei City, Taiwan
Ping-Keung Yip, Cardinal Tien Hospital, New Taipei City, Taiwan
Miao-Ju Chwo, Fu Jen Catholic University, New Taipei City, Taiwan
Yu Chu Huang, Fu Jen Catholic University, New Taipei City, Taiwan
Ming-Teh Lin, Fu Jen Catholic University, New Taipei City, Taiwan

Background: To cultivate students’ empathy, the authors modified the idea of “lottery assignment” (Barnbaum, 2001) and designed an experiential learning activity “Disease Lottery” in the courses of College of Medicine at Fu Jen Catholic University during 2011-2016. This presentation will share our modification of teaching strategies during these years.

Summary of work: Students were encouraged to interview the Volunteer Patients (VPs), then present the patients’ life stories with the first-person perspective. The initial design was modified yearly based on the questionnaires and interviews from students, VPs group feedback, video clips analyses, teachers’ reflections and research meetings.

Summary of results: The innovative changes that we had achieved were: (1) increasing students’ motivation, (2) providing students with more assistance as well as freedom, (3) assisting VPs to clarify their roles, (4) integrating with the course properly.

Discussion: The value of “Disease Lottery” derived from using the first person narrative to experience the patients’ life. Modifications were made to help students take the role as a patient or his/her family more realistically and vividly.

Conclusion: Our modifications of “Disease Lottery” gradually helped students learn empathy cognitively, affectively and behaviorally. These results also made this activity more acceptable for students and more successful in curriculum revolution.

Take-home message: “Disease Lottery” created the experience that students learned empathy in the cognitive, affective and behavioral ways.

#3H6 (2587)
cARdiac ECG App – Using Augmented Reality to Enhance the Real Thing

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Peter Bright, School of Medicine Deakin University, Waurn Ponds, Australia
Sarah Burgess, School of Medicine Deakin University, Waurn Ponds, Australia
Colin Warren, School of Medicine Deakin University, Waurn Ponds, Australia

Background: Students reported poor knowledge and understanding of Electrocardiography (ECG) even after accessing multiple two-dimensional resources and interactive tutorials. Therefore, we created an interactive three-dimensional (3D) model using Augmented Reality (AR) for students (accessible via Apple App Store). This application uses interactivity and animation to stimulate learning within an established curriculum.

Summary of work: Using their tablet/smartphone, students EXPLORE (a model of the heart), LEARN (perform an ECG and interpret traces) and ASSESS their understanding of ECG using spatial manipulation of the heart/body. Students can access this learning experience whenever and wherever they wish, providing flexible ‘just in time learning’ on the wards.

Summary of results: After using the app, a reference group of medical students rated their confidence in applying and understanding ECGs on a scale of 1 (strongly disagree) to 5 (strongly agree). The average score pre-cARdiac ECG was 2.45, and after using the app increased to 4.18 (p=0.000).

Discussion: Students describe "I am a visual learner and being ... able to move the heart and orientate it truly adds to my understanding, as does the ability to see it all happen at the same time!", and "my understanding majorly improved ... now I understand what I'm looking at".

Conclusion: This remarkable cARdiac ECG AR application provides medical (and other health) students exciting, innovative opportunities to engage with a novel ECG resource. In using the app, students gained a deeper understanding of correlating the ECG trace on the surface with the underlying electrical and pathological abnormalities occurring inside the heart.

Take-home message: Emerging technologies, such as augmented reality, can add to student learning when designed and implemented in response to curriculum needs. We suggest that student learning of ECGs can be more engaging, with better understanding potentially leading to increased detection of critical cardiac events, improved clinical outcomes and enhanced patient safety.
#3I1 Short Communications: Management and Leadership - Social Accountability

**Location:** Room 101 a/b

#3I1 (3166)

Student toolkit on SA in medical schools: a way to empower every medical student to take action

**Jersey Glasner, International Federation of Medical Students’ Associations (IFMSA) and Swiss Medical Students’ Association (swimsa), Bern, Switzerland**

**Stijntje Dijk, International Federation of Medical Students’ Associations (IFMSA), Rotterdam, Netherlands**

**Rita Ramalho, Portuguese Medical Students’ International Committee (PorMSC), Porto, Portugal**

**Kaylynn Purdy, Canadian Federation of Medical Students, Thunder Bay, Canada**

**Mohsa Bhiri IFMSA, Associa-Med Tunisia, Tunis, Tunisia**

**Alexander Lachapelle, International Federation of Medical Students’ Associations (IFMSA), Montreal, Canada**

**Background:** Defined in 1995 by the WHO, the concept of social accountability (SA) in medical schools is a relatively new concept but its implementation is worldwide probably one of medical education’s biggest current challenges. In collaboration with TheNET, the IFMSA decided to empower each medical student to take action locally.

**Summary of work:** The IFMSA appointed a group of 6 students from 6 different countries to develop a toolkit with the aim of giving any medical students the opportunity to know more about SA, to evaluate his/her own school and to take action using some ready-to-use tools.

**Summary of results:** The toolkit is an interactive 25 pages PDF-document. It provides a comprehensive explanation of SA, an assessment tool that help identify the improvement areas of a school regarding SA and concrete tools including a powerpoint presentation, a letter to the dean, a social media campaign and a training.

**Discussion:** The toolkit was made by students for students. Thanks to its elaboration by medical students with various cultural backgrounds and studying in different settings, the toolkit can be used by everyone. The user can very quickly acquire the knowledge and tools to make a difference in his own institution.

**Conclusion:** SA is not only a challenge for governments and deans but is also a matter of tomorrow’s doctors. With an easy-to-use toolkit, the IFMSA and TheNet strive for the empowerment of an important stakeholder. Their goal is that every medical school around the world better responds to the community's needs.

**Take-home message:** Students have a crucial role to play in SA. Through its student toolkit on SA in medical schools, the IFMSA is giving every medical students around the world the tools to make a change for his/her community.

#3I2 (2589)

What can Medical Students do for you? Exploration of the impact on community organisations of a Social Accountability placement

**Joanne Thompson, The University of Sheffield, Sheffield, UK**

**Deborah Murdoch-Eaton, The University of Sheffield, Sheffield, UK**

**Background:** Community placements aim to provide medical students with meaningful experiential learning opportunities around social determinants of health, health inequalities and social injustice.

We have implemented Social Accountability placements purposefully and transparently designed in collaboration with a diverse range of community partners aimed to benefit the organisation in some tangible way.

**Summary of work:** Over 2 years, 127 organisations across South Yorkshire have hosted 437 students working on activities determined by the organisation. Evaluation of impact of these collaborative activities on the community organisations was explored through in-depth focus groups adopting an Appreciative Inquiry methodological approach, student presentations and reflections, and questionnaires.

**Summary of results:** Tangible benefits for organisations appear to relate to setting expectations and realistic outcomes. Preliminary key themes additionally emerging include an enhanced motivation to host students, busting stereotypes of medics and developing effective partnership working, both with future doctors and with the University.

**Discussion:** The large scale implementation of this type of placement is labour intensive, and requires sensitive and careful support and planning to empower both organisations and students. The Appreciative Inquiry evaluation approach has facilitated positive, honest, open discussions which we suggest as a valuable approach to developing and researching impact.

**Conclusion:** Community placements can and should engender specific qualities such as advocacy, altruism and holism through experiential learning. Mutually beneficial outcomes for host and learner has potential for sustained engagement beyond placements organised within the medical school curriculum, and are an aspect of impact worth further research.

**Take-home message:** Social accountability is more than service learning. This placement has enabled students to consider the centrality of Social Accountability to healthcare practice. Most importantly, as a Medical School we are committed to ensure the development of socially accountable doctors through developing reciprocal mutually beneficial, relationships with local organisations.
Social Accountability and the Role of Universities in Turkey

Nazan Karaoglu, Necmettin Erbakan University Meram Medical School, Konya, Turkey

Background: It is known that social accountability is one of the important responsibilities of a University. In recent years there is a considerable increase in social responsibility projects in Turkey. According to the Charities Aid Foundation (CAF) World Donorship Index 2012 Report donorship of Turkey is 10% and volunteerism is 4%.

Summary of work: The aim of this literature research is to define the situation of the Universities in Turkey about social accountability. By a review for articles, reviews and reports in Turkish Medline, Google, Google scholar and Universities websites tried to find why Turkey is 137th among 146 countries in donorship index.

Summary of results: Higher Education Council of Turkey (YÖK) specifically updated the curricula of the Education Faculties of the Universities. “Social Service Applications” courses added to the curricula in 2006. After this decision many faculties including medical schools put courses about social accountability. There is an increasing interest in social accountability in Universities.

Discussion: There is more than 90 Universities all around Turkey and most of them are public universities. Social accountability projects are prestigious and had advantages for students, university and society. Donorship culturally is a very well accepted manner. Private universities by their economic and resource advantages seem to be more effective.

Conclusion: Public Universities by their higher numbers of students and faculty members should take more steps. It seems that nowadays with its specific problem as a population higher than 80 million, immigration and terrorism problems, social accountability of the Universities is important more than ever in Turkey.

Take-home message: Formal social accountability courses aiming to create awareness about personal and institutional responsibilities of a physician to the society may serve to the community in Turkey and humanity. Informal education, faculty culture, role modeling and hidden curricula should be on the agenda also.

Demonstrating social accountability in medical education through geospatial analyses

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Gary Tithecott, Western University, London, Canada
Robert Hammond, Western University, London, Canada
Saad Chahine, Western University, London, Canada

Background: Medical schools are socially accountable to serve their local communities; they must produce the right distribution of physicians, both geographically and by specialty that meets societal needs. This study explores the geographic distribution/proximity of residents as well as the relationship between high-school origin, rural clerkship exposure and residency program.

Summary of work: Data from eight graduating cohorts of Canadian medical students (N=1,231) were collected and analyzed using geospatial and logistic regression analyses. High-school postal code, rural clerkship exposure and location of residency were used to examine the geographic distribution/proximity of residents and determine if these variables are predictive of residency location.

Summary of results: The results show that 40% of graduates pursue residency programs within Southwestern Ontario; 20% of which reside within rural communities. Graduates pursue residency training within a 100km radius from their hometown. Exposure to rural family medicine clerkship and medical specialty are predictive of local residency program selection (p<.05).

Discussion: Findings from this study are consistent to previous social accountability research, in that residency specialty and exposure to rural communities during clerkship are predictive of residency location. Through the use of spatial analyses we were able to determine the geographic proximity between high-school postal code, rural clerkship and residency location.

Conclusion: This study contributes to the robust social accountability literature of medical schools; to serve societal health needs within their local communities. Through the use of geospatial analyses we were able to examine the geographic distribution and proximity of residents in relation to their hometown and rural clerkship experience.

Take-home message: Students are apprehensive to venture outside their comfort zone. This study allows us to draw boundaries on the health care needs of the communities they predominantly serve. In turn schools can self-evaluate and monitor their social impact and strategically plan their admissions and selection practices.
**#315 (3173)**

**Medical schools partnering with their communities: what do citizens wish for?**

Marie-Claire Bérubé  
Julien Poitras, Université Laval - Faculté de médecine, Québec, Canada  
Emmanuelle Careau  
Maman Joyce Dogba

**Background:** WHO defines social accountability of medical schools as the requirement to answer health needs of the communities they serve by adapting their curriculum, teaching and research priorities. To succeed, health needs must be known on an ongoing basis, which can be accomplished by opening a dialogue between schools and communities.

**Summary of work:** In May 2016, Université Laval’s Medical school organized citizen forums all over its territory to consult the population on its interest to participate to school affairs and on the best way to do it. Nine citizen forums were held in 8 cities as worldcafés, over 125 people were met.

**Summary of results:** Citizens deemed participation to training and research programs important. As to the means to achieve this, citizens expressed their preference towards a combination of models to join a wider audience. Face to face consultations at regular intervals were considered crucial to allow confrontation of ideas and to create a habit.

**Discussion:** Those forums gave us knowledge about the willingness of citizens to participate to school programs, research and activities, and also indications on the best way to achieve this. Partnerships with local community organisations and health services were judged essential engagement strategies.

**Conclusion:** In a socio-political context marked by the reduction of citizen participation, Medical schools and their Universities, as knowledge institutions opened to debate and freedom of thought, might play an increase role.

**Take-home message:** The report produced establishes a roadmap towards a continuous process of citizen collaboration with our school. Citizen forums on the territory of a Medical school can inform on the population willingness to take part to the activities of the school and on the best method to achieve this.

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**#316 (1672)**

**A qualitative study of the perceived long-term impact on participants in a medical service learning program**

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Ying-Cing Chen, National Yang-Ming University, Taipei, Taiwan  
Tzu-Jung Chiu, National Yang-Ming University, Taipei, Taiwan  
Pei-Chieh Tseng, National Yang-Ming University, Taipei, Taiwan

**Background:** As medical curriculum emphasizing social care and compassion is largely neglected, National Yang-Ming University has initiated a medical service-learning program since 2005 and has since made headway in implementing it. This study aims to evaluate the perceived long-term impacts of the service-learning program and its mechanisms from participants’ perspectives.

**Summary of work:** After purposive sampling, semi-structured interviews and focus group discussions, data collected from participants of National Yang-Ming University’s service-learning program between 2005-2012 were coded, analyzed, and subsequently processed through triangulation methodology. Finally, a concept map is generated to describe the mechanism and impact of the service-learning program.

**Summary of results:** The qualitative data yielded the perceived aspects of long-term personal impact of service learning, its mechanisms and suggestions to the program. Three main categories of impact are as follows: career development, change in attitude toward patients, and growing interest in global social care.

**Discussion:** To ensure long-term personal influence of medical students, continuing participation in similar programs, well-guided reflection, and peer-communities that enhance constant-learning were needed. Suggestions for future service-learning programs include establishment of personal mentorship, integration of global health issues into training curriculum, and development of a sustainable collaboration with local organizations.

**Conclusion:** When implemented with certain elements and structures, medical service-learning programs could have profound impacts on medical students that may lead to positive influences on the future of tomorrow’s doctors.

**Take-home message:** By participating in service-learning programs, medical students could better develop career plans, sustained empathy and care for patients and the society along their career.
Background: Embarking on curriculum review The Royal College of Surgeons in Ireland decided to build on existing definitions of medical professionalism to develop a definition for undergraduates in contemporary Ireland, and an approach which can be used to define other areas of professionalism (in RCSI’s multi-professional and multi-national environment).

Summary of work: A series of focus groups were convened with: experts from North America and Europe, medical school teaching faculty, medical students, and members of the public (patient representatives or advocates). Groups were recorded and transcribed. The previous group’s definition became the focus for sequential deliberations and iterated.

Summary of results: We analysed functional grammar (concerned with contextualized, practical uses for language). The ‘strapline definition’ changed in terms of Rheme structure (what is the clause about, how is this developed?) The definition of changed from ‘cold’ (draft 2) to ‘warm’ (draft 3): e.g. from abstraction (professionalism) to personalisation (personal subject professional).

Discussion: The analysis uses a medical metaphor to present some of the findings with emphasis on the linguistic analysis. It uses methodologies derived from linguistic pragmatics, from functional grammar and from the philosophy of language to analyze the form and function of a definition of medical professionalism.

Conclusion: Changes in the iterations of the definition were directional from ‘cold’ to ‘warm’ formulations and seemed to be motivated by emotional values and gut-feeling. This may be due to the fact that the emergent definition aimed to maximize engagement of faculty and students.

Take-home message: Although perspectives on professionalism differed amongst these groups of interested participants, similar elements were judged as important by all but articulated differently. The final definition was shaped by pragmatism for engagement amidst contemporary societal context and angst.

#3J2 (1049)
Students’ motivation to respond to professionalism lapses of their peers

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Ariane Teherani, University of California San Francisco, San Francisco, USA
Walther van Mook, Maastricht University Medical Center, Maastricht, Netherlands
Gerda Croiset, VUmc School of Medical Sciences, Amsterdam, Netherlands
Rashmi Kusurkar, VUmc School of Medical Sciences, Amsterdam, Netherlands

Background: A majority of medical students endorse a professional obligation to report unfit colleagues, but it is unclear if they actually do. This study aims to clarify which professionalism lapses students witness in peers, how they respond to such lapses, and what motivates them to report or not report such lapses.

Summary of work: An explorative, qualitative study using thematic analysis was designed to capture students’ experiences through individual interviews with randomly selected undergraduate medical students attending the congress of the American Association of Medical Colleges 2016. The expectancy-value-cost model of motivation was used to investigate students’ choice to respond to a peer’s lapse.

Summary of results: Twelve students were interviewed. They mentioned witnessing the following professionalism lapses of their peers: being absent/late, disrespectfulness, privacy violations, lying/cheating. Reasons not to respond: peer seems approachable, group response possible, whole group of students can benefit. Reasons not to respond: own learning not affected, not knowing how to respond, fearing retaliation.

Discussion: The expectancy-value-cost model recognizes three components in motivation to respond to an event: (i) having expectancy of success (here: peer seems approachable), (ii) knowing value in engaging (here: creating benefit for all students), and (iii) costs of engaging in a response (here: perceived threat of retaliation).

Conclusion: For a student to respond to a peer’s lapse, he/she has to expect success in getting the anticipated action from faculty, expect benefit to students, and not have to pay a cost for responding. If the student perceives a deficiency in any of these aspects, chances of reporting are low.

Take-home message: 1. Medical students often witness professionalism lapses of peers, but they are reluctant to respond. 2. Medical schools should explicitly train students how to respond to unprofessional behavior. 3. Faculty can help to create positive learning experiences for all students by taking action when individual professionalism lapses are reported.
#3J3 (581)
How to make teaching professionalism fun

Marti Balaam, The Centre for Medical Education, Edinburgh Medical School, Edinburgh, UK

**Background:** Medical Schools are required to teach professionalism outwith the clinical environment. Without the context of real life situations classes can often lack authenticity and students are often disengaged. The challenge therefore is to offer students a more stimulating and rewarding learning experience.

**Summary of work:** I investigated how to make classroom professionalism teaching more stimulating and rewarding for students. There is a dearth of literature in this area however I found that there is some evidence that role play and the use of media scenarios taken from television hospital dramas are perceived well by students.

**Summary of results:** I found a few examples of teaching professionalism in the classroom which were perceived by students as both meaningful and entertaining. This included role play and using video clips from Television hospital drama. These examples were seen as of educational value by the students who participated.

**Discussion:** As evidence reveals that students learn better when they enjoy the learning experience and teaching professionalism in the classroom can be perceived as non-contextual and dull it was pleasing to find examples of teaching practices which increased the students enthusiasm for professionalism teaching in the classroom.

**Conclusion:** There are some good examples of engaging students in professionalism teaching. Due to a dearth of literature in this area further work is required to explore how we can make professionalism teaching more stimulating and rewarding for students.

**Take-home message:** There are ways to make professionalism classroom teaching more fun and relevant for students, for example the use of video clips of hospital dramas which deal with professional dilemmas, however this requires further exploration and research with both teachers of professionalism and medical students.

#3J4 (2026)
A Foucauldian discourse analysis to uncover the reasons for failing to detect low-level unprofessionalism in undergraduate medical students

Joanne Harris, Imperial College London, UK

**Background:** Teaching and assessment of professionalism is variably performed for medical undergraduates. There is uncertainty whether attitudes or behaviours are being assessed and reports that some assessors are failing to report low-level unprofessionalism. This is despite evidence that unprofessional behaviour at medical school may lead to malpractice cases in the future.

**Summary of work:** A qualitative pilot study was performed to look at assessment of professionalism from the assessors’ viewpoint. Semi-structured interviews were carried out with two consultants, a general practitioner, junior doctor and medical student. The data was analysed using a Foucauldian discourse analysis and the power/knowledge relations around professionalism were studied.

**Summary of results:** Discursive constructions were examined in three areas – 1) behaviours contributing to professional identity, 2) appearance relating to professional identity and 3) power and hierarchy. An increase in managerial control and expectations of performativity in medicine including a managerially-imposed dress code had led to a loss of identity in some clinicians.

**Discussion:** A reduction in self-efficacy and shift in power relations between clinicians and students were noted. Clinicians using discourses about managerial control were less likely to find a student unprofessional. Others suggested their main role was to guide but not judge the student. Foucauldian discourse analysis allowed description of hypothetical clinicians.

**Conclusion:** Five hypothetical clinicians were identified from the Foucauldian analysis of the discourses. One clinician used discourses to suggest that they would reliably report low-level unprofessionalism. The other four clinicians used various discourses to give reasons for not reporting poorly performing students as unprofessional.

**Take-home message:** Failure to detect low-level unprofessionalism is prevalent in undergraduate medical education. Using discourses, four hypothetical clinicians were shown to not report poorly performing students as unprofessional. The focus should now be on how to mitigate this problem using faculty development techniques and guidance from the regulators.
#315 (2078)
Reporting Medical Students with Professionalism Lapses: “It’s a Thankless Job”

Deborah Danoff, McGill University Faculty of Medicine, Montreal, Canada
Deborah Ziring, Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, USA
Richard Frankel, Indiana University School of Medicine, Indianapolis, USA
J. Harry “Bud” Issacson, Cleveland Clinic Lerner College of Medicine, Cleveland, USA
Heather Lochnan, University of Ottawa Faculty of Medicine, Ottawa, Canada

Background: Medical education continues to focus on/struggle with developing, assessing and remediating professionalism. An important limitation in this work is faculty reticence to report medical student professionalism lapses. Exploring the reasons for faculty reticence can inform strategies to ensure lapses are not ignored, and students who require remediation are identified early.

Summary of work: Clinical teachers from medical and surgical specialties at 4 large medical schools were invited to comment on barriers to reporting using an online brainstorming, virtual forum. Synthesis of 191 comments resulted in 55 unique statements used in a rate and sort (thematically) exercise. Demographic information was also collected.

Summary of results: A comparative analysis using participant demographic information demonstrated high correlations for agreement that process issues were a key barrier. Faculty acknowledged their responsibility to report lapses but rationalized non-reporting with concerns such as putting faculty and/or students’ future in jeopardy or “reporting is tedious and benefits are not clear.”

Discussion: Subgroup analysis identified discrepancies in importance ratings. Junior faculty cited process issues as important barriers, senior faculty rated context concerns highly (e.g. “is this a pattern of behaviour?”), and, among all groups, female surgeons rated fear of retribution highest. Study limitations are modest response rate and size of demographic comparison groups.

Conclusion: Faculty reticence to report lapses remains a key barrier to identifying medical students with professionalism lapses. This study highlights the need for specific interventions to address process issues, reinforce benefits of reporting, and deal with fear of repercussions to students and/or faculty members. Reporting should not be a thankless job.

Take-home message: There are multiple reasons faculty are reluctant to report lapses in professionalism. This poses a challenge to institutions that want and need to identify students with such lapses. Key enabling strategies to promote reporting would ensure assistance with process issues, a supportive environment and protection from repercussions to faculty.

#316 (136)
A cross sectional study of students’ attitudes to professionalism in a healthcare professions institution

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Judith Strawbridge, Royal College of Surgeons in Ireland, Dublin, Ireland
Fiona Boland, Royal College of Surgeons in Ireland, Dublin, Ireland
Teresa Pawlikowska, Royal College of Surgeons in Ireland, Dublin, Ireland

Background: Students identify the need for an explicit definition of professionalism in healthcare education. This study sought to develop a view of professionalism from the perspective of students from the disciplines of medicine (including Graduate Entry Medicine (GEM) students), pharmacy and physiotherapy in the Royal College of Surgeons in Ireland (RCSI).

Summary of work: A cross-sectional questionnaire study design was utilised. The questionnaire was adapted from the Professionalism Mini-Evaluation Exercise (P-Mex) tool developed at McGill University (Cruess et al, 2006). All RCSI undergraduate medical, pharmacy and physiotherapy students were invited to participate. Quantitative data was analysed to examine frequencies and possible associations between responses.

Summary of results: There was evidence of statistically significant difference in ranking of GEM students when compared to direct entry medicine students in ‘maintaining composure in a difficult situation’ (p=0.0154), ‘completing tasks in a reliable fashion’ (p=0.0051); ‘being available to patients and colleagues’ (p=0.0067); and ‘maintaining appropriate boundaries with patients and colleagues’ (p=0.0154).

Discussion: Professionalism is a cornerstone in developing and maintaining patient trust in the healthcare profession. Healthcare professionalism is a complex, multidimensional set of fundamental values, communicated through behaviours and actions which reinforce that patient trust. The findings from this study illustrate that healthcare student’s place high value on professionalism traits.

Conclusion: Interpretations of professionalism can vary depending on the stage of training and between disciplines GEM students showed higher levels of awareness of doctor patient relationship skills, reflective skills, and inter-professional relationship skills, in line with their expected increased maturity, when compared with direct entry medicine, pharmacy and physiotherapy students.

Take-home message: An essential aspect of healthcare education concerns a clear definition of what healthcare professionalism entails. Professional behaviour is a consistent requirement for graduation from healthcare courses. The development of appropriate attitudes towards professionalism whilst studying and training helps to inform future practice.
Reflection on professionalism useful for both students and teachers

Angel Centeno, Universidad Austral, Buenos Aires, Argentina
Maria Paz Grebe
Malena Sayal

Background: Reflection is seldom present formally in the curriculum, and usually students do not have enough time to engage on it. Besides, lessons learned during reflective activities can be applied or transferred to other situations and have long lasting effects.

Summary of work: Within the framework of a study on professionalism we encouraged students to reflect and comment on physician attitudes concerning patient care, team work or teaching activities. Twenty medical students (middle level and interns) were invited to register in electronic portfolio critical incidents related to medical professionalism.

Summary of results: Each student registered three incidents, and after each incident met with a faculty member to comment and re-reflect on what was written. The faculty was a facilitator previously trained. Fifty nine incidents were obtained 47 percent categorized as positive and 53% as negative, 63% concerning medical care and 37% in relation to teaching and learning situations. Using critical incidents, reflecting on them after writing them down with a faculty member is an effective tool to identify flaws or virtues in professionalism both in patient care and teaching.

Students and teachers engaged in the process and there is a request from the students to maintain this activity and to create a reflection group. For most of them the emotional impact was strong. Reflection is a useful activity to identify elements of professionalism in medical school. Students and faculty member engage naturally in this.

Take-home message: The process is simple and straightforward and only requires time, a minimal training and commitment to it. Including reflection activities formally in the curriculum help students to identify professionalism incidents both positive and negative. It is a simple process that may potentially be expanded to other areas. Lack of curricular time is the main difficulty.
Patients in Education: creating a community of patients to engage with the university

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Carolyn Canfield, Patients in Education, Vancouver, Canada
William Godolphin, University of British Columbia, Vancouver, Canada
Shelley Hourston, Patients in Education, Vancouver, Canada
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Background: Learning from patients and caregivers helps students integrate knowledge, makes it practical, and fosters commitment to improving care. Creating an infrastructure to support and sustain patients as active institutional collaborators (teachers, assessors, curriculum developers and educational decision-makers) is necessary to ensure true partnership between university and community.

Summary of work: We describe development of Patients in Education (PIE), an organization that engages with the university to enrich the education of students through inclusion of the patient’s voice. We aim to move beyond individual patients invited into the classroom to an independent organization able to partner with the university.

Summary of results: Since January 2016, PIE has: developed a vision, mission, guiding principles and identity; instituted a process for meeting requests for patient involvement in teaching and curriculum development, and for a patient / community advisory committee; engaged community organizations in joining PIE; developed a communications strategy and website.

Discussion: We have identified critical factors that have contributed to success so far. These include: a history of patient involvement at our university; an international conference that inspired a core group to meet to further advance patient involvement; and early successes in fulfilling requests from the university.

Conclusion: This collaboration represents an innovative approach to partnership between the university and a developing independent community-based organization. The foundation is a mutual desire for excellence in training for the next generation of health professionals, co-created with patients for an enduring appreciation and career commitment to the patient experience.

Take-home message: ‘Patients in Education’ is an independent patient organization, developed to expand patient partnerships with the university to enrich and strengthen the education of health professional students. We describe its evolution, lessons learned and key factors for success during the first 18 months.
Working with ‘real’ patients with Mental Health conditions: Helping medical students prepare for clinical placements in Psychiatry

Madeleine Bonney-Helliwell
Amir Burney, The Medical School, University of Sheffield, Sheffield, UK
Martin Hague

Background: Medical students may feel overwhelmed when meeting patients with mental health conditions and find it challenging when interacting with them. Following a review of the current Psychiatry curriculum we decided to recruit ‘real’ patients with Mental Health conditions, aiming to provide an opportunity of high educational value to medical students.

Summary of work: Recruitment was organised through information leaflets. Patients attended an interview and familiarisation process. Psychiatrists facilitated the teaching supported by the Patients as Educators (PaE) team.

As part of the course evaluation, patients were requested to feedback. The PaE team were interviewed to explore their experiences of working with the patients.

Summary of results: 26 patients were recruited and 24 took part in the sessions. 8 completed the evaluation questionnaire. Key themes relating to the positivity of the experience, altruism, therapeutic benefit to self and benevolence were identified. The PaE team identified key differences which related to the process of recruitment and support for the patients.

Discussion: This novel initiative led by the department of Psychiatry and the PaE team resulted in the provision of an excellent opportunity for medical students to engage with the ‘real’ patient. Patients felt that the experience had a cathartic benefit and found it reassuring that clinicians were present to provide support.

Conclusion: We implemented a successful learning opportunity for medical students in collaboration with ‘real’ mental health patients to help prepare students for their psychiatry placements. The first enrolment of mental health patients within the Patients as Educators scheme has been both beneficial to the medical students and for the volunteer patients.

Take-home message: This unique initiative will help medical students to develop an understanding of real-life clinical challenges when working with patients who have mental health conditions, better preparedness for practice and a smoother transition into clinical practice. Patients found the experience rewarding whilst contributing to communication skills training for medical students.

Collaborative competencies at the primary secondary care interface: the patient’s view

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Background: In a society where ageing of the population and the increasing prevalence of long term conditions are major issues, collaboration between primary and secondary care is essential to provide continuous patient-centered care. The mainly separated postgraduate training programmes of primary and secondary care physicians should include training in collaborative competencies.

Summary of work: To define collaborative competencies we started with the view of the primary stakeholder: the patient. Focus groups with patients were conducted. These results will be augmented with results from a literature review and an ongoing Delphi study among physicians from both primary and secondary care and their residents.

Summary of results: Using the patients’ journey, several moments where collaboration took place were identified. Participants defined competencies necessary for collaboration. They emphasized the importance of patient centeredness: to see the patient as a partner in collaboration. Other competencies were communication, knowledge about the other, roles and responsibilities and collaborative attitude.

Discussion: Patients mentioned the importance of good collaboration between primary and secondary care. They found it hard to say what their doctor should do or know, but implicitly mentioned competencies by sharing their experiences. Strategies to acquire collaborative competencies, named by participants, include joint training and internships at each others’ workplace.

Conclusion: The results of this study provide an understanding of the competencies patients expect their physicians to possess in intraprofessional collaboration at the primary secondary care interface. Future steps include the implementation and evaluation of educational interventions to acquire these competencies in postgraduate medical training.

Take-home message: Today’s healthcare asks for professionals with collaborative competencies at the primary secondary care interface. Postgraduate training programmes should provide physicians with these competencies. To optimise patient centeredness medical education research should more often include the patient’s view.
#3K5 (976)
Only heroic voices: the censoring of patient experience

Susan Shaw
Rain Lamdin

Background: Listening to or hearing the patient voice is widely considered to be a hallmark of modern health professional practice and there are widely publicised examples of patient stories, including those of high-profile practitioners who have become patients. However, many barriers stand in the way of publishing authentic and insightful accounts.

Summary of work: Following a patient/caregiver experience registered health professionals compared their journal with the clinical records of the hospitalisation. On finding clear differences between the two accounts they developed a scholarly discussion but struggled to have it published. The road to publication and the barriers encountered on it are interrogated.

Summary of results: The nature of barriers to publication and the history of them are considered along with the apparent privileging of some ‘famous’ patient voices. Risks and benefits of disclosure of personal experiences are considered with a view to how they may be used to inform research practice, education and practice development.

Discussion: The ‘disconnect’ between the espoused value of patient voice and barriers to presenting and discussing it is illustrated. Barriers include interpretations of ethical approval to share lived experience while the publication of some high-profile personal health journeys in professional and popular literature is apparently free of such sanctions.

Conclusion: Ensuring patient voice is acknowledged and valued is considered a particularly significant feature of health care as it can provide insights into refinements that would improve patient experiences and outcomes. While there are some risks with sharing personal information the stories of professionals as patients warrant a wider profile.

Take-home message: It is imperative that authentic and insightful patient voices are shared in order to inform the evaluation and refinement of health care delivery. This requires that attention be paid to how voices are acknowledged and disseminated within recognised and valued formats that are accessible to practitioners.

#3K6 (1941)
Patients’ and accompanying persons’ opinions about the quality services of medical students during clerkship

Siska Nia Irasanti, School of Medicine Unisba, Indonesia
Ieva Baniasih Akbar, School of Medicine Unisba, Indonesia
Yani Dewi Suryani, School of Medicine Unisba, Indonesia
Rizki Perdana, School of Medicine Unisba, Indonesia

Background: The increased intensity of hospital competition, demanding company to always incorporate the needs and desires of consumers and try to fulfill what is expected of consumers by producing quality satisfactory services. During clerkship, students are required to rotate through different medical specialties and treat patients under the supervision of physicians.

Summary of work: This research aims is to know patients and accompanying persons opinions about the quality services of School of Medicine Unisba medical students during clerkship. This research method use cross sectional-descriptive eksplanatory survey with a questionnaire. 160 patients was participated with accidental sampling method. Statistical analysis use spearman correlation test analysis.

Summary of results: The results showed the services quality of of School of Medicine Unisba medical students during clerkship in a unit of outpatient Paediatric Department Al Ihsan Hospital, Bandung Indonesia rated good based on responsiveness component of 78,53%, the assurance component of 78,21%, 77.31% of empathy component and component reliability of 76,09%.

Discussion: Significant correlation and moderate relationship were revealed with $p<0,001$ ($p$ value≤0,05) and correlation coeffisient ($r_s = 0,39$). A gap between patients needs and reality of these medical doctor services during clerkship can be used in drafting a strategy to improve the quality of services, increase patients satisfaction and loyalty.

Conclusion: This conclusion is the better quality services of medical students during clerkship can cause more importance quality service indicator.

Take-home message: The take home message is the quality service of medical students during clerkship indicator based on patients need can be used to improve patients satisfaction.
#3L Short Communications: Research in Medical Education
Location: Room 102

#3L1 (660)
Medical Education Research in Taiwan 2006-2015: A Scoping Review

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Garrett Ren-Jie Liu
Moja Babovič

Background: As a rapidly emerging field in Taiwan, Medical Education Research (MER), has already produced a vast body of evidence. However, there has been no systematic study exploring this field so far. Recognizing the void, our study aims to map the state of the MER literature originating from Taiwan (2006-2015).

Summary of work: Between May–December 2016, a scoping review of healthcare education manuscripts was conducted. Inclusion criteria: English/Chinese language; Taiwanese authors; January 2006 and December 2015. Research Questions included: numbers of published papers per year; journal types; most cited articles; most frequently researched topics; research design; and key researchers.

Summary of results: 6,266 references were found across 3 databases (MEDLINE+Journals@Ovid, Scopus, Web of Science), additionally 191 retrieved from 22 key journals. Stage 1: three researchers screened titles/abstracts for duplicates and exclusion/inclusion criteria. Stage 2: from remaining, 890 manuscripts, 19 conference papers and three non-peer-reviewed book chapters were excluded (n=868 texts remained).

Discussion: 2008-2009 publications almost doubled (n=56; n=94); then steadily increased (104 average yearly publications). The majority are published in nursing journals (e.g. Journal of Nursing, Nurse Education Today). Medical Education also features highly (n=9 pre-2010; n=21 2011-onwards). A follow-up 2016-replication is underway for a clearer picture. Content themes will be discussed.

Conclusion: In our scoping review we illuminate key concepts and main sources of evidence to fully grasp the potential of further research in MER for Taiwan. A rigorous database of current literature helps us identify areas of highest priority and provides us with a rationale for future grants applications and decision-making. Our scoping review plays an important part in this endeavour.

Take-home message: Amidst this flourishing of publications, the complex climate of MER in Taiwan is a fruitful avenue for exploration. This is required for us to continue to undertake rigorous research in the field, thereby engaging in meaningful dialogues internationally.

#3L2 (786)
Beyond a good story: from Hawthorne Effect to reactivity in health professions education research

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Elise Paradis, University of Toronto, Toronto, Canada

Background: The Hawthorne Effect (HE) is used most often to describe a research participant’s response to being observed and allegedly threatens the validity of observational research. The objective of this study was to gain a more nuanced understanding of the role of the HE in health professions education (HPE) research.

Summary of work: We reviewed critiques of the initial Hawthorne Works studies, analyses of the HE in educational and psychological settings, systematic reviews, and finally examples in the HPE literature. We scrutinized examples from our own HPE research, looking for both confirmatory and disproving evidence of a HE.

Summary of results: Definitions of HE vary immensely, but generally encompass: special attention accorded participants, awareness of being in an experiment, and change in routine. Evidence in HPE research is highly contingent on task and research context. Our research suggests that the pace of healthcare delivery and the embeddedness of researchers minimize HE.

Discussion: The HE has gained mythical power in observational, particularly HPE, research. Yet the heterogeneity in description of the HE limits its interpretability. Research participants’ behavioral adaptation during observational research likely comes from their understanding of the study and the associated expected behavior, rather than mere awareness of being observed.

Conclusion: The HE has a variable, complex presence in HPE observational research. Researchers should remain alert to possible adaptations in participants’ behavior and report and question these behaviors, while carefully considering the context. Future research should examine the longitudinal effects of any HE.

Take-home message: We suggest that reviewers avoid asking about a HE, and instead articulate their specific methodologic concerns. We also suggest that researchers avoid a HE by performing sustained observation, cross-checking their own (etic) understanding with the emic view of participants, thus providing more robust accounts of participant life.
**#3L3 (386)**

**What Activity Theory has to offer in Medical Education Research – an example**

Agnes Elmberger, Department of Learning, Informatics, Management and Ethics, Karolinska Institutet, Stockholm, Sweden
Juha Nieminen
Klara Bolander Laksov

**Background:** Lately, there has been an increasing interest in activity theory (AT) within medical education research (Reid 2015). Often, the arguments for using AT are that it offers a comprehensive framework bridging the separation between theory and practice, and that it enables the researcher to include both micro and macro structures.

**Summary of work:** With the aim to study how pedagogical change takes place in clinical environments, activity theory was used to illuminate the involved elements in such processes. Qualitative data was collected in five different clinical contexts where initiatives for educational change had been taken.

**Summary of results:** The notion of the activity system with its included elements (Engeström & Sannino, 2010) was especially helpful in identifying the involved factors and what role they play in educational change in clinical environments. The analysis continued by identifying interconnections and contradictions between neighboring activity systems, which further deepened the understanding.

**Discussion:** AT enabled us to broaden the understanding for how educational change takes place in clinical environments, so that future change initiatives can be supported. In our experience, one of the challenges with AT was how to proceed from merely describing results to generating new knowledge and add to existing theories.

**Conclusion:** Activity theory does not come ready to use. It is a theory with many founding principles that needs to be understood in order to reach its full potential. But when this is attended to, the theory allows researchers to systematically study complex activities within medical education, such as educational change.

**Take-home message:** Activity theory holds the activity as unit of analysis and includes the different elements involved in the activity. The theory also includes tools and notions to illuminate interconnections between several activities and thus, it offers ways to investigate the activity from a more systemic perspective.

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**#3L4 (294)**

**Learning Curves in Health Professions Education Research: A Systematic Review**

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Martin Pusic, New York University, New York City, USA
Rose Hatala, University of British Columbia, Vancouver, Canada
David Cook, Mayo Clinic, Rochester, USA

**Background:** Learning Curves (LCs) are used in medical education to represent paths to competence and expertise and can be useful tools for competency paradigms. However, research reports of LCs often omit important information. We conducted a systematic review of the reporting quality of LC research to identify specific areas for improvement.

**Summary of work:** We searched MEDLINE, EMBASE, CINAHL, ERIC, Web of Science and Scopus in 2011 for studies of simulation-based education. From this convenience sample the authors identified all studies reporting a LC. Reviewers worked in duplicate to extract information on graphical, statistical, and conceptual elements of LCs.

**Summary of results:** 145 of 985 studies reported a LC. Items for improved reporting included: description of learning intervention (reported in 51%), graphical competency lines (22%), and 13% displayed no LC graph at all. 63% statistically analyzed the LC, but only 7% of the functions chosen used all data offered by the LC.

**Discussion:** Given that LCs are inherently a visual display of learning, it is striking that the graphs portrayed in up to 90% of studies underutilized effective graphing techniques. Statistically, methods were used that did not take advantage of hierarchical linear models, the ideal approach to statistical modeling of a LC.

**Conclusion:** The reporting of learning curves is often incomplete. Furthermore, the rich conceptual and statistical framework offered by learning curves is underutilized. Consistent reporting of key elements and consolidation around best practices will improve the use of learning curves for both local applications and for generalizable research.

**Take-home message:** LCs in Health Professions Education are poorly reported graphically, statistically and conceptually. Best practices include: use of graphical tools that depict multiple dimensions of the learning task, complete reporting of interventions and feedback, communication of important thresholds such as competency and remediation, and use of a mathematical modeling function.
#3L5 (852)
Exploring in-depth analysis of top-cited articles in medical education

Samy Azer, King Saud University, Riyadh, Saudi Arabia

Background: The aim of this study was to analyze the top-cited articles in medical education identified by Azer 2015 and explore the characteristics of these articles that can provide insight into their assessment.

Summary of work: The following were analyzed: (1) any correlation between number of grants, number of authors, institutes, or countries involved and number of citations, (2) number of female representation in authorship, the representation of non-medical staff in the authorship, and (3) exploring any association between top authors and awards in medical education.

Summary of results: No correlation was found between the number of citations and number of grants, authors, institutes, or countries involved. 50% of authors were females. No correlations were found between the number of females or non-medical authors and citations. Authors with two or more articles received the Karolinska Institutet Prize for Research.

Discussion: The analysis shows that the higher number of citations received are not necessarily related to funding, working collaboratively with a big team from several institutes or several countries. The results indicate that top-cited articles have presented innovative ideas or provided answers to questions/challenges that have faced medical/health educators.

Conclusion: The finding that authors of more than one top-cited article received the Karolinska Institutet Prize for Research in Medical Education indicates that this could be a parameter in selecting the candidates for the award.

Take-home message: Careful assessment of top-cited articles may provide more insight into exploring their characteristics and present an excellent model for researchers and medical/health educators that they use in their teaching and research work.

#3L6 (2622)
Lessons from a Community of Practice

Ellayne Fowler, University of Bristol, Bristol, UK

Background: This reflection is on a three-year University Fellowship awarded to develop the quality of the medical education research at a multi-site medical school. Using a conceptual framework of Communities of Practice (Lave & Wenger, 1991) a range of measures were taken to develop work already being done in teaching Academies.

Summary of work: This work is a case study, reporting on a range of initiatives and analysis of both results and processes. 3 years of successful abstracts at a UK conference were analysed using a quality framework developed from literature. Educational interventions and support were analysed using questionnaires and focus groups.

Summary of results: Analysis of successful abstracts demonstrate development of quality in terms of methods of evaluation (Kirkpatrick, 1967) and purpose of research (Cook et al., 2008). Changes in the size of the COP have led to further revision of intervention methods for sustainability through greater work between Academies and a medical education course.

Discussion: Using a theoretical framework has aided reflection on developing educational research in an extended medical school faculty. Small interventions in support have led to external success at conferences and the introduction of innovations into the medical school curriculum. Communication and sharing of innovations are key to further developments.

Conclusion: Theoretical framing of educational research issues has led to interventions that support the development of a COP. While you can’t create a COP you can support the development of a group with common goals into a COP which is the basis for ongoing changes in that COP.

Take-home message: • COPs take time to grow and need to be sustained in view of their changing makeup; • Develop some consensus on quality before attempting larger research projects; • Build on success with a forward looking strategy for research in your programme
Background: To address gaps in the performance of early residents in the US, the Association of American Medical Colleges published a list of 13 Core Entrustable Professional Activities for Entering Residency in 2014. Ten US medical schools were convened to develop best practices for implementation of the Core EPAs in UME.

Summary of work: The Core EPA pilot is organized around concept groups of Curriculum, Assessment, Entrustment and Faculty Development. Additional teams are addressing specific features of individual EPAs. This presentation will report outcomes from a recent pilot meeting in Washington, DC, focused on the process of rendering entrustment decisions in UME.

Summary of results: The pilot group has developed guiding principles, toolkits for EPA teaching and assessment, and strategies for engaging learners. Early implementation at institutions shows promise and challenge. Preliminary principles for entrustment decisions have been developed in anticipation of rendering test-case entrustment decisions and sample reports for the graduating class of 2019.

Discussion: Implementing the EPA framework in UME presents several challenges. Scale is an issue; institutions participating in the pilot have class sizes varying from 90 to over 200 students. The medical student must meet performance expectations of faculty across clinical disciplines, thus the pilot group must formalize generalizable processes for entrustment.

Conclusion: The AAMC Core EPA pilot group is making steady progress, acknowledging challenges and developing strategies to address them. Recent attention to the process of rendering and reporting entrustment decisions has been critical to shape the interventions needed now to position ourselves to report findings for decision making. Early shared principles for EPA teaching and assessment have been developed in anticipation of rendering test-case entrustment decisions and sample reports for the graduating class of 2019.

Take-home message: The AAMC Core Entrustable Professional Activities for Entering Residency pilot process has offered critical structure for collaboration in addressing the challenges associated with implementing competency-based assessment. Common standards and shared approaches across US institutions will be necessary to optimize the care of patients at the UME to GME transition.

#3M2 (1011) Introducing EPAs within undergraduate medical training in Switzerland: A challenge for faculties

Pierre-André Michaud, Joint Commission of the Swiss Medical Schools, Bern, Switzerland

Patrick Jucker-Kupper, Institut für Medizinische Lehre, Bern, Switzerland

Christian Schirlo, Institut für Medizinische Lehre, Zürich, Switzerland

Sonja Trüstedt, Faculty of Medicine, Basel, Switzerland

Christoph Berendonk, Institut für Medizinische Lehre, Bern, Switzerland

Mathieu Nendaz, Faculty of Medicine, Geneva, Switzerland

Background: Since 2002, the curriculum of the five Swiss medical faculties is driven by a list of learning objectives. As part of the 2nd revision of this document, a new conceptual framework has been developed, named Profiles, for: “Principal Relevant Objectives For Integrated Learning & Education in Switzerland.”

Summary of work: An interprofessional group of experts from whole Switzerland has developed the structure and content of Profiles, producing a document of 20 pages. As in previous versions it contains an adaptation of the CanMEDS roles and "situations as starting point”. An ambitious decision was to include EPAs (Entrustable Professional Activities).

Summary of results: According to the available literature and the AAMC’s guide, Profiles provides nine EPAs ranging from physical examination to management plan and safety. At the end of the curriculum, the student is expected to reach level three of entrustability, i.e. be able to perform the task autonomously, with distant supervision.

Discussion: The expert group & vice-deans for medical education have run many discussions around issues such as the level of entrustability to expect, the selection of EPAs, the link between EPAs and CanMEDS roles and the impact of EPAs on the curriculum in each of the five Swiss faculties.

Conclusion: The implementation of Profiles has currently started and raises several questions: how can students learn to become autonomous, entrustable? What is the impact of introducing EPAs on professionalism? The biggest questions are the ones of the (bed-side) evaluation of entrustability and faculty development in the area of such assessment.

Take-home message: The use of EPAs at the undergraduate level is currently discussed in several countries. The implementation of EPAs in all Swiss faculties constitutes an opportunity to test the feasibility of this approach and to reflect on how to match it with the goals of undergraduate medical curriculum.
A simulated Night on Call (NOC): understanding workplace entrustment judgments about near graduating medical students from multiple perspectives

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Background: The AAMC proposed 13 Entrustable Professional Activities (Core EPAs) for entering residents. To explore the measurement of Core EPA entrustment we developed Night on Call (NOC), a 4-hour simulation in which medical students rotate through a series of clinical activities where competency was assessed and raters made entrustment judgments.

Summary of work: Sixteen entrustment judgments were made on each of 73 near senior medical student by 9 trained raters; 4 Standardized Patients and 3 Standardized Nurses (1 rating competency and 1 rating communication each), 1 Attending based on an oral presentation (OP), 1 peer rating based on a patient handoff (HOfs).

Summary of results: We tested the hypothesis that NOC measures trustworthiness. A one-factor confirmatory factor analysis (CFA) fit the data ($\chi^2 = 155.27, df = 112, p < .001, CFI = 0.97, TLI=0.97, RMSEA = 0.07, p>0.05$). All but 2 of the 16 factor loadings were greater than 0.3.

Discussion: These findings clarify the everyday, workplace, entrustment judgments of medical trainees made by clinical supervisors, nurses, patients and family members. Establishing validity evidence for NOC and entrustment thresholds for the 13 EPAs will enable us, through NOC to provide a meaningful educational handoff from medical school to residency.

Conclusion: A single-factor, 16 measure model fit the entrustment framework within an ecologically valid simulated workplace suggesting that an individual student’s clinical trustworthiness is measurable across work activities and rater perspectives. NOC shares the limitations of assessments based on simulated patients and nurses and the strengths of such standardized strategies.

Take-home message: NOC, a simulated workplace assessment of AAMCs Core EPAs; enables the study of entrustment judgments and may provide a meaningful educational handoff from medical school to residency. While high stakes entrustment decisions should be based on accumulated competence evidence workplace entrustment judgments of medical trainees continue to be critical.

Confidence of graduating medical students to perform Core end-of-undergraduate-training Entrustable Professional Activities (EPAs)

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Background: Twelve Core EPAs were recently defined at the Charité -Universitätsmedizin Berlin, Germany, i.e. tasks every graduating medical students should be able to perform under distant supervision when entering residency. We analyzed to what extent this outcome is met in students from a traditional undergraduate curriculum.

Summary of work: An online questionnaire was send to graduating students of the traditional curriculum at the Charité. Students were asked how confident they felt to perform each of the 12 EPAs under distant supervision (supervisor not readily available, results reviewed) within the first days of residency.

Summary of results: Sixty-three students responded (44 females, 21 males, mean age of 27 years, response rate 13 %). The students confidence varied markedly between the EPAs, ranging from 97% (take a medical history, perform a physical exam and provide a structured summary) to 23% (recognize an emergency situation and act upon it).

Discussion: The approach of this study provides meaningful, concise and sufficiently detailed insight into the extent graduating medical students feel confident to perform Core EPAs under distant supervision. It allows to identify key gaps in an undergraduate medical program and its transfer to workplace learning and performance.

Conclusion: In the program evaluated the graduating medical students reported very variable confidence to carry out end-of-training Core EPAs as defined in the same institution. The results of our study will be used to discuss what curricular changes are needed to archive the consented, institutional key outcomes.

Take-home message: Using Core EPAs as key outcomes for undergraduate medical education yields a meaningful view on what has been reached by graduating students in certain medical programs. Graduating students’ confidence ratings on the ability to carry out professional tasks under defined supervision levels can provide useful information on reaching educational outcomes.
#3M5 (618)
Workplace-based assessment tools for feedback and entrustment decisions in health professions education: a systematic review

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Mira Mandoki
Olle TJ ten Cate

Background: Entrustable Professional Activities combine feedback and evaluation with a permission to act under a specified level of supervision and the possibility to schedule learners for clinical service. This literature review aims to identify workplace-based assessment tools that indicate progression towards unsupervised practice, suitable for entrustment decisions and feedback to trainees.

Summary of work: A systematic search was performed in the PubMed, Embase, ERIC and PsycINFO databases. Based on title/abstract and full text, articles were selected using predetermined inclusion and exclusion criteria. Information on workplace-based assessment tools was extracted using data coding sheets. The methodological quality of studies was assessed using the MERSQI instrument.

Summary of results: The search yielded 6,371 articles (180 were evaluated in full text). In total 80 articles were included, identifying 67 assessment tools. Only a few studies explicitly mentioned assessment tools used as a resource for entrustment decisions. Validity evidence was frequently reported, and the MERSQI quality score was 10.0 on average.

Discussion: In a review in 2009 by Kogan et al. concluded that only few assessment tools had been profoundly evaluated and tested. In the present study we found validity evidence for more assessment tools. Commonly used assessment tools (Mini-CEX, DOPS, OSCE) had validity evidence from multiple studies.

Conclusion: Many workplace-based assessment tools were identified that potentially support learners with feedback on their development and support supervisors with providing feedback. As expected, only few articles referred to entrustment decisions. Nevertheless, the exciting tools or the principals could be used for entrustment decisions, supervision level or autonomy.

Take-home message: Much is known about workplace-based assessment tools to provide learners with feedback or formative assessment, including validity evidence for a variety of available assessment tools. However, few studies have researched the application of these assessment tools for the purpose of making decisions about the required level of supervision.

#3M6 (2860)
Orientation, consultation and engagement to support implementation of work based assessment based on Entrustable Professional Activities

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Background: Entrustable Professional Activities (EPAs) were adopted as a means of reframing the specialist anaesthesia training programme in Ireland. Bespoke work based assessment tools were developed with an emphasis on feedback. A phased approach to implementation was adopted with a multi-faceted strategy for supporting change with an ambitious timescale.

Summary of work: Feedback Reports were designed and implemented for three EPAs, using a supervision scale based on the concept of ‘entrustability’. This involved significant formalisation, enhancement or change in practice for consultants and trainees. Orientation seminars, regional workshops, hospital visits and digital resources were provided to support implementation on a national basis.

Summary of results: Effective CPD requires articulating a clear rationale as well as supporting changes in practice. Workshops and hospital visits provided valuable consultation opportunities where concerns could be raised and addressed. The concept of entrustability, for example, was nuanced so as to be meaningful and acceptable to clinicians.

Discussion: Traditional approaches to CPD which involve disseminating agreed best practice are no longer tenable in emergent, innovative, developing fields. Strategies for implementing CBME, EPAs and WBA need to engage all stakeholders as partners in a joint enterprise of quality improvement in the interests of patient care.

Conclusion: Implementing CBME, EPAs and WBA requires a comprehensive, multi-faceted and responsive CPD strategy which includes meaningful consultation and engagement with stakeholders. Conducting these processes in hospitals may be necessary if not essential, given the constituency involved. Accessible resources, leadership from senior clinicians and institutional commitment are also key to success.

Take-home message: Implementing CBME is a major change management process. It requires effective, ongoing support for those responsible for effecting change in their practice. It needs to combine support from credible peers, accessible resources and other learning opportunities. A well-resourced CPD strategy needs to respond to and inform the EPA development process.
#3M7 (2234)
Putting the feet of ACGME Milestones and EPAs in the Shoes of Anesthesiology Residents in Taipei: A Consensus Roadmap for Shift-based Assessment

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**Background:** To introduce both milestones and entrustable professional activities (EPAs) to anesthesiology programs in the 3 teaching hospitals of Taipei Medical University and National Taiwan University Hospital, a holistic in vivo shift-based assessment is anticipated to be contextually developed and implemented.

**Summary of work:** A four-phase strategy was adopted: 1) Using a modified Delphi technique to obtain consensus and facilitate faculty development; 2) Developing an e-questionnaire for assessing residents’ performance on shifts; 3) Implementing such shift-based assessment on a daily/weekly basis; 4) Determining our EPAs through expert meetings and integrate them with the e-questionnaire.

**Summary of results:** 37 experts came to consensus on 285 milestones through three rounds of a modified Delphi protocol. 8 milestones which relied on US board examination in Medical Knowledge were re-established. A new e-questionnaire has been designed and applied to residents’ daily work shifts. Experts meetings will be held since March 2017.

**Discussion:** Unlike the current modus operandi of Clinical Competence Committee (CCC) whose feedbacks were likely perceived as summative, high-stakes,(Hauer et al., 2015) more reductionist, and in vitro,(Hawkins et al., 2015) a shift-based approach which encompasses milestones and EPAs may avoid some pitfalls that CCC may occur.(Donato, Alweis, & Wenderoth, 2016)

**Conclusion:** This exploratory study illustrates the detailed inquiry process and contextual strategies of how an educational innovation, which strives to synthesize milestones and EPAs, has been carried out in anesthesiology residency program.

**Take-home message:** The consensus roadmap established in Taipei may bring light to those who strive to adopt an in vivo shift-based milestones assessment in a non-Western context.
How prior curricular experiences and student goals influence medical students’ engagement with formative assessments

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Kevin Eva, The University of British Columbia, Vancouver, Canada

Background: Despite educators’ desire to enable learning through formative assessments, it is currently unclear how students engage in these opportunities, and how these opportunities enable their learning. We conducted this study to understand how students engage in assessments that are intended to be formative and what factors influence that engagement.

Summary of work: Drawing on a constructivist grounded theory approach, we interviewed 21 first-year medical students from one Canadian medical school about their experiences of learning through participation in a formative OSCE (FOSCE) in which they received both immediate oral feedback, and delayed written feedback.

Summary of results: The FOSCE enabled student learning by facilitating achievement of students’ goals (e.g., becoming a successful medical student and a good physician). One way that students facilitated goal achievement was by using the FOSCE to address barriers from prior curricular experiences that limited goal attainment (e.g., limited feedback and skills practice).

Discussion: From a self-regulated learning perspective, the findings indicate that students engage in learning opportunities in ways that best enable them to achieve their own goals. One way is by using present learning opportunities to address limitations from previous learning experiences that students believe limit their ability to achieve their goals.

Conclusion: Students use formative assessments to facilitate the achievement of learning goals by addressing barriers from prior curricular experiences that limit the achievement of their goals.

Take-home message: When imagining the benefits that formative assessments might provide, educators should consider students’ learning goals and the barriers stemming from prior curricular experiences that students perceive limit their achievement of these goals as important sources of influence.
#3N3 (241)
Student response to feedback: a think aloud and screen capture study

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Background: Within health professional education, reflection is thought to be a key determinant of receptivity to feedback and subsequent self-regulation of learning. This study was designed to explore student reflection during the critical time when they receive, interpret and (potentially) plan their response to feedback.

Summary of work: 17 second-year medical student participants engaged in a think-aloud protocol with simultaneous screen capture recordings while viewing and interacting with their progress test feedback (personalised PDF reports). Thematic analysis of transcribed audio recordings (augmented by analysis of screen capture data) was used to interpret their responses to the feedback.

Summary of results: Most participants had low expectations due to the end-of-course standard of the test but scores below the median were generally viewed unfavourably. All participants reviewed all sections of the report with most time spent reviewing domain-level performance. Many students overlooked finer details and some misinterpreted key content elements.

Discussion: When reviewing their feedback reports, participants appeared to value domain and cohort comparisons above brief test item summaries. Some were reassured by their progress, others had made non-specific changes to their study schedule while very few students made directed plans to guide future learning.

Conclusion: Despite the inclusion of clear and detailed instructions, some students made errors in report interpretation. In addition, a general intention to increase study, rather than specific plans to address identified weaknesses, suggests that on their own these feedback reports are likely to have limited impact on students’ future learning.

Take-home message: Evidence of frequent miss- and under-interpretation suggests that providing students with computer-generated personalised feedback on assessment requires careful scaffolding. This could include more explicit orientation and guidance to the purpose of the assessment, greater emphasis on study behaviour and learning goals and a reduced focus on relative performance.

#3N4 (904)
Feedback to the future: What factors influence tutor provision of feedback? A video reflexive study of tutors in experiential consultation skills teaching

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Background: This research project uses video reflexive ethnography to explore the perceptions of tutors around feed forward feedback in experiential small group consultation skills training.

Summary of work: Participants were consultations skills tutors at the University of Dundee. Seven participants were recruited in total. The primary data source consisted of audiotaped video reflexivity sessions. Additionally, participants were asked to complete a questionnaire to explore their perceptions around the methodology of this research as a staff development tool.

Summary of results: The findings illustrate that feed forward within feedback is strongly influenced by context which influences how tutors provide feedback to students. The contextual factors which influence feedback and feed forward are presented within a new framework for feedback which conceptualises feed forward within the complexity of everyday teaching practice.

Discussion: When feedback is considered though the lens of every day teaching practice we can begin to demystify the process. As part of this we need to re-conceptualise feedback as an everyday pedagogy and consciously re-couple teaching and feedback practice rather than viewing feedback as an isolated act within teaching.

Conclusion: We concluded that context matters in feedback and strongly influences the feedback that tutors provide particularly the longitudinal development aspects of feedback (feed forward). A new framework for feedback is proposed which helps conceptualise some of the contextual factors we need to consider as teachers.

Take-home message: 1. Context matters in feedback practice. 2. Context influences the feedback that we provide particularly the longitudinal development aspects of feedback (feed forward). 3. Viewing feedback through the lens of every day teaching practice helps us understand this complex process. 4. Feedback should not be viewed as an isolated act.
#3N5 (2903)
Development of structured, feasible, valid and reliable tool for assessing Long case: SLICE (Structured Long Interview and Clinical Examination)

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Background: Management of patient is assessed using different assessment tools, however Long case provides the opportunity to do it holistically. No tool was found to assess the Long case holistically in our context where 100-300 students of one class have to be examined in 3-4 days.

Summary of Work: Available tools in literature to assess long case in undergraduate medical students in a limited time were not according to our local context. Delphi technique and cognitive interviews with the senior faculty were conducted. Content validity index (CVI) was calculated for each item of the tool to develop SLICE.

Summary of Results: It was found to be valid and reliable tool with CVI for relevance of 0.92 and Clarity of 0.90 and reliability of 0.88. The mean time of completion of assessment of a student was 12 minutes.

Discussion: SLICE is a structured tool to assess undergraduate medical students for long case in a context where 100-300 medical students are to be assessed in 3-4 days. It provides the examiner to assess all students uniformly in a short span time avoiding subjectivity and disparity in examination process.

Conclusion: Long case assessment can be used for the holistic assessment of students regarding clinical reasoning and management of the patients, however the tool used should be valid, reliable, acceptable, feasible and with good educational impact.

Take-home Message: SLICE is structured way of assessing long case in short space of time without compromising the principles of good assessment.

#3N6 (2973)
The significance of pedagogic relationships in encouraging take-up of feedback by students

Linda Jones, Centre for Medical Education, Dundee, UK

Background: Drawing on doctoral research "Managing To Care, The Emotional Dimensions Of Formative Assessment: Sustainability of teacher learner relationships in four case studies" explored the importance of relationship between learners and tutors on the alignment of staff and students expectations of and likelihood of learners using feedback to adapt and self-regulate.

Summary of work: 4 Case studies, utilising mixed methodologies observation, survey and interview generated broad descriptors of manifestations and expressions of reciprocal caring between teachers and learners in General Practice; 5Rhythms dance; Shaolin Kungfu and undergraduate medicine. Likert scales/thematic analysis identified the importance of relationships and shared expectations on effectiveness of formative assessment.

Summary of results: Findings suggested misalignment between tutor and undergraduate expectations in medicine. Comparison illuminated faculty-development strategies needed to enhance medical educators use of emotional intelligence and emotional labour to increase trust in individual teachers rather than the profession or school, which in-turn could increase take-up of feedback and promote more self-regulatory behaviours.

Discussion: There is potential for greater use of learning contracts, peer learning as a means to develop learner abilities to self-assess. Feedback only becomes formative assessment when students choose to act on it. It is the quality of the relationships we form that has the most significant impact on that choice.

Conclusion: Traditional models, separating cognitive and emotional dimensions of learning need to be reconsidered. Developing active use-of-self, a component of emotional intelligence, by faculty can role-model adding value to learner-centered teaching and relationship building within education processes which have much in common with developing effective patient centered capabilities in our students.

Take-home message: Effective pedagogic relationships are crucial to learners making best use of feedback. Historically we’ve paid limited attention to how we build trust and hold the space whilst learners develop capacities to self-assess / self-regulate. Faculty development curricula need to explicitly balance skills handling emotional, cognitive and social dimensions of learning.
Improving feedback literacy in the workplace: students’ experiences of the benefits of learning to be vulnerable

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Background: Feedback is a key mechanism in workplace learning and yet research indicates that it remains a problematic process. Students want meaningful feedback and clinical supervisors have reported challenges in delivering honest feedback with sensitivity. Educational interventions designed to improve feedback skills are typically aimed at educators rather than learners.

Summary of work: This study evaluated an educational intervention designed to improve students’ engagement in feedback in the workplace. In the hospital setting an interprofessional student group (n=105) engaged in an e-learning priming module, face-to-face workshop and ongoing reflective activities. Evaluation included learner surveys and interviews, with qualitative data interrogated using Framework Analysis.

Summary of results: Post intervention, students reported higher levels of engagement in feedback in the workplace. They expressed feeling more confident in soliciting feedback on specific aspects of their clinical practice. Despite initial feelings of discomfort, students described that they were more likely to disclose their self-evaluation of performance to supervisors.

Discussion: Students reported feeling vulnerable starting placements because they are novices. This view reflects the wider work-based learning literature. Receiving feedback from an expert typically added to this sense of vulnerability. Developing students’ feedback literacy increased their understanding of feedback processes and confidence in both soliciting feedback and self-evaluation.

Conclusion: Post educational intervention, students reported they were more likely to initiate discussions with supervisors on specific areas of practice requiring improvement—a ‘front foot’ identification of deficits. This strategy not only yielded more productive discussions but also helped to reduce the emotional reaction often experienced in verbal feedback encounters.

Take-home message: Developing learner feedback literacy is likely to be as important as developing educators’ feedback skills. Students reported that the training resulted in enhanced confidence to ask for feedback. Rather than feeling exposed by their self-evaluation of deficits, they experienced this conversational style of feedback as empowering.
#3O Short Communications: Assessment
– OSCE 1
Location: Room 201

#3O1 (2110)
A snapshot of OSCE practices at Australian Medical Schools

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The ACCLAIM Collaboration

Background: The Australian Collaboration for Clinical Assessment in Medicine (ACCLAIM) consortium comprises 15 out of a total of 19 medical schools in Australia. The objective of this collaboration is to provide benchmarking and quality assurance of Objective Structured Clinical Examinations (OSCEs) on a national basis.

Summary of work: We aimed to design and administer a questionnaire with the objectives of 1) providing a snapshot of current OSCE practices within medical schools in Australia and 2) compare these practices with current gold standard according to guidelines, which we consider to be AMEE guide no. 81.

Summary of results: A semi-structured questionnaire was designed and administered to each of the 19 medical schools in Australia, including the 15 consortium members. Questions were included about the OSCE process, analysis, and administration. The results of the survey will be available for AMEE 2017.

Discussion: In our experience in our roles as visiting examiners as part of the ACCLAIM collaboration, we have noted that the OSCE process varies across Australian Medical Schools. This survey will allow us to document current practice.

Conclusion: We hope that the results of our survey will provide a snapshot of current OSCE practices and allow participating schools to reflect on their current OSCE practices in relation to other medical schools in Australia, and recommended gold standard practices.

Take-home message: Variations in the interpretation and implementation of accepted guidelines for OSCEs is inevitable, given the need to respond to local needs and limitations. Sharing of such diversity is important in order to maintain the strength of OSCE assessment and to meet the changing needs of medical education.

#3O2 (3040)
Perception of OSCE amongst clinical teacher-examiners

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Background: The Department of Medical Education at Jagiellonian University has the longest tradition of using OSCE in Poland. We have been organizing OSCE to assess the skills of students after they have completed Laboratory Training of Clinical Skills since 2000 and coordinating multidisciplinary skills assessment for the 3rd-year students since 2015.

Summary of work: The aim of this study was to investigate OSCE from the examiners’ perspective. The study was conducted by using a questionnaire which was distributed among teachers, who assessed students during the multidisciplinary OSCE. It has been made after students have completed initial courses in internal medicine, surgery, pediatrics and gynecology.

Summary of results: More than 91% of examiners believe that the OSCE is an appropriate test to assess the learned skills of students, nearly 90% examiners believe that it is fair. In the opinion of 72% of respondents, OSCE has a positive effect on the learning of students.

Discussion: Our study showed that, regardless of specialty, place of work and seniority, teachers believe that the OSCE is a fair exam and proper to assess the skills and, more importantly, that the exam in this form has a positive impact on what students learn.

Conclusion: Practical skills assessment is crucial for proper evaluation of students and curriculum but evaluation is not only a purpose of assessing. Teachers report that the introduction to the curriculum exam OSCE has a positive impact on the motivation of students to learn clinical skills.

Take-home message: OSCE is a proper tool to assess practical skills. According to the teachers’ practical assessment by an examination, OSCE has a positive effect on the motivation of students to learn these skills.
Standardising marking in OSCE communication stations: a collaborative approach

Joseph Oakley, The College of Optometrists, London, UK

Background: The College of Optometrists is the professional, scientific and examining body for optometry in the UK. In our OSCE, communication stations were consistently flagged with high pass rates despite feedback that trainees found effective communication difficult. Examiners were informally observed and questioned about assessing communication revealing significant variance in marking.

Summary of work: A project was launched to establish what entry-level communication was and develop a marking matrix of qualitative statements to standardise marking. Subsequently, we trained examiners to apply this marking matrix using video scenarios and interactive voting pads and monitored its application in live exams through peer marking moderation and feedback.

Summary of results: Examiners now rate themselves as more confident when discriminating candidate communication. Examiners have fed back the matrix makes a subjective field more objective and fair and peer reviewers have noted a decrease in inter- and intra-examiner variability. Statistically, communication stations are no longer consistently flagged with high pass rates.

Discussion: • A transparent and inclusive approach to reviewing current marking practice works best; • Quality assuring new approaches to marking through direct observation is important; • Are expert clinicians trained to effectively mark communication discretely? • Communication demands on practitioners are increasingly complex and assessment needs to keep up.

Conclusion: In the past, communication marking came secondary to clinical considerations – we made too many assumptions of our examiners. The collaborative approach and specific training delivered to examiners around marking communication skills discretely was well rated. Peer reviewing marking and feedback has also given examiners confidence rather than scaring them.

Take-home message: • Don’t ignore communication marking – tackle the challenge with your examiners; • Assessment needs to keep up with the advanced communication skills demanded of our modern-day practitioners; • Involve all stakeholders when reviewing current marking practice – a collaborative, transparent approach works best.

Social and Cultural Factors Influencing Consistency of Examiner Judgements in Competency-based Assessments in Medical Education

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Lata Vadlamudi, School of Medicine, The University of Queensland, Australia
Christopher Roberts, Sydney Medical School, The University of Sydney, Australia

Background: Based on Generalizability Theory (Brennan, 2001) and Cultural Historical Activity Theory (CHAT) (Engeström, 1987), I explored the consistency and the associated factors that influenced examiner judgements of student performance, and the impact of providing feedback to examiners in calibrating their judgements in the final-year OSCE at one Australian research-intensive university.

Summary of work: I used a mixed-methods case study approach to collect quantitative and qualitative data. I undertook statistical analysis of examiner markings to explore the contribution of contextual factors (students, examiners and stations), and analytical and inductive coding to explore the social and cultural factors, that influenced examiner judgements of student performance.

Summary of results: Outcomes of the statistical analysis revealed that examiners was the major contextual factor in the judgement process. Preliminary analysis of the qualitative data indicated that social and cultural factors, and their interactions, including the institution’s requirements, examiners’ values, attitudes and experience all played an influential role in the judgement process.

Discussion: This established understanding of the above factors was crucial in engaging examiners to develop strategies which would help them to identify these influential factors and minimise their influence in the judgement process. Also, to understand the tensions brought about by these factors which might inhibit examiners to calibrate their judgements.

Conclusion: This study facilitated the development of effective strategies and evidence-guided recommendations to assist examiners in recognising the social and cultural factors involved in, and their subsequent impacts, on the judgement process. The outcomes of this study were important to ensure that graduating medical students are competent and safe to practise.

Take-home message: • A range of contextual, social and cultural factors, and their interactions were involved in examiner judgements of student performance. • Tensions brought about by these factors might also inhibit the examiners to calibrate their judgements. • The established understanding would help examiners to recognise these factors and to minimise their influence.
#3O5 (631)
Paper marking of an Objective Structured Clinical Examination is not faster than using tablets: a randomized controlled pilot

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Background: Flaws and demands for resources within Objective Structured Clinical Examinations (OSCEs) are due to the ongoing use of inferior lower ‘paper based’ technologies. Our aim is to compare examiners while assessing students with regard to assessment time and head movements while using paper forms (lower) and electronic (higher) technologies.

Summary of work: Three consecutive randomly assigned and pre-recorded OSCE scenarios were shown to, and examined by 14 female and 6 male examiners. Performance scores of the students were respectively recorded on paper, laptop and tablet. We used SPSS 22 and Edu-G 6.1. for Analysis of Variance (ANOVA) and Generalizability Theory (G-Theory) analysis.

Summary of results: Differences found are not statistically significant (p>0.05). The G-Coefficient for lower technology is 0.44 whereas for laptop and tablet respectively 0.37 and 0.55. Error variance is associated with the interaction of Observations and Technology (lower technology) (OT= 96%), only 4% is associated with variation due to the technology involved.

Discussion: Educational informatics is a relatively new field of study that is constantly evolving at a rapid pace. Due to the emerging nature of the field there is a noted lack of research.

Conclusion: This was a pilot study on a small scale and in the future research a larger number of examiners and cases would need to be included to further examine the impact of higher technology assessment on utility, examiner’s distinct and individual assessment behavior.

Take-home message: Higher technology used in OSCE assessment is not faster but more reliable in OSCE assessment compared to lower technology.

#3O6 (750)
Can peer examiners be used in medical OSCEs to improve feasibility, reliability, validity and feedback?

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Background: Objective Structured Clinical Examinations (OSCEs) are fundamental to medical school assessment and are typically marked by clinicians and faculty. Delegation of formative OSCE marking to final year medical students may confer a benefit to both peer examiners but also create a less intimidating examination environment and improve feedback.

Summary of work: Fifty formative OSCE stations were double-marked by faculty and peer examiners. Anonymous quantitative data was analysed using linear regression, Cronbach’s Alpha and Bland-Altman plots to determine the level of agreement and reliability of peer markers, when compared to faculty examiners and themes extracted from qualitative free-text feedback.

Summary of results: There is significant correlation between faculty and peer markers (R = 0.7090, p<0.0001), good internal consistency (0.8296), and negligible bias (-0.0550). Qualitative analysis suggests that peer markers give more useful feedback.

Discussion: Peer markers demonstrated the capacity to assess third year students with acceptable consistency and reliability, although further work is required to determine whether improved training might improve peer marker consensus with faculty. The feedback provided by peer examiners suggests greater insight into the challenges posed by OSCEs for learners.

Conclusion: Our findings support use of peer markers in formative OSCEs. The cognitive and social congruence of peer markers appears to yield more useful qualitative feedback for learners, further supporting their role. The impact on peer examiners will be the next step in our analysis.

Take-home message: Final year medical students can be trained as peer examiners in order to increase feasibility. They have similar reliability and validity to faculty examiners in formative OSCEs and, additionally, confer some benefits over faculty markers with regard to written feedback.
#3O7 (932)
"Prescribing safely together on the ward": testing and adapting a simulation OSCE designed for medical students as an interprofessional education activity for medical and pharmacy students

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Background: Team working and closer involvement of pharmacists with healthcare teams are suggested to improve prescribing outcomes. A study of doctors' prescribing errors recommended interprofessional education (IPE) development. A commonly applied definition of IPE by the Centre for Advancement of IPE (CAIPE) involves students learning with, from and about each other.

Summary of work: The “prescribing safely together on the ward (PSOW)” OSCE (currently run for medical students) was developed as an IPE pilot for medical and pharmacy students. An initial pilot utilised scenarios designed for the uniprofessional exercise. Following feedback, activities were amended for a second pilot. Quantitative and qualitative feedback was obtained.

Summary of results: Following the first pilot, SPICE ratings showed no change. Responding to students' concerns about task suitability, transcribing/prescribing tasks were reduced and patient counseling/problem-solving tasks were increased. After the second pilot, SPICE ratings improved significantly indicating improved perceptions of IPE. Qualitative data indicated they learnt with, from and about each other.

Discussion: Results indicated that students learnt with, from and about each other after the second pilot. This highlights the importance of responding to student feedback, and developing tasks which are suitable for interprofessional collaboration. Students also benefited from having qualified pharmacists as 'experts' to give feedback.

Conclusion: The “PSOW” OSCE was adapted as a successful IPE activity for medical and pharmacy students; customisation of the learning activity was essential for its success. In the process students learnt with, from and about each other addressing the three components of the CAIPE definition.

Take-home message: A practical OSCE covering a range of ward-based scenarios around patient-centred care, communication and safe prescribing (initially designed for medical students) was developed as a successful IPE activity for medical and pharmacy students. Students learnt with, from and about each other as assessed by quantitative SPICE questionnaires and qualitative evaluation.
#3P Symposium: Continuing Professional Development: Evolution or Revolution?
Location: Room 208

Graham McMahon, President and CEO Accreditation Council CME (ACCME)
Ivan Silver, Vice President Education, Centre for Addiction and Mental Health (CAMH), Toronto, Canada

Moderators: Lawrence Sherman, Global Medical Education Futurist and the Funniest Guy in Medical Education, and Jane Tipping, Educational Consultant, University of Toronto and Lifelong Learning Centre, Alberta, Canada

Continuing Professional Development (CPD) is a broad and complex field now well established as an important contributor to the continuum of health professional education. It is also an exciting field with few if any limitations placed on what it will evolve into as the future unravels. Recent years have witnessed many changes in CPD as its visibility continues to rise. International standards of best practices are emerging, important issues concerning revalidation, accreditation, the impact of education on public health and patient safety are just a few of the issues currently being examined. Featuring internationally renowned speakers, this symposium will provide a provocative overview and debate on accreditation, the role of systems in CPD, stakeholders’ needs, present and future CPD initiatives in lifelong learning, patient safety, knowledge translation and quality improvement.

Who should participate in the symposium? The symposium is geared towards educators who have an interest or active in CPD. This is an exciting time as we begin to explore international connections and vision for the future.

What will you gain from participating? The opportunity to voice your opinions and experience, to ask questions and be part of an evolving international community of CPD practice. The symposium is designed to be engaging, controversial, energetic and inclusive – you will not be bored!
Impactful Learning Analytics: Refining definitions & visualizations of engagement for educational impact

**Background:** Learning analytics is the analysis of learners and their contexts, often reported as a visual dashboard. However, most visualization tools come from business, bringing into question if learning analytics dashboards accurately reflect learner achievement to faculty. Moreover, little is understood about how faculty act on dashboard data to support learners.

**Summary of work:** A user-centered design framework informed two qualitative design-based research iterations of dashboard feedback and re-design with clerkship directors at four medical schools in Canada and the USA. Results from this mixed methods investigation will be presented alongside dashboard iterations to share key usability features and educational action insights.

**Summary of results:** Clerkship directors unanimously use the dashboard to track learner progress (e.g. number of cases complete/incomplete), to understand learner progress (e.g. wrong diagnosis, wrong answer), though they intervene in person to help learners. Other useful design elements: red flags, number of incompletions, and symbols indicating reason for poor progress.

**Discussion:** Modifying common usability principles into medical education contexts was key to increasing faculty’s ability to accurately interpret the data presented. As data-driven academic centers become more prevalent, dashboard design is critical to informing faculty decision-making and interventions to support learners outside the learning software.

**Conclusion:** Designing dashboards in medical education requires specialized knowledge of the medical education context as well as human-computer interface design. A new discipline of visualization for medical education is warranted. Further research validating the present findings is underway and will be available in late Spring 2017.

**Take-home message:** Medical education has custom needs for learning analytic dashboard design. Clear communication from the dashboard to faculty is imperative if faculty are to accurately support learner progress towards mastery in medicine. Dashboard usability conventions and educational leadership interventions are needed to support evidence-based education in the health professions.
Co-creation improves motivation and self-efficacy in the liminal space between teaching and assessment in healthcare professional education: An action research investigation

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Rebecca Grainger, University of Otago, Wellington, New Zealand

Background: The time between formal teaching and assessment is a liminal space where high-stakes learning occurs. Often neglected by instructors, medical students struggle to navigate this themselves. Based on the cognitive-motivation model (Pekrun, 1992) we hypothesised that co-creating a pre-exam learning course with students would increase their intrinsic motivation and self-efficacy.

Summary of work: In an action research project we partnered with 96 5th year medical students, in two design cycles, to co-design a pathology revision course for their high-stakes examinations. Students were invited to co-design course content and delivery method with instructors. Quantitative and qualitative data were collected.

Summary of results: A “student-driven and instructor delivered” method of teaching was co-created, with students nominating topics and instructors delivering requested knowledge in online, social media and face-to-face sessions. Student participation increased over time (from 24% to 97%). Analysis of dialogue and survey results revealed high reported self-efficacy and motivation to learn.

Discussion: Student motivation and self-efficacy were enhanced by the co-creation process where instructors supported autonomy and reduced anxiety by regarding students as knowledgeable and critical partners. Increased relevance between the co-created knowledge delivery method and immediate learning goals also contributed to improved student engagement.

Conclusion: Students and teachers successfully co-created a learner-centred community in a pre-examination space, in which exam-related knowledge delivery was student-led and “just-in-time”. Co-creation was found to be effective at increasing intrinsic motivation and self-efficacy in the pre-assessment liminal space.

Take-home message: This study revealed characteristics of the pre-assessment space that is normally ignored by instructors but crucial to medical students: an unmet need for explicitly structured content; for structured knowledge recall; and for instructor support to increase their academic self-efficacy not only cognitively but also emotionally.

Effect of Concept Mapping Teaching Method on Critical Thinking Skills of Medical Students

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Background: Fostering critical thinking is an important objective of medical education. Concept mapping is an effective teaching method enhancing student’s critical thinking. Concept mapping is a facilitative teaching strategy to enhance students’ critical thinking. This study examined effectiveness of using concept mapping as an educational tool to enhance medical students’ critical thinking.

Summary of work: This is a quasi-experimental study. 100 Medical Students were recruited to study based on census. Participants divided into case and control groups. Control group were lectured and case group taught by concept mapping. Student’s critical thinking was evaluated by “California Critical Thinking Questionnaire”. Analysis using SPSS version 16 was performed.

Summary of results: Mean score of critical thinking before intervention in cases was 6.68±2.55 and in control group was 6.64±2.74. Score for cases after intervention is 11.64±2.29 and in control group is 10.04 ± 3.11.Comparison of mean scores’ for both groups demonstrated students' critical thinking in case group was significantly higher after intervention.

Discussion: Concept map allows students to become aware of thinking patterns. In this regard, Zeep believes in designing different parts of concept mapping, critical thinking will be improved. Medical instructors are advised to lecture students using concept map to promote critical thinking among students and to reduce gap between theory and practice.

Conclusion: The findings of this study demonstrated that concept maps are an effective teaching method for enhancing student’s critical thinking skills enhancement and improving Anatomy grades. Current evidence suggests the need to improve medical students’ critical thinking skills and to teach students using more active learning methods.

Take-home message: Concept mapping method is an effective teaching strategy for medical students, which leads to the promotion of critical thinking skills.
Does what happens in IBL stay in IBL? Do students link Inquiry Based Learning to the wider curriculum?

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Laila Yaquby, St George’s, University of London, London, UK

Background: Literature suggests that students benefit from IBL but may struggle to learn independently to fill the necessary 'knowledge gap' and apply the learning. To understand this tension we investigated student integration of IBL with other learning experiences to identify any support needed to maximise the impact of this resource-intensive method.

Summary of work: 184 undergraduate medical and biomedical science students with experience of IBL were given a bespoke questionnaire containing Likert statements and open questions to assess approaches to study, and IBL in particular, in term time and during exam preparation. The study was carried out by two undergraduate students under academic supervision.

Summary of results: A substantial proportion of students state that they do not link their IBL learning with that from other sources (34-66%). Responses to free text questions show lack of understanding of or disagreement with principles of IBL, in particular in relation to the value of the 'knowledge gap'.

Discussion: IBL is a resource-intensive activity for institutions and students, hence curriculum design should ensure that students are supported to maximise its benefits. We intend to adapt IBL cases to increase opportunities for discussion of both the benefits of integrating sources of learning and the value of the 'knowledge gap'.

Conclusion: This work supports the message in the literature that students may not develop independent learning strategies unsupported, and identifies that study practices do not always reflect the principles of IBL in ways that would optimise outcomes. Curricula need to educate students about pedagogical rationale and strategies to implement learning methods.

Take-home message: Educate curriculum developers about the need to build in scaffolding for developing independent learning in order to: 1. Educate students about the value of the 'knowledge gap' as a prompt to independent learning in IBL; 2. Support students in their development of independent learning strategies.

Project Based Learning in Medical Education

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Background: Project-based learning (PBL), starting on a question about a real-world problem, develops competencies across the curriculum. On a weekly basis, students from 1st to 3rd year, implemented projects on hypertension (2015) and food promotion (2016), elaborating questions, objectives, hypotheses and variables, collected data, analyzed it and presented it to authorities.

Summary of work: To determine the PBL educational impact, competencies for teamwork, information search, critical thinking and oral presentation were evaluated based on classroom performance and project tasks. The quality of the resulting research was evaluated from papers accepted in congresses.

Summary of results: Of the total of 211 students, they were competent or advanced in teamwork 87%, in search of information 72%, in critical thinking 63% and in oral presentation 85%. There were more advanced skills among 3rd year students. The 11 papers submitted to congresses were accepted.

Discussion: PBL promoted the development of skills to teamwork, seek information, think critically and present orally. Working in small groups based on projects helped to define characteristics of relevant problems to our society.

Conclusion: PBL promoted the development of skills to teamwork, seek information, think critically and present orally. Working in small groups based on projects helped to define characteristics of relevant problems to our society.

Take-home message: The incorporation of BPL into medical training stimulated the development of skills needed for the 21st century, while introducing students to the research of relevant health problems.
#3Q7 (3001)
Institutional Transformation to Evidence-Based Pedagogy: A Case Study Applying the Four-Frame Approach

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Background: Mounting evidence demonstrates that passive learning methods produce inferior outcomes in science teaching when compared to active learning methods. The leadership of health science institutions therefore should embrace evidence-based pedagogy. This case study of a medical school describes the process of institutional change using Bolman and Deal’s theoretical framework.

Summary of work: The Bolman and Deal frames, Structural, Human Resource, Political, and Symbolic, are applied to each domain needed to effect change: the curriculum, faculty development and the physical aspects of the learning environment. This case study also examines expectation setting, institutional responsibility to prepare teachers and learners, and establishment of incentives.

Summary of results: During planning, important factors were identified that corresponded to each of the Frames. Structural: pedagogical methods, classroom environment, financial support; Human Resource: need for faculty expertise, support personnel; Political: stakeholder buy-in, resource realignment; Symbolic: teacher recognition, teaching academy creation.

Discussion: This case study illustrates that implementing a significant organizational change requires strategies that address considerations from four perspectives, or frames. In this case, transformation to an evidence-based pedagogy occurred after the alignment of curricular goals informed by the literature; administrative support; facilities; faculty development and incentives for teaching transformation.

Conclusion: All of the factors leading to organizational change could be characterized using the organizational framework of Bolman and Deal. By aligning our planning process this way, we were able to help identify stakeholders with particular affinity or investment in specific frames to optimize the process and maximize enthusiasm and buy-in.

Take-home message: Teachers and administrators who are interested in implementing active learning in health sciences curricula should consider four key components in their change framework: Structural, Human Resource, Political and Symbolic. These interdependent frames help in planning, choosing members of the team and evaluating success.
#3R Round Table: Self Directed Learning

Location: Room 210

#3R (1226)
Medical Students’ and Residents’ Self-Regulated Learning in the Clinical Environment: A Systematic Review

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Nynke van Dijk, Department of General Practice, Academic Medical Center, Amsterdam, Netherlands

Maaide Endeldijk, Educational Sciences-University of Twente, Enschede, Netherlands

Debbie Jaarsma-Faculty of Medical Sciences-University Medical Center, Groningen, Netherlands

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Background: Self-regulated learning (SRL) is important for lifelong learning. Its cyclic process of setting learning goals, choosing learning strategies and assessing progress toward goals, reveals positive professional and educational outcomes of SRL. Therefore, it is important to determine how medical students and residents regulate their learning in the complex clinical environment.

Summary of work: We conducted a systematic review according to the guidelines of The Association for Medical Education in Europe. PubMed, EMBASE, Web of Science, PsycINFO, ERIC and Cochrane Library were searched from January 1992 to July 2016. Two reviewers independently performed the review process. Quality of included studies was assessed.

Summary of results: A total of 3341 articles were initially identified, with 18 included in the review. The analysis showed high variation in the use of SRL strategies by medical students and residents. Variation between learners was linked to individual (goal setting) and contextual (time pressure, patient care, supervision) characteristics.

Discussion: Although this review revealed more insight in strategies and influential factors of SRL in the clinical environment, the role of this specific context and how learners assess their progress towards goals remains unclear. This means that SRL in the clinical environment has not yet been used to its full potential.

Conclusion: SRL in the clinical environment is a complex process that results from an interaction between person and context. This systematic review points to influential factors that can be used in the clinical practice as a leverage to support the individual SRL needs of medical students and residents.

Take-home message: SRL in the clinical environment is a difficult process, highly specific for every individual, and influenced by multiple factors. Future research should focus on the role of SRL in the clinical context and on learners’ assessment of progress toward goals.

#3R2 (2307)
The role of the assessment system in the relation between self-regulated learning, participation and performance

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M Meeuwisse, Erasmus University Rotterdam, Netherlands

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LR Arends, Erasmus University Rotterdam, Netherlands

Background: Self-regulated learning (SRL) and participation in scheduled learning activities are key predictors of academic performance, especially when combined (Stegers-Jager et al, 2012). The goal of this study is to investigate possible differences in SRL, participation and academic performance, and in their relations, for students under two different assessment systems.

Summary of work: Year 1 medical students completed the Motivated Strategies for Learning Questionnaire and items on participation, under i) a conjunctive lower stakes, lower performance standard assessment system (n = 648) and ii) a compensatory higher stakes, higher performance standard assessment system (n = 529). Performance is operationalized as students’ average grades.

Summary of results: Students in the compensatory system showed significantly higher academic performance, task value, self-efficacy, organization, metacognition, effort regulation and time management compared to students in the conjunctive system, while intrinsic goal orientation and elaboration didn’t show significant differences. The relations between academic performance, SRL and participation were similar across assessment systems.

Discussion: The higher academic performance under a higher stakes, higher performance standard compensatory assessment system, seems to result from higher SRL and participation. Relations between SRL, participation and academic performance are similar across both assessment systems, meaning that the same measures explain differences in academic performance.

Conclusion: Characteristics of the assessment systems, such as the stakes, the performance standards, and the degree of compensation between grades, seem to be related to SRL, participation and academic performance.

Take-home message: Assessment systems need to be carefully designed, since they have the potential to optimize student learning and academic performance.
Self-regulatory processes and performance of 2nd year physiotherapy students in a clinical procedure: an exploratory study

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John Sandars, Edge Hill University, Liverpool, UK
David Alamo-Argüeso, University of Las Palmas, Las Palmas, Spain
Felipe Rodríguez-De Castro, University of Las Palmas, Las Palmas, Spain
Manuel João Costa, Life and Health Sciences Research Institute, University of Minho, Braga, Portugal

Background: Students use Self-Regulated Learning (SRL) to generate feedback about their own learning. Previous findings with SRL Microanalysis (SRL MAT) suggest that students who underperform in specific tasks have poor SRL skills. This exploratory study investigated the usefulness of SRL-MAT to evaluate the regulatory profiles of physiotherapy students in clinical procedures.

Summary of work: A SRL microanalytic protocol was administered to 26 Year 2 physiotherapy students (57% females) performing goniometry on peer students. The SRL-microanalysis protocol assessed goal setting, metacognitive monitoring, self-evaluative standards, and satisfaction. A purposive sample represented high and low performers in the task. Sessions were audio-recorded, transcribed and analyzed qualitatively.

Summary of results: There are 15 successful students: 14 are able to set procedures related goals, and monitored their performance. There are 11 unsuccessful students: 5 do not set specific goals beforehand and 6 show no concern with self-monitoring during performance. Pre-task self-efficacy beliefs and satisfaction with performance are higher in successful students.

Discussion: This study suggests that physiotherapy student SRL regulatory profiles might condition performance in clinical tasks. Our findings are in accordance with previous studies with medical students. With our SRL microanalytic protocol, we are able to detect differences in self-regulatory processes throughout the three phases of the SRL cycle.

Conclusion: Our findings suggest that providing feedback on self-regulatory processes to low performing physiotherapy students could benefit their performance in the goniometric task. SRL-MAT is a potentially useful protocol to generate information about task associates SRL skills. Further research is required to ensure generalizability to further tasks and institutions.

Take-home message: The use of a self-regulated microanalytic protocol can provide information to the benefit of performance and learning of clinical tasks in physiotherapy students.

Is there a correlation between different measures of self-regulated learning in medical education?

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Background: There is increasing interest in understanding self-regulated learning (SRL), but SRL processes are commonly identified by using two different measures (real-time microanalysis and retrospective questionnaires). This pilot study was the first to examine the correlation between microanalysis and the Motivated Strategies for Learning Questionnaire (MSLQ) in medical education.

Summary of work: A standard SRL microanalysis assessment protocol was developed and administered to 76 Year 1 medical students whilst performing a biomedical science learning task. The verbal responses were recorded and coded by two independent assessors. All participants completed an MSLQ two weeks after performing the same learning task.

Summary of results: The SRL microanalysis self-efficacy measure had medium correlation with the MSLQ self-efficacy subscale composite score \((r=0.39, \ p=0.001)\). There were no significant correlations between other SRL microanalysis measures (goal setting and strategic planning, metacognitive monitoring and adaptive inferences) and the related MSLQ subscale composite scores \((p>0.05)\).

Discussion: The lack of significant correlation between SRL microanalysis and questionnaire measures is consistent with the only previous research from another educational context. The two measures appear to identify different aspects of SRL, with microanalysis related to a student’s approach to a specific task and questionnaires related to a general approach.

Conclusion: This pilot study was the first to compare SRL microanalysis and a commonly used questionnaire measure of SRL in medical education. The results suggest that each measure identifies different aspects of SRL used by students. We recommend further studies with larger samples and different contexts to confirm our findings.

Take-home message: Fully understanding how students engage in SRL in medical education, especially to provide targeted feedback and remediation of struggling students, requires the use of both microanalysis and questionnaire measures since each measure identifies different aspects of SRL that are used by students.
#3R5 (3084)
Self-Directed Learning in Health Professions Education: A Scoping Review

Ian Couper, Stellenbosch University, Cape Town, South Africa

**Background:** Self-directed learning (SDL) is stated to be an essential tool for developing lifelong learning and ensuring that health professionals provide high quality evidence-based healthcare. This study aimed to explore the extent, role and impact of SDL in health professions education (HPE), using a scoping review of the literature.

**Summary of work:** A search for "self-directed learning" using PubMed yielded 1134 articles, of which 154 articles were included review. An Education Resources Information Center (ERIC) database search identified 12 additional articles. Summaries of these 166 articles were entered into an Excel spreadsheet. Collated data was analysed qualitatively and themes identified.

**Summary of results:** Articles came from a wide range of countries, with the USA being most common. Professionally, medicine dominated, followed by nursing and then physiotherapy. Most articles related to undergraduate training. Major reasons for using SDL included promotion of lifelong learning, developing critical thinking, empowerment of learners and enhancing academic performance.

**Discussion:** Many assumptions about SDL are made. The expectation that the outcomes of graduates will be improved through SDL is often reported as is the assertion that SDL produces lifelong learners, but little evidence is provided for these. Some evidence was found linking PBL with improved graduate competence and physician performance.

**Conclusion:** SDL is frequently used in HPE. Changing the curriculum to enhance SDL may improve academic performance and also competence, as well as self-motivation and efficacy. Whether it does this more effectively than other forms of learning in HPE, and whether these link to lifelong learning, is not clear.

**Take-home message:** SDL has been adopted as a strategy to promote critical thinking, enhance motivation and improve academic performance. The relationship between SDL and lifelong learning, and the impact of SDL on graduate outcomes, are not clear. The role of SDL in specific clinical contexts and programmes occurs deserves further exploration.

#3R6 (3055)
Working towards directed independent learning in undergraduate clinical skills

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Laura Smith
Clare Conway
Janet Cassey

**Background:** The use of self-directed learning (SDL) in clinical skills centres aims to prepare medical graduates for lifelong learning. However, a general lack of clarity about the purpose and meaning of SDL has led to confused approaches and negative connotations. Directed-independent learning (DIL) allows the students to engage with the curriculum.

**Summary of work:** We evaluated outcomes of 3rd year medical students' use of our Clinical Skills Centre SDL room using a questionnaire and the booking records. Information obtained from consenting students sort to review how the SDL room was being utilised, identify areas working well and areas of improvements.

**Summary of results:** Whilst the students generally found the dedicated SDL room useful, recognised barriers included: • A lack of direction when practising the skills; • Failure to understand best use of the facilities and equipment provided; • A lack of supplies / consumables for repeated practice; • Lack of clarity about resources available.

**Discussion:** SDL puts students under pressure to find their own way when trying to learn clinical skills. Whilst students needed the space to practice independently, providing some direction has the potential to make the journey from novice to expert less bumpy. DIL provides an opportunity for continued support whilst working independently.

**Conclusion:** Educators need to direct students to engage in self-regulation, realistic goal setting, appropriate method choice and use of strategy. In DIL, the student is expected to use their own initiative with staff guidance to access specific learning opportunities. This demands shared responsibility, clear understanding and feedback.

**Take-home message:** Ultimately, “one size does not fit all”. The use of SDL for clinical skills is not enough on its own and might well not be suitable for novice medical students wanting to learn clinical skills for the first time. “See one, do one, teach one” needs challenging & replacing.
Using “Big Data” to Guide Implementation of Osmosis, a Web and Mobile Adaptive Learning Platform for Medical Students

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Ashwin Menon
Shiv Gaglani
Sean Tackett

Background: Adaptive learning platforms (ALPs) can revolutionize medical education by making learning more efficient: they can tailor learning to an individual’s needs and apply techniques proven through cognitive science research (e.g. testing effect, spaced repetition, interleaving). Unfortunately ALPs’ potential has not been realized because students do not use them persistently.

Summary of work: To explore why students use ALPs persistently, we applied educational data mining methods to USA medical student data collected through one ALP called Osmosis from August 1, 2014 to July 31, 2015. Multivariate logistic regressions modeled Osmosis persistence as the dependent variable and Osmosis-collected variables as predictors.

Summary of results: Of 6,787 students included in our analysis, 2,138 (31.5%) used Osmosis persistently. Number of formative assessment items per student, mobile device use, subscription payment, and group membership were independently associated with persisting (p<.001, all models). Adjusting for number of items, lower response accuracy was associated with persistent use (p<.01).

Discussion: These data from approximately 15-30% of all U.S. preclinical medical students offer insights into how ALP implementation can be improved. Future research should explore the intriguing finding that students with more wrong answers were more likely to persist; perhaps students prefer an ALP with content which challenges them.

Conclusion: This study is an illustration of big data medical education research, provides guidance for effectively implementing ALPs, and paves the way for future work which assesses individual and contextual factors which can further optimize ALP adoption and persistence.

Take-home message: Applying educational data mining methods to large existing datasets is feasible and yields meaningful results; such methods could be used more often in medical education research. To improve implementation of ALPs, institutions could ask students to share in their cost and form groups, and track usage to guide early intervention.
Understanding students' experiences and personal learning strategies when using mobile technologies in the clinical workspace

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Victoria Richards, University of Bristol, Bristol, UK
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Background: Medical students work and study in an increasingly digital clinical workplace (Kelsey, 2015). Integration of mobile learning is patchy yet has the potential to play a key role in medical education. We explored student experiences of using mobile technologies and devices to understand opportunities and constraints for more widespread adoption.

Summary of work: Twenty-eight third year University of Bristol medical students participated in the study. Diaries and interviews captured the utility and acceptability of mobile learning technologies within the clinical workplace over a 10-month period. Inductive qualitative analysis of the data identified emerging themes and a set of codes for further data analysis.

Summary of results: Key themes identified included; immediacy and efficiency of access to information and learning resources, acceptability of mobile devices within the clinical workplace, new learning spaces and opportunities and collaboration between peers and teachers. Students developed a diverse range of studying skills, strategies and learning behaviours supported by their mobile devices.

Discussion: Mobile devices consolidated real-time teaching in clinical settings, provided flexibility of learning spaces and enabled students to personalise their learning. Perception of devices by patients and healthcare professionals varied with potential to hinder use. Students who adapted well, experienced changes in learning behaviour embedding mobile learning into their studying strategies.

Conclusion: Mobile technologies enhanced the learning experience for students who adopted devices as the main stay in their studying in clinical settings; others preferentially used conventional methods. Medical educators and developers should do more to support and design curricula to maximise the use of digital and mobile technologies enabling personalised learning.

Take-home message: Providing medical students the opportunities early in their career to purposefully use mobile learning holds the potential for new cohorts of doctors to thrive in an increasingly digital healthcare service. Faculty should develop staff and student mobile learning practices and associated digital capabilities in support of this.

What do new entrants to the medical profession need to know? An analysis of social media submissions to #tipsfornewdocs

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Background: Twitter, a microblogging social media site, is an increasingly popular platform for doctors to explore clinical and professional topics, with engagement from both professional and lay audiences. The #tipsfornewdocs hashtag is used to share advice with newly-qualified doctors. This study codifies the nature and focus of such advice.

Summary of work: An analysis of the Twitter activity containing the hashtag #tipsfornewdocs was performed using Symplur healthcare analytics software. Tweets from a peak 48 hour period in 2016 (immediately preceding the first day of work for newly qualified UK doctors) were analysed using thematic analysis.

Summary of results: Between 01/08/2016 and 02/08/2016, 661 unique #tipsfornewdocs tweets were posted. 621 (93.9%) were posted from the UK and 521 (78.9%) were by doctors, with the remainder by allied healthcare professionals and patients. The focus and intent of these tweets were characterized in relation to professional development theories.

Discussion: The content of most #tipsfornewdocs tweets could be categorized into Eraut’s (1994) four aspects of professional knowledge, with many sharing tacit knowledge and facilitating improved personal knowledge. A significant subset of tweets attempted to support or accelerate socialization into the profession: an essential step in joining the healthcare community.

Conclusion: Advice given to new doctors using #tipsfornewdocs comprises both professional knowledge acquisition and professional socialization. Analysing hashtagged posts provides a relatively rapid way of understanding key issues in professional education, the perceived knowledge gaps of new doctors, and the ways in which socialization into the professional might be practically supported.

Take-home message: Social media informs and supports newly-qualified doctors. Despite their brief and often jocular nature, #tipsfornewdoctors tweets provided meaningful and varied advice. Hashtag-driven enquiries are a valuable and time-efficient way of accessing and sharing tacitly held knowledge. Social media content analysis provides valuable insights into key educational issues and novel solutions.
Use of Facebook in medical education: experience as an informal tool in the internal medicine residency course

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Jaime Camacho Aguilera, Hospital General de México "Eduardo Liceaga", Ciudad de México, México

Background: Social networking sites have become important communication and sharing information tools, educational strategies could be implemented. Access to Facebook is easy; individuals can get on-line 24 hours/day through their devices. Residents from the “Hospital General de México” Dr. Eduardo Liceaga (school-hospital) implemented this informal resource to improve their learning.

Summary of work: Implement Facebook to support rehumathology module in 2016 academic program. Showing a descriptive, observational and participative study. Facebook “Internal medicine group” included 87 internal medicine residents, clinical images and questions were selected from actualized medical literature and shared via Facebook; questions were made according difficulty, media tutorial support is given.

Summary of results: Volunteer participation was of 48%. Evidence of different kind of interactions were exposed: collaborative learning, learning interconnections, sharing academic resources, tutorial support and analysis of information. Approach to key points, were reached with the support of mayor grade residents. Pictures from the Facebook wall of the group expose these interactions.

Discussion: Via Facebook, important aspects of the pathologies are emphasized by the case-images, details are missed due short-time classes. That was roughly the importance of the tutorial support. Facebook is an important tool of implementation of media tutorial, as residents have free-access to web, straying off the traditional way of learning.

Conclusion: The use of social media, though informal, is an important pedagogical complement so far in this century. It diverst from the traditional class learning and here we expose the easiness to share quality information in medical matters and direct it to the specific objectives of a determined academic program.

Take-home message: Medical teachers should take in to account this modern tool, to get access to their students; given the facilities of sharing information and stay connected all time the students can express doubts and tutors can provide support through discussion or sharing information. More activities could be planted through networking sites.

Social media and medical education: a learner-centered framework

Nigel Hee, Centre for Biomedical Ethics, National University of Singapore, Singapore
Rachel Teo, Centre for Biomedical Ethics, National University of Singapore, Singapore
Anita Ho, Centre for Biomedical Ethics, National University of Singapore, Singapore
Joy Tan, Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Background: Social media blurs the divide between the public and private spheres. Though beneficial for learning and collaboration, it poses unique challenges for medical students entering a profession. Social media guidelines were developed at National University of Singapore to help students utilise social media responsibly and effectively.

Summary of work: The development of the social media guidelines took a learner-centred approach across two phases. First, a research assistant worked with a medical student to identify and code publicly available social media guidelines from universities worldwide before drafting our own. Then, focus groups were held with students to fine-tune the guidelines.

Summary of results: From the first phase, 40 documents were identified, 6 were coded, and 33 codes were identified. In the three focus group sessions consisting of 6 to 11 students each, student feedback was obtained in the following areas: content, tone, intention, and communication of the guidelines to the medical student body.

Discussion: As a direct result of student feedback, the guidelines were reworked to include both specific prohibitions and more general guidelines. Frameworks for action in specific situations were also refined based on what students felt was most realistic. Feedback on how best to communicate the guidelines was also taken into account.

Conclusion: Involvement of a student for the first phase of development helped to ensure that the guidelines broadly addressed crucial issues related to social media. The focus group discussions also added much value to the initial guidelines, and the final social media guidelines were significantly edited following student feedback.

Take-home message: The development of the social media guidelines with a learner-centred framework helped to bridge the disconnect in understanding of social media usage and trends between faculty and students. It also provided useful information on how best to frame the guidelines and communicate them to students with clarity and empathy.
**#3T Workshop: Equality and Diversity in healthcare teaching: Supporting LGBT (391)**

**Location:** 203b

**Ellie Hothersall, University of Dundee, Dundee, UK**  
**Susie Schofield, University of Dundee, Dundee, UK**

**Background:** Sexual orientation and gender reassignment are two of the protected characteristics covered by many countries’ equality legislation. The difficult and emotive issues surrounding LGBT can be particularly challenging and employers’ equality and diversity training may leave more questions than answers. Yet as tutors we are required to provide a safe space for learners, tutors and patients. This workshop explores some of the issues relating to the experiences of the LGBT-identifying student/trainee, including intersectionality and unconscious bias.

**Who Should Attend:** The workshop will explore both individual and structural issues related to LGBT. Consequently, this workshop will benefit a wide range of participants, from tutors involved with individual learner support at under- or post-graduate level, to those whose role is faculty development or curriculum design.

**Structure of Workshop:** The workshop will include three structured exercises: an activity around the protected characteristics (card-sorting), examples from participants from their own settings (small group discussion) and generating possible solutions for case studies presented. Participants will also receive a Getting Started handout which includes further reflection.

**Intended Outcomes:** Immediate outcomes - Define what ‘Equality and Diversity’ means; Describe protected characteristics relating to LGBT and discrimination; Reflect on examples in clinical teaching and start formulating a plan of action. Long term outcomes - This workshop will benefit participants’ institutions/healthcare communities by developing participant awareness of the issues, sharing with others, co-producing solutions to institutions’ situations, developing a community of practice in the area and ultimately benefiting future learners and patients.

**Level:** All

**#3U Workshop: Leaders in Higher Education (1185)**

**Location:** Room 204

**Stephanie Marshall, CEO, Higher Education Academy, UK**

**Background:** This session explores the different career routes that higher education medical staff may wish to consider, from Dean through to Deputy-President (pro- or vice-chancellor), and beyond, to President (or Rektor or Vice-Chancellor). There are different motivations for wanting to embark on an executive position, with the primary motivation being a desire to take a holistic overview, driving strategic change for the benefit of the profession, and at the top end, for society more widely.

**Who Should Attend:** This session should appeal to anyone who enjoys taking more of a birds-eye view and a strategic position, having a vision of the impact that certain changes could bring about, and a real commitment to purpose and inspiring others to joining in the quest for excellence in medical education and higher education more generally. The workshop should appeal to a range of staff working in medical education: teachers, educators, researchers, curriculum developers and Deans.

**Structure of Workshop:** The workshop begins with statistics illustrating distribution of medical educators, including those in Deans and/or executive positions. The workshop will then move to explore, in groups, what the career and promotion prospects are within participants own institutions, unpacking what particular skills sets different individuals demonstrate. A mapping exercise will take place, with subsequent encouragement and exploration of what participants might wish to engage in, as career enhancement, to take their career to the next level.

**Intended Outcomes:** There are four intended outcomes to this workshop: firstly, increased knowledge and understanding of the landscape of leadership roles within higher education, and the opportunities that are open to medical educators. Secondly, an exploration of the different infrastructures and career opportunities that are available across universities. Thirdly, the skills set that typifies the profiles of those occupying executive positions. And, finally, support in thinking about participants own next steps with respect to leadership development.

**Level:** Introductory/Intermediate
#3V Workshop: How to write effective Multiple Choice Questions (MCQs) (2607)
Location: Room 205

Denise Dupras, Mayo Clinic, Rochester, MN, USA
Amy Oxentenko, Mayo Clinic, Rochester, MN, USA
Brianna Vaa, Mayo Clinic, Rochester, MN, USA

**Background:** Knowing how to write meaningful multiple choice test questions (MCQs) allows educators to accurately assess knowledge and minimize learners “getting it right” on tests simply because of poorly constructed questions or acquired test taking skills. There are numerous opportunities to use well-written MCQs to assess medical knowledge in both summative examinations and in formative evaluations at the medical school, residency or fellowship level.

**Who Should Attend:** This workshop is appropriate for anyone involved in assessing medical knowledge along the continuum of medical education. In particular for those who are involved developing multiple choice questions or tests.

**Structure of Workshop:** Participants will complete a brief pre-test consisting of MCQs to see how often questions can be answered correctly without knowledge of the content. A short didactic session will follow and include concepts involved in developing effective MCQs and question evaluation using psychometrics. Participants will then review “flawed” questions and construct improved questions. At the end of the workshop the pre-test will be reviewed to highlight the flaws in the pre-test MCQ questions.

**Intended Outcomes:** At the end of the workshop, participants will be able to write effective multiple choice questions, recognize common flaws in MCQs, and be able to critique and improve questions written by others prior to inclusion in tests.

**Level:** Introductory/Intermediate

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#3W Workshop: Assessing the Intangible: a structured framework for meaningful assessment of difficult-to-measure competencies (1560)
Location: Room 209

Hilary Writer, University of Ottawa, Ottawa, Canada
Moyez Ladhani, McMaster University, Hamilton, Canada
Amy Acker, Queen's University, Kingston, Canada

**Background:** Medical educators must complete assessments across the learning continuum for a variety of clinical contexts and competencies. Effective competency based medical education necessitates rigorous and frequent assessment to determine the learner’s readiness to progress through each developmental stage. While assessment of knowledge is straightforward, meaningful assessment of skills and behaviours such as advocacy, collaboration, and professionalism, can be challenging. This workshop will equip participants with a structured framework for meaningful assessment of these 'intangibles'.

**Who Should Attend:** Medical educators involved in assessment across all levels of medical education.

**Structure of Workshop:** Highly interactive case-based workshop. A brief didactic session will identify challenging areas of assessment and review available assessment methods and tools. This will be followed by small group practice using a combination of author- and audience-generated case-based scenarios. A final large group discussion will share approaches to the scenarios and consolidate an assessment framework.

**Intended Outcomes:** By the end of this workshop, participants will be able to i. identify those competencies for which assessment is challenging ii. access and use a variety of resources for multi-modal assessment of intrinsic competencies iii. Design a meaningful blueprint for assessment of these competencies for a variety of curricula and learners.

**Level:** Intermediate
Intended Outcomes:
- Become accessible online to participants.
- Enhance the reciprocity between sending and host institutions.
- Establish a platform to produce a practical handbook incorporating the framework and best practices discussed.
- Discussed at this workshop.

Sections of the handbook. The handbook will eventually incorporate the framework and best practices discussed during the workshop.

Participants will be able to: Share experiences in sending and accepting students on overseas electives; Discuss how to prepare students and the receiving site before the elective; Develop a framework to build or strengthen overseas elective programs; Exchange experiences to enhance the reciprocity between sending and host organizations; Establish a platform to produce a practical handbook incorporating the framework and best practices discussed at this workshop.

Level: Intermediate/Advanced

Who Should Attend:
This workshop welcomes faculty members from both high-income and low-middle income countries, including those involved with medical curricular development in global health teaching and assessment; medical education evaluation and assessment researchers; medical students with an interest in participation in medical electives in global health provides tremendous learning experiences and increases students’ awareness of social determinants of health (SDH). However, global health electives pose specific challenges for students and host institutions. Students may encounter complex challenges including communication difficulties and ethical dilemmas, and may deprive local learners of limited educational resources. A practical handbook will not only adequately prepare students but also enhance communication between sending and host institutions.

Background: A well-structured, mentored overseas electives in global health provides tremendous learning experiences and increases students’ awareness of social determinants of health (SDH). However, global health electives pose specific challenges for students and host institutions. Students may encounter complex challenges including communication difficulties and ethical dilemmas, and may deprive local learners of limited educational resources. A practical handbook will not only adequately prepare students but also enhance communication between sending and host institutions.

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By the end of this workshop, participants will be able to: Share experiences in sending and accepting students on overseas electives; Discuss how to prepare students and the receiving site before the elective; Develop a framework to build or strengthen overseas elective programs; Exchange experiences to enhance the reciprocity between sending and host organizations; Establish a platform to produce a practical handbook incorporating the framework and best practices discussed at this workshop.

Level: Intermediate/Advanced

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This workshop welcomes faculty members from both high-income and low-middle income countries, including those involved with medical curricular development in global health teaching and assessment; medical education evaluation and assessment researchers; medical students with an interest in participation in medical electives in global health provides tremendous learning experiences and increases students’ awareness of social determinants of health (SDH). However, global health electives pose specific challenges for students and host institutions. Students may encounter complex challenges including communication difficulties and ethical dilemmas, and may deprive local learners of limited educational resources. A practical handbook will not only adequately prepare students but also enhance communication between sending and host institutions.

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Who should attend: Faculty, educators, medical education researchers, and administrators who seek to gain a better understanding of learning communities and CoP concepts, and want to begin cultivating learning communities for capacity building.

Participants who wish to enhance their skills in facilitating, managing, and evaluating their learning communities using techniques that will be taught and discussed during the workshop.

Structure of Workshop: The workshop begins with a remote introduction by Etienne Wenger on key vocabularies and concepts of CoP. Participants will then actively engage through planned activities and discussions to identify structural elements of learning communities within their workplace. Subsequently, participants will be introduced to methods of evaluating CoP, and discuss the potential application of these in their current work. Finally, participants will formulate a personalised plan addressing challenges faced in sustaining CoP initiatives.

Intended Outcomes:
1) Health professionals, faculty, educators, medical education researchers, and administrators who seek to gain a better understanding of learning communities and CoP concepts, and want to begin cultivating learning communities for capacity building.
2) Participants who wish to enhance their skills in facilitating, managing, and evaluating their learning communities using techniques that will be taught and discussed during the workshop.
3) Develop a plan to apply elements of communities of practice to improve strategic capabilities in their context.
4) To apply a toolkit for evaluating existing communities of practice.

Level: Introductory/Intermediate
#3AA Workshop: Medicine as a Community of Practice: Implications for Teaching and Learning (88)

**Location:** Room 218

**Richard Cruess, McGill University, Montréal QC, Canada**

**Sylvia Cruess, McGill University, Montréal QC, Canada**

**Edvin Schei, University of Bergen, Norway**

**Yvonne Steinert, McGill University, Montréal QC, Canada**

**Background:** Communities of practice is a learning theory that proposes that medicine and the health professions are loci of social learning. Individuals voluntarily join a community, moving from legitimate peripheral to full participation. Through socialization, they acquire the identity of community members, accepting norms established by the community and society. Explicitly applying the concept of communities of practice to curricular design can provide a theoretical base for educational interventions designed to support professional identity formation.

**Who Should Attend:** Those involved in undergraduate and postgraduate health professions education as teachers, educators, and curriculum developers.

**Structure of Workshop:** Following a large group interactive discussion of the theory of communities of practice and its relationship to other learning theories, participants will discuss in small groups their learning environments as communities of practice. A second interactive discussion will present educational initiatives drawn from the literature that describe how best to establish and maintain a community of practice. Following a large group discussion, individuals will consider how to establish their learning environments as communities of practice.

**Intended Outcomes:** At the end of the workshop, participants will be able to: describe the nature of a community of practice and its relation to the processes of identity formation and socialization; how the theory of communities of practice can assist in curricular design; and determine how explicitly establishing medicine as a community of practice in their learning environment can assist in creating a community that is welcoming and supportive of professional identity formation.

**Level:** All

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#3BB Workshop: Arranged marriage or match made in heaven: what makes for successful mentorship? (2081)

**Location:** Room 306

**Martina Kelly, University of Calgary, Calgary, Canada**

**Jocelyn Lockyer, University of Calgary, Calgary, Canada**

**Sarah Yardley, University of Keele, Keele, UK**

**Tim Dornan, Queen’s University Belfast, Belfast, Northern Ireland**

**Background:** Mentoring is associated with enhanced career development and academic progression. Recent reviews in medical education advocate for increased uptake of mentoring across the learning continuum – from junior medical student to senior academic. While formal mentoring is presumed from faculty and learners are expected to avail of this expertise, expectations around mentoring are frequently ambiguous. In this workshop, we will examine models of mentorship, discuss mentorship theory and share secrets of success.

**Who Should Attend:** Mentors and mentees at all stages, in all domains (clinical, research, teaching, interdisciplinary) are welcome. Or perhaps you are simply curious to know more about mentorship and the evidence underpinning its use. A mix of junior and senior participants would help generate authentic discussion about the affordances and challenges of mentorship at different career stages.

**Structure of Workshop:** The workshop will start a brief overview of some key characteristics of mentorship. Participants will reflect on their experience of mentorship to identify effective mentor strategies. We will compare and contrast different types of mentoring (e.g., traditional, peer, distance) drawing on research and theory. Small group work, incorporating challenging cases will explore pitfalls in mentoring relationships, and how to handle them. Together, facilitators and participants will generate take-home tips for success.

**Intended Outcomes:** Participants will evaluate the current evidence base for mentorship in medical education, to identify what works for whom. They will appraise effective mentoring skills and critically consider a range of mentoring models. Participants will formulate strategies to trouble-shoot taxing mentoring relationships. Participants will leave the workshop more motivated and confident to mentor others, and better able to benefit from mentoring (as mentor and mentee).

**Level:** All
#3CC01 (827)
Perception of educational roles among faculty of a tertiary level hospital in Singapore

Jason Chang, Singapore General Hospital, Singapore, Singapore
Chee-Kiat Tan, Singapore General Hospital, Singapore, Singapore

**Background:** Recognition of a teacher’s role is part of good teaching culture and reinforces the teachers’ commitment to teaching. The aim of this study was to evaluate the self-perception of teaching roles of the faculty in a tertiary level teaching hospital in Singapore.

**Summary of Work:** An electronic survey was sent to the faculty of the Department of Gastroenterology and Hepatology, Singapore General Hospital to evaluate their perceptions of importance, current involvement and future intended involvement in the 12 roles of a teacher using a validated questionnaire by Harden & Crosby (2000).

**Summary of Results:** 31 of 35 faculty completed the survey (88.6% response rate). 29% of responders were junior faculty (Senior Residents) and 71% were senior faculty (Associate Consultant and above). The roles of clinical teacher (4.43±0.73), role model (4.21±0.85) and mentor (4.00±0.88) were ranked as the most important with the highest current involvement.

**Discussion:** Roles of lecturer, facilitator and examiner were less important while planner and resource developer were the least important roles. Faculty reported willingness to contribute more in their future involvement in all roles (Figure 1). Narrative feedback was obtained from participants.

**Conclusion:** The roles of clinical teacher, role model and mentor are the most important and most relevant to the clinical faculty. Most faculty are keen to contribute a larger role in education compared to their current contributions. Faculty need protected time to teach. Recognition of teaching is important for faculty morale.

**Take-home Message:** The results of this study provide a direction for the institution’s efforts in faculty development, which is to focus on supporting the faculty in their primary education roles as clinical teachers, role models and mentors by providing protected time and recognition for teaching.

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#3CC02 (1480)
Building the Giver: Educational Culture: Patient Safety in Resident as Teacher Program

Sermsak Sukpanichyingyong, Khon Kaen Medical Education Center, Khon Kaen, Thailand
Thananit Sangkomkamhang, Khon Kaen Hospital, Khon Kaen, Thailand

**Background:** Patient safety is a serious global public health issue. The existing challenges highlight strategies to raise awareness among residents and medical students. Thus, we have implemented the patient safety topic in Resident as Teacher (RaT) program since 2016, aiming to evaluate the perception and knowledge of both residents and students.

**Summary of Work:** The residents were assigned to dependent directed self-learning using patient safety guidebook. Feedback of contents and teaching skills was fostered by staff before teaching session. One-hour interactive teaching was provided to 4th- and 6th-year students. The residents’ self-evaluation, students’ evaluation form and pretest/posttest - level 2 of Kirkpatrick’s evaluation- were collected.

**Summary of Results:** Seven residents’ feedback was high on benefit from the topics, confidence, retention of knowledge and application to health care system. Also, 45 student’s feedback were high levels on above mentioned, including professionalism. Additionally, the mean of posttest scores (16.7 scores) was on the increase, compared to pretest scores was 33.3%.

**Discussion:** According to the learning pyramid, it was hypothesized that interactive learning (teaching others or immediate use of learning) could improve not only residents’ attitude and caring about contents but also medical students’ positive learning experience. From the previous study, staff’s mentoring could enhance their teaching skills. This is a win-win situation.

**Conclusion:** Both orthopedic residents and medical students responded positively to this RaT program on the patient safety topic. The students gained knowledge whereas the residents gained confidence on teaching skills and understanding of the topic.

**Take-home Message:** Our pilot study showed a possibility of introducing patient safety topic on RaT. Learning by teaching promotes positive attitudes as well as retention of knowledge.
Resident as teacher curriculum: Specific needs analysis of residents in Emergency Medicine

Guat Keng Yvonne Goh, Changi General Hospital, Singapore
Han Nee Gan, Changi General Hospital, Singapore
Ling Tiah, Changi General Hospital, Singapore

Background: Emergency physicians surveyed in a general needs assessment felt it was important for residents to acquire competent skills during residency and consensus opinion was a need for formal instruction. This study aims to look at the specific needs of our residents in emergency medicine (EM) to develop a resident-as-teacher curriculum.

Summary of Work: Mixed methods design involving EM residents. Quantitative data collected via a survey of 29 EM residents and qualitative data via purposeful sampling of 5 senior residents. 1-1 interviews were conducted using a structured interview protocol. Two investigators coded the individual manuscripts independently. Consensuses on themes were identified as they emerged.

Summary of Results: 18 (62%) residents completed the online survey. Exposure to formal teaching was varied and 72% felt it should be introduced during junior residency. Almost all our residents (88.9%) felt it was important to possess basic teaching skills and to be a competent teacher at the end of their residency training.

Discussion: Residents reported a marked increase in responsibilities in teaching during senior residency. They found it challenging to balance service requirements with teaching on the job. Feedback on their teaching was useful and protected time for teaching was mentioned as a means to overcome barriers to their developing teaching skills.

Conclusion: Results of our study have been incorporated to develop a structured resident-as-teacher curriculum over a 2-year cycle. Residents are introduced to education theories and priority was to educate them in the domains of assessment, providing effective feedback and teaching instructional methods (ambulatory teaching, small group teaching, teaching procedures, presentation skills).

Take-home Message: Increasingly residents see increased responsibilities in teaching and formal instruction in teaching is essential in ensuring competent teachers. A tailored resident-as-teacher curriculum is essential but more needs to be done to address barriers of other competing commitments (i.e. attainment clinical skills), time and resource constraints and a heavy workload.

Basic Life Support in Primary School by First Year Medical Students

Borwon Wittayachamnankul, Emergency Dept, CMU, Chiang Mai, Thailand
Chananthon Suwanpairoj, CMU, Chiang Mai, Thailand
Thanakorn Wongsombut, CMU, Chiang Mai, Thailand
Kittipitch Maisawat, CMU, Chiang Mai, Thailand
Nita Torod, CMU, Chiang Mai, Thailand

Background: Only ten percent of Thai people know about basic life support (BLS). Current Thai education does not include practical lessons on BLS in the health education curricula. Therefore, integrating BLS course in the primary school may be a promising solution. This may improve medical expertise of junior medical students.

Summary of Work: First year medical students conduct a course for students grades 4-5, with a ratio of trainee-to-trainer of 6-7:1. All trainers have completed BLS for lay provider certification. This 3.5-hour simulation based course covers chest compressions and AED use. Post course assessment includes practicals, 15 multiple choice questions, and attitude interviews.

Summary of Results: Mean of correct answers, increased from 5.74 ± 3.2 to 9.42 ± 5.0 (P<0.01). More than 90% of students can perform each skill on the BLS and AED-use checklist, except safety awareness and clearing-before-shocking. After this course, most students, both medical and grade school students, improved confident in performing BLS.

Discussion: Applying BLS in primary school curricula is feasible and appropriate. Medical students can also improve their BLS skills by teaching other students. This study not only improved knowledge, confidence to perform and teach BLS, but also emphasized the importance of public health education to medical students.

Conclusion: Teaching BLS using a simulation based approach in upper elementary school students is appropriate as it improves BLS skills in both trainer and trainee students.

Take-home Message: Having first year medical students lead a BLS course helped better their understanding of their role as a medical care provider.
Planting the seeds of best-evidence medical education in Cambodia: using an online course to train two next generations of medical educators

Julien Aron, University of Health Sciences, Phnom Penh, Cambodia
S Satha, University of Health Sciences and Calmettes Hospital, Phnom Penh, Cambodia
C Sambath, University of Health Sciences, Phnom Penh, Cambodia
L Goldman, Boston University Family Medicine Global Health Collaborative, Boston USA
Y Bouchan, University of Health Sciences, Phnom Penh, Cambodia

Background: Cambodia faces a shortage in medical educators to train a rising number of students and to conduct reforms. In 2014, the University of Health Sciences (UHS) enlisted the faculty development as a priority for the 2014-18 Strategic Plan, and launched a new International Program (IP) for best students.

Summary of Work: To test the feasibility and effectiveness to train online medical educators and IP students in Best-Evidence Medical Education (BEME), we used the AMEE-ESME (Essential Skills in Medical Education) course, from September 2015 to June 2016. Pilot evaluation used quantitative (success rate, pre/post-test, satisfaction survey) and qualitative data (2 discussion groups).

Summary of Results: 19 educators (79% male, 38.1±9.1 year-old) and 10 students (70% male, 23.5±1.6 year-old) were enrolled. Completion rate was 80% and 100%, respectively. Pre- and post-test identified knowledge gaps and improvement in BEME key-concepts. Participants expressed overall satisfaction and identified challenges and success factors regarding the course in Cambodia.

Discussion: Language barrier, new terminology and concepts were challenging. The success factors were the cautious selection of participants and the on-site facilitation, providing support for assignments. Trained educators are now involved in teaching, curriculum revision and assessments. Students lead a new Family Medicine Interest Group and launched a Peer-Assisted Learning program.

Conclusion: This pilot study demonstrated the feasibility and efficacy to use the AMEE-ESME online course to train educators and students in Cambodia. Since January 2017, a new batch of 10 students is taking the course. The two new generations of educators are incrementally involved in educational reforms and advocacy for BEME.

Take-home Message: Lessons learned from this pilot project can be used for developing countries willing to train trainers in BEME using online resources. Training simultaneously young educators and students is strategic to prepare the future and to ensure that the BEME culture is gaining ground, in both a top-down and bottom-up dynamic.

Vodcasts to support Educational Supervisors in using the ePortfolio

Nicola O’Shaughnessy, GP Education Unit, Southampton, UK
Johnny Lyon-Maris, GP Education Unit, Southampton, UK
Samantha Scallan, GP Education Unit, Southampton, UK

Background: Educational Supervisors (ESs) are required to validate online evidence presented by trainees in their ePortfolio over the duration of the training programme. There is no formal, hands-on teaching for supervisors on how to use the ePortfolio, save for a 45 page manual. We aimed to develop more user-friendly, interactive support.

Summary of Work: A suite of short video tutorials (‘vodcasts’) were created. They concern accessing the ePortfolio and performing the various supervisor management and validation tasks. The vodcasts use a live supervisor’s account and are recorded in real time. Users can search for specific tutorials without having to watch long clips for segments.

Summary of Results: Early feedback from users has been positive, and a more formal evaluation is underway, including usage statistics.

Discussion: The use of video tutorials gives supervisors a more interactive source of information on how to use the ePortfolio; users can work at their own pace, pause and rewind as needed and they can follow the steps in completing a task on screen in real time.

Conclusion: This vodcast pilot has broadened the educational support tools for supervisors, and as it has been positively received, with opportunities for future development.

Take-home Message: Vodcasts can be a useful additional tool for educational supervisors in developing their supervisory practice.
Antibiotic prescription in primary care: Investigation of association between GPs’ self-assessed knowledge vs actual prescription practice

Arash Hadadgar, Karolinska Institute, Stockholm, Sweden
Leila Safaeian
Nahidossadat Mirshahzadeh
Tahereh Changiz
Nabil Zary Italo Masiello

Background: General practitioners prescription behavior, which is related to their knowledge and attitude regarding antibiotic use, has a key role in widespread antibiotic consumption. Using a case-based self-assessment in a CME context, we evaluated the association between GPs’ knowledge in common infectious disease and their actual prescription outcome indicators.

Summary of Work: This was a comparative cross sectional study. GPs who work in Isfahan province (in Iran) were invited to participate. The data collection was based on a web-based self-assessment test, including 5 web-based cases. We checked participants’ prescription data from the Rational Use of Drugs review committee.

Summary of Results: Forty six GPs participated in the study. We did not observe any statistically significant association between assessment results and GPs previous antibiotic prescription outcome indicators. But, there were some significant differences among participants’ prescriptions regarding their gender, time since graduation and practice setting.

Discussion: Absence of correlation between GPs previous antibiotic prescription and assessment result can either demonstrate the sufficiency of GPs knowledge in this field or simply that physicians may be tempted to provide self-assessment that fit an accepted professional norm that may differ from their normal clinical performance.

Conclusion: To improve antibiotic prescription, further research for exploring and addressing the gap between knowledge and practice is needed.

Take-home Message: By understanding the contribution that knowledge may play, we can in the future develop better interventions to improve prescription practices and focus more on policy issues to improve the indicators.

Perceived Learning Needs of General Practitioners in Myanmar: A Mixed Method Study

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Background: Needs assessment is an essential step in the planning of educational activities. Although the continuing medical education (CME) programmes are regularly conducted for general practitioners (GPs) in Myanmar, their learning needs have not been assessed before. A mixed method study was conducted to identify the learning needs of the GPs.

Summary of Work: The study consists of two phases. In Phase I, six focus groups of GPs were recruited, and their learning needs were explored. A questionnaire was constructed based on the findings of the groups’ discussion. In Phase II, the questionnaire was distributed to 380 GPs selected from two major cities.

Summary of Results: From the focus groups discussion, 33 topics were identified as learning needs, and these were organized into six categories. A response rate of the questionnaire survey was 62%. Clinical guidelines for common illnesses and procedural skills were the highest-ranked learning needs whereas counselling and communication skills were the lowest-ranked needs.

Discussion: The study provides a list of GPs’ perceived learning needs. The findings can be used to plan and implement need-based CME programmes. The priority CME activities would be writing and publishing of clinical guidelines for common illnesses seen in the general practice and conduction of training workshops on procedural skills.

Conclusion: The study provides a framework of GPs’ learning needs, and it could apply to the CME planners and educators.

Take-home Message: The framework of GPs’ learning needs serves as an initial step in designing the need-based CME training programmes.
#3CC09 (1270)
Improvement of medical professionals’ engagement in team-based medical practice and physicians’ performance by using coaching

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**Background:** Coaching is a communication skill that brings out one’s potentials and voluntary actions. It has been applied to patients with lifestyle diseases but limited numbers of studies have reported on team-based medical practice or physicians’ performance. Therefore, we examined effects of coaching in these situations.

**Summary of Work:** Two physicians who lead diabetes team consisted of multi-medical staff attended coach training programs and practiced coaching for their team members. Meanwhile, certified coaches coached 4 physicians who have moderate clinical experience and specialty. Before and after taking coaching, self-evaluation questionnaires using 7-point Likert scale was performed.

**Summary of Results:** After taking coaching, scores about engagement in their medical team including self-efficacy increased significantly (from 4.0 to 4.9, p = 0.04), and mutual distance senses between medical professionals narrowed. Also, scores about ingenuity in physicians’ performance increased significantly (from 4.3 to 6.0, p = 0.035).

**Discussion:** Our results demonstrate that coaching increases self-efficacy and mutual communication of medical professionals in the medical team. Furthermore, coaching affects performance of relatively skilled physicians. Coaching may contribute to increase new viewpoints and choices of action in medical professional group.

**Conclusion:** Coaching is useful in improving medical professionals’ engagement in team-based medical practice and physicians’ performance. It may have positive impact on patient outcome. Further studies are necessary for showing effect of coaching on reforming medical organizations, building good patient-doctor relationship and optimized treatment and education for patients.

**Take-home Message:** Coaching is an effective tool that enhances self-efficacy and performance of various medical professionals including experienced physicians, and it can lead to the improvement of medical teamwork and patient outcome.

#3CC10 (1623)
Reinventing the Faculty Development Process in Khoo Teck Puat Hospital, Singapore

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**Background:** The current practice for administrators in Residency Program Office is to send out faculty development courses to medical educators through single email dissemination. However, on average, only about one-tenth of educators responded to such emails. To increase the registration rate, we propose an online self-assessment tool to indicate course preferences.

**Summary of Work:** To encourage more medical educators to register for faculty development courses, we have developed an online questionnaire to indicate their training interests and needs in hope to enhance the effectiveness in their teaching. The questionnaire was put together by literature reviews and adapting various programmes lists from local universities.

**Summary of Results:** 80 (53.3%) of 150 medical educators responded. 58 (72.5%) chose ‘Designing and Planning of Learning’ as their main area of interest. 40 respondents (50.0%) preferred ‘Curriculum Planning and Organizing’ as an additional compulsory module. 48 (60.0 %) indicated that conflict of schedule was the main barrier to register for courses.

**Discussion:** The responses collected from this online questionnaire were encouraging. It has demonstrated that self-assessment was an effective tool for administrators to make informed decisions early based on individual medical educator’s interests and needs. Matching these interests and needs to suitable faculty development courses will be made much easier.

**Conclusion:** An online questionnaire demonstrated its effectiveness in identifying the specific interests and needs of each medical educator. This aids the administrators in making informed decisions when matching the suitable faculty development course. We predict that the readiness for medical educators to learn and participate in faculty development may henceforth increase.

**Take-home Message:** Though a simple process, a personalized approach via self-assessment questionnaire could benefit both medical educators and administrators in facilitating faculty development processes. However, a single administration of such feedback is insufficient. It is recommended for such feedback to be administered periodically to keep ahead of medical educators’ preferences and requirements.
#3CC11 (2858)
Collaborative Informal Learning in Healthcare - Experience of using the CONFER Tool

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**Background:** A high proportion of learning within the healthcare sector is informal and happens collaboratively. However meeting regularly is a challenge, due to geography and time. The tool (CONFER) was co-designed with users as part of the EU funded project (Learning Layers) to specifically help provide assynchronous distant collaboration and learning.

**Summary of Work:** We report the practical experience in a healthcare setting of using an internet-based tool (CONFER) to improve the effectiveness of collaborative decision making and informal learning. This took place within a group of geographically dispersed quality improvement facilitators spread over several hospitals throughout the Yorkshire and Humber region.

**Summary of Results:** The results provide rich insights on how the tool can meet the end users’ needs in a real-world setting. Positive findings included evidence of increased engagement, with more collaborative solutions being obtained and greater sharing. There were however also certain challenges to the introduction of new technology which require consideration.

**Discussion:** The use of the CONFER tool can enhance collaborative decision making and learning in dispersed groups. Greater engagement, ownership of the decisions made and increased team cohesion were reported. However, challenges included difficult access in some organisations, the learning of a new technology and perceived lack of decision spontaneity.

**Conclusion:** The Tool CONFER can aid collaborative decision making and learning. However, technology challenges are likely to cause widespread adoption to be slow. The more a group has the need for collaboration the greater the impetus to overcome these challenges. In this group the benefits appeared to outweigh the challenges.

**Take-home Message:** CONFER is a useful tool to aid collaborative decision making and learning in dispersed groups. However it’s adoption is not without challenges. The more a group has important decisions requiring everyone’s buy in, the greater its likely benefit.
Addition of bedside ultrasound to the physical implementation of OSCE before and after workshop. Students' performance could be further improved by students' knowledge and confidence. The evaluation of theoretical examination showed an improvement in self-confidence may reduce risk of complications and errors during procedures. The positive feedback from the participants, peer tutors and mentors motivated us to already start making plans for the next Klinikfest with addition of clinical simulation on a sophisticated manikin and bedside ultrasound.

**Discussion:** The results of the evaluation form and theoretical examination showed an improvement in students' knowledge and confidence. The evaluation of students' performance could be further improved by implementation of OSCE before and after workshop. Addition of bedside ultrasound to the physical examination may be the way to further improve Klinikfest.

**Conclusion:** Familiarity with the clinical skills and higher self-confidence may reduce risk of complications and errors during procedures. The positive feedback from the participants, peer tutors and mentors motivated us to already start making plans for the next Klinikfest with addition of clinical simulation on a sophisticated manikin and bedside ultrasound.

**Take-home Message:** Workshops like Klinikfest should be considered as an additional educational strategy in a complex educational process of undergraduate medical students. In the end, Klinikfest enables students to rehearse, improve, and build on already obtained knowledge in a safe environment and to bridge the gap between clinical and non-clinical environment.

### Background

Klinikfest is a one-day clinical skills workshop. It took place at the Faculty of Medicine Maribor. Klinikfest was created by peer tutors and their mentors to offer students additional practice of clinical skills. Forty places were offered to the students from 4th to 6th grade from both Slovenian medical faculties.

**Summary of Work:** In the first part of the workshop, the participants practiced clinical skills supported by virtual patient cases in eight working groups. The second part started with demonstration of physical examination, which was then practiced in pairs under supervision of peer tutors. Theoretical examination was conducted before and after the workshop.

**Summary of Results:** The results of the evaluation form showed high satisfaction with the workshop (4.84 out of 5 points). Students also estimated their knowledge of clinical skills before (3.28/5) and after the event (4.44/5). This self-evaluation also correlates well with the results of theoretical examination, which improved significantly after the workshop (p=0.003).

**Discussion:** The results of the evaluation form and theoretical examination showed an improvement in students' knowledge and confidence. The evaluation of students' performance could be further improved by implementation of OSCE before and after workshop.

**Conclusion:** Familiarity with the clinical skills and higher self-confidence may reduce risk of complications and errors during procedures. The positive feedback from the participants, peer tutors and mentors motivated us to already start making plans for the next Klinikfest with addition of clinical simulation on a sophisticated manikin and bedside ultrasound.

**Take-home Message:** Workshops like Klinikfest should be considered as an additional educational strategy in a complex educational process of undergraduate medical students. In the end, Klinikfest enables students to rehearse, improve, and build on already obtained knowledge in a safe environment and to bridge the gap between clinical and non-clinical environment.
#3DD03 (3104)
Exploring Barriers to Effective Bedside Teaching: Student and Tutor Perspectives

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Background: Bedside teaching is known to be a valuable method of teaching clinical aspects of medicine. Ramani (2003) wrote 12 tips on how to improve bedside teaching, however in recent times bedside teaching is being utilised less due to multiple barriers such as time constraints, unpredictability and patient related challenges.

Summary of Work: At our trust, 3rd year students are allocated junior doctors as bedside tutors. We explored student views of the effectiveness of teaching they received, through written feedback based around Ramani’s (2003) work. We conducted semi-structured interviews to explore tutors views on delivering bedside teaching and barriers they encountered.

Summary of Results: We collected feedback from 40 students. 100% of students found bedside teaching sessions beneficial. Areas identified by students for improvement included the tutor setting clear learning objectives and ensuring engagement from non-participating students. A common barrier identified by tutors was taking time away from clinical duties to deliver sessions.

Discussion: It is important to understand the barriers against delivery of effective bedside teaching, in a service driven hospital. For our hospital, one of these is doctors taking time away from clinical duties to deliver sessions.

Conclusion: Bedside teaching continues to be an effective teaching method in the views of students and tutors. Educating tutors on different ways to improve the effectiveness of their teaching can improve learning experiences of students, however other barriers, such as time constraints are more difficult to rectify.

Take-home Message: It is important for all institutions to explore the barriers against effective bedside teaching. By increased awareness, simple improvements in teaching can be made were appropriate and an appreciation of more difficult barriers, such as time constraints, can be acknowledged.

#3DD04 (612)
Frustration on clinical skills competence does not seem to lead to deliberate practice

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Background: Graduating Finnish medical students constantly express frustrated awareness of the limitations of their clinical skills. A clinical skills center was constructed in the University of Helsinki in 2004. In 2015, a project was started in order to train peer instructors and the opening hours of the skills center were extended.

Summary of Work: The new structure was widely advertised and students were explicitly encouraged to train their skills. To evaluate the amount of our graduating students’ self-directed clinical skills practice, 6th year students were asked to fill in a questionnaire about the training of individual procedures in the skills center during their studies.

Summary of Results: 87/120 6th year students returned the questionnaire (72.5 %). The most frequent skills trained on voluntary basis in the skills center were suturing a wound (28.9%), insertion of a venous cannula to an adult (22.4%), insertion of a laryngeal mask (22.4%), lumbar puncture (19.5%) and taking an arterial blood sample.

Discussion: Finnish medical students have permission to work as locum tenens in hospitals after the fourth study year and in primary care after the fifth. They often express frustrated awareness of their own limitations. Previously, the reduced opening hours might have been a hinder preventing students to from voluntary training.

Conclusion: Despite the possibility to practice common clinical skills deliberately in the skills lab, less than one third of the graduating students had practiced on their own. The students have wide experience of common procedures that are easy to perform and they don’t seem to have need to cultivate their skills.

Take-home Message: The students have practiced most emergency procedures during their studies both in medical school and at working life. In spite of active encouragement, the renewed skills center has attracted less graduating students than expected. Organized training events or flipped classroom implemented in mandatory courses might be possible solutions.
#3DD05 (761)
Workplace Learning from Role Playing and Simulations

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Background: The expectation that students can understand patients’ points of view is very important. The effect of role-play in students learning following Pediatrics clinical workplace practice is not well known. Our study aims to examine whether role-play in clinical cases enhances students learning of disease/management and develops patient-centeredness for future practice.

Summary of Work: In groups of 10, final-year undergraduate students (n=72) selected a clinical case to role-play. Students wrote scripts and role-played patients, family and different levels medical staff. Afterwards, students expressed their learning during the course and received feedback from teachers. A questionnaire was used to assess effectiveness and satisfaction of learning.

Summary of Results: The effectiveness and satisfaction of role-play learning was 3.8±1.4 and 4.4±1.0 (five-point Likert scale). Most students reported: greater disease familiarity and enhanced patient-doctor/peer-group relationships. Greater understanding of visiting staff responsibility, communication skills and empathy was reported. A few felt role play-skills could only be practiced for common gastroenteritis cases.

Discussion: The learning effect may be influenced by case difficulty (e.g. biliary atresia, Kawasaki disease). Close supervision of the teachers can help students learn more about the ethical and communication issues which happened in the real world even the easy and common cases in the workplace after their 5 weeks learning.

Conclusion: Learning from role-play and simulations can enhance the effectiveness of students’ disease diagnosis and performance. The close supervision before the play and a detail feedback for students’ improving after the role-play is important.

Take-home Message: Learning from role-play and simulations for final year undergraduate students can enhance the effectiveness of students’ disease diagnosis and performance. The choice of easy cases’ discussion should not only on knowledge but the feelings of family and some ethical issues.

#3DD06 (3050)
Barriers and enablers to practising clinical skills on placement

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Background: Clinical experience is an essential part of medical school. Existing research by the authors reveals a gap between intention to practice and actual practice of clinical skills. It is in everybody’s interests that students are able to take advantage of the opportunities available to them in a ward-based environment.

Summary of Work: This research explores what third-year medical students perceive to be the barriers and enablers to performing clinical skills on patients on the ward. It adopts a qualitative methodology, utilising one-to-one and group interviews. Barts and The London students in their third year of the MBBS course during 2016/17 were interviewed.

Summary of Results: Data collection and analysis will be completed by May 2017. Anecdotally, students report a range of personal, environmental and teacher/peer relationship factors which influence their planning and performance of clinical skills. Our data will allow us to further explore the lived experience students have of practising clinical skills.

Discussion: An audit of medical students’ log books has identified these actual experiences of practising clinical skills as falling short of student expectations. Thematic analysis of student interviews may suggest common reasons for this, to build on the wider literature which exists in this area of medical education.

Conclusion: Students are aware of the opportunities available to perform clinical skills on the ward and what is expected of them. However, there is a gap between the intentions of these students and their actual achievements. Our study investigates factors which might be barriers or enablers to these students.

Take-home Message: Clinical experience is fundamental to medical student learning. By highlighting barriers and enablers to practising skills and identifying the reasons for these, measures may be implemented to improve students’ opportunities on the ward. We believe this study will identify how better to prepare and support students for ward-based learning.
"Accident or Intention" to disclose patients' health records among medical students

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**Background:** The increased adoption of electronic health records (EHR) in medical training institutions and the use of personal devices among those who access personal health records (PHR) raises concerns about potential misuse. Despite mandatory EHR training and a rigorous privacy policy, medical students are people that are a cause for concern.

**Summary of Work:** Workplace norms and morality have a strong influence on students’ intention to disclose and responsibility to report misuse where knowledge about the privacy policy and EHR training have a lesser effect. There is greater misuse by students with downloading PHR to their devices and sharing PHR on social network.

**Summary of Results:** Professionalism and role modeling on PHR security and privacy in a clinical workplace play an important role in creating an environment of data privacy and influencing students’ awareness of PHR misuse. The countermeasures, including privacy policy training and EHR training are less effective because these modules cannot be conducted frequently enough.

**Discussion:** Professionalism and role modeling on PHR security and privacy in a clinical workplace play an important role in creating an environment of data privacy and influencing students’ awareness of PHR misuse. The countermeasures, including privacy policy training and EHR training are less effective because these modules cannot be conducted frequently enough.

**Conclusion:** Our findings indicate that personal and institutional technology adoption is a potential problem for PHR misuse. Simply conducting EHR and privacy policy training is not enough. To better reduce misuse, institutions should place greater emphasis on teaching medical morality and creating an environment of data security.

**Take-home Message:** Institutions need to reinforce the message about health data privacy in a repeated manner and integrate it into many teaching moments so that convenience does not override privacy.

Patient shadowing; an educational tool to enhance appreciation of the patients’ perspective

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**Background:** Patient shadowing (observing care from patients’ perspective) has been used worldwide for improvement of medical services. There is a growing emphasis on the appreciation of the patient’s agenda in undergraduate medical curricula, currently delivered through simulation teaching. We evaluated the use of real-time patient advocacy as an educational tool.

**Summary of Work:** We enrolled year 3 medical students attending vascular outpatient clinic (with the same consultant). Control group students sat in with the consultant. Intervention group students shadowed patients instead, using structured observation and reflection forms. We held an end of placement focus group to compare student attitudes and learning outcomes.

**Summary of Results:** Thematic analysis of the focus group highlighted many positive gains from being a patient advocate, including better appreciation of the patient journey and greater understanding of patient attitudes toward their illness. Students also quoted a more in-depth clinical knowledge and appreciation of consultation skills compared to their control counterparts.

**Discussion:** All students found the patient advocacy experience overwhelmingly positive; students have greater appreciation of the patient agenda and perspective, and report greater depth of clinical learning. We would need to expand this tool through other outpatient clinics with greater number of students to see if the effect is generalisable.

**Conclusion:** There is a growing understanding of the importance of appreciating the patients’ agenda in undergraduate medical curricula. Similarly, the GMC advises medical teachers to focus on patients being active partners in medical education. Patient advocacy is an effective educational tool to meet both of these aims.

**Take-home Message:** Patient advocacy is effective as an educational tool both in attitudinal change towards appreciation of the patients’ agenda, and in improvement of clinical learning. It highlights to medical students the importance of the patient’s agenda and effective communication during the consultation, reinforcing a patient-centred approach to practicing medicine.
#3DD09 (521)
Students’ Perspective on the Value of Social Gathering During Early Clinical Exposure Courses

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Background: As part of the early clinical exposure (ECE) courses, three groups of mentors in Taipei Medical University had provided students with regular social gatherings separately. However, the attendance at these gatherings had been from session to session with significant differences. This study investigated students’ reasons for attending these events.

Summary of Work: Participants rated the following reasons for attending the social gathering in 5-point-Likert-scale (1=Not-at-all-concerned/5=Extremely-concerned) and could provide additional comments in an open-ended question. 1. the convenience of the meeting location; 2. their mentors would be present; 3. the refreshment; 4. the meeting time concern; 5. the interest in the informative activities.

Summary of Results: 69 out of 99 ECE course participants took this survey. The results revealed that the order of the determining factors in students’ session attendance was 1. the meeting location (Mean=4.5/SD=0.73); 2. the presence of the mentors (Mean=4.00/SD=1.12); 3. refreshment offered (Mean=3.74/SD=0.93); 4. the time concern (Mean=3.27/SD=1.01); 5. session topics/information (Mean=2.40/SD=1.15).

Discussion: The survey findings were consistent with the attendance records of 14 social gatherings. The participation in the hospital that was apart from the campus was lower than the locations closer to the campus. In addition, it was discovered that the students still attended the meetings during the midterm week.

Conclusion: From the comments provided by the survey participants, although the convenience of the meeting location played an important role in decreasing students’ attendance, the bonding with their mentors as well as the refreshment offered at the gatherings attracted the students’ participation.

Take-home Message: With the survey result pointing out that mentors’ presence weighed more than the actual information provided at the session, the Mentor-mentee relationship could be a key component that contributes to a successful ECE program.

#3DD10 (1998)
Integrating SNAPPS model into learner ratings for outpatient education: combining process of learning and assessment for teaching

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Background: As a unique learning venue, medical education in the outpatient setting brings challenges in teaching and learning as a result of the pace of patient care and limited time available for teaching. We sought to promote the ambulatory teaching efficacy by integrating SNAPPS model into learner ratings for outpatient education.

Summary of Work: We used the six steps of SNAPPS, a learner-centered model for outpatient education, as a basic concept to develop a clinical teaching assessment (CTA) tool. Clinical teachers were invited to participate in the SNAPPS training program and were informed upon the role of learners as assessors of their teaching performance.

Summary of Results: Twenty-two clinical teachers were enrolled in this current work. Learners presented with higher satisfaction after we adopted SNAPPS model as a CTA tool in the ambulatory teaching environment. The learner rating score increased also when compared to the state before the SNAPPS-based CTA tool was integrated.

Discussion: Adopted SNAPPS model as a measurement tool can improve clinical teachers’ self-efficacy: first, help preceptors to integrate learners into patient care delivery; second, make clinical teachers’ teaching more efficient in instructional reasoning; third, clinical teachers are more able to evaluate learners’ performance and provide feedback in real time.

Conclusion: The innovative measurement tool was developed by integrating SNAPPS model into learner ratings for outpatient education, which is especially meaningful for clinical teachers who need clear guidance to engage their learners and facilitate the teaching and learning interaction in a clinical venue with a quick pace.

Take-home Message: The development of a measurement tool by integrating SNAPPS model as a CTA combines the process of learning and assessment for teaching. The tool improves clinical teachers’ self efficacy and promote learners’ learning satisfaction.
Choosing Wisely in Medical School - Better Late Than Never

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Background: It is part of “Choosing Wisely’s philosophy” a more cost-efficient decision-making in medicine. Specialty medical societies were the first to apply it, but other settings should be considered, like medical schools. The participation of medical teachers is very important to influence medical students, specially as a role-model.

Summary of Work: A 12-item list of recommendations of situations in internal medicine (that were frequent, but inappropriate) was created by an expert panel of 10 medical teachers. The list was sent to other medical teachers for grading of the items. Teacher’s opinions and comments about this campaign were obtained through a questionnaire.

Summary of Results: The list was answered by 81 teachers. The recommendation most voted was “do not order laboratory tests that won't change clinical decision”. What motivated their choice was how frequent that behaviour happens in their clinical practice. Most of the teachers agreed about the importance of this campaign in medical education.

Discussion: It is important to recognize the relevance of role-modeling in medical education. To order unnecessary tests is a behaviour commonly done by physicians in an automatic way. Medical teachers also work in non-educational environments, are exposed to that kind of behaviour on their clinical practice, and may influence medical students.

Conclusion: The campaign was well received by teachers, and was considered very important. It is possible that “Choosing Wisely’s” strategy it is a good way to develop cost-consciousness on future doctors.

Take-home Message: The inclusion of medical teachers in the “Choosing Wisely” campaign is essential for its success in Medical School, once they serve as a role-model to medical students.

Assessing student learning about multimorbidity; a review of student reflections

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Background: Third year medical students at Glasgow visit a patient with multimorbid health care needs during a General Practice placement. The aim is that students gain an understanding of the impact of multimorbidity on delivering holistic, longitudinal care to patients. Student assessment comprises a written reflective account on their patient.

Summary of Work: A detailed review of 26 written student reflections was performed to address two research questions: 1) What insights do medical students get about patient coping strategies when faced with chronic illness? 2) Can students identify and empathise with roles for GP’s and health care professionals in managing patients with multimorbidity?

Summary of Results: Six key themes were identified from reviewing student work and these highlight the main areas of learning and student reflection on this experience. These were: 1) The multidisciplinary team; 2) Patient support networks; 3) Polypharmacy; 4) Application of evidence based medicine; 5) Mental health issues; 6) Student quotes and insights.

Discussion: Students were able to identify both intrinsic (patient specific) and extrinsic (environmental, social, situational) factors affecting patients coping mechanisms. Students had constructive and insightful reflections about multidisciplinary team care for patients with multimorbidity, but also acknowledged the importance of informal (unpaid) care provided by family and friends for these patients.

Conclusion: Review of student reflections has allowed insight and exploration of some informal and hidden curricula learning during this student experience with patients who have multimorbidity. A richer understanding of the learning taking place during this module has been enabled, and the benefits of this student experience more clearly defined.

Take-home Message: There is insightful, thoughtful, and individual learning taking place through student encounters with chronically ill patients. Students have documented case specific, contextual learning from their experiences, and reflected on how this will be translatable to their future learning. Module learning outcomes and assessment criteria can now be evolved and refined.
Becoming a real doctor: Investigating how workplaces play a role in clerks’ professionalism through a qualitative mixed-methods study

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Background: Workplaces engage individuals with meaningful and purposeful activities (Billett, 2004). Similarly, when activities in bedside learning are structured instead of ad hoc, the goals are clearer instead of hidden, and the work dynamic is supportive and inviting rather than casual, learning outcomes can be arguably satisfying and enhances professional advancement.

Summary of Work: To understand the role of workplaces and associated impacts on clerkship, this IRB-approved inquiry embarked on a four-staged, multiple-sites mixed methods research in years 2015 and 2016. It compared two hospitals in southern Taiwan, and contrasted those findings with one of the leading university hospitals within the UC-system.

Summary of Results: Four major themes from the visual analysis of the photos, and 43 relevant codes categorized in four major themes from 33 transcribed semi-structured interviews were developed. Through data triangulation, we found that the roles that clerks played and associated functionality they performed decided the level of meaningful and purposeful engagement.

Discussion: Clinical workplaces were pedagogically meaningful. Participation, engagement and activities were essential. Activities were both conceptual and physical, and ranged from knowledge advancement, contextualized applications, inter-professional interactions to interpersonal communications. Consequently, knowing how and knowing why became critical to professionalism and the identity formation, which had a role in career aspirations.

Conclusion: Workplaces prepared professional roles in the making. The more clerks were engaged, the easier they overcame obstacles, and were better socialized in hands, minds and hearts which constituted the professionalism. A sophisticated conceptual framework was developed which illuminated how workplaces being a frame of reference for professionalism and career formation.

Take-home Message: Early experiences in clinical workplaces does make a difference only when clerks are introduced to their work and teams, have meaningful engagements, and are allowed to perform, interact, collaborate and reflect. Ultimately, workplaces become a social institution for professionalism, which have an impact on identity formation and career goal aspirations.

Are teaching and learning sites in clinical clerkships rotations shared, and is it helpful?

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Background: Brazilian clerkships have been developed in the main medical areas over the past two years. We have a lot of public, and mainly private schools, that need to develop clerkships in the National Health System units. We investigated if the sites are shared and if it is helpful or not.

Summary of Work: Sixty eight Brazilian Medical Schools with clerkships (42.5%, 45% public), from all Brazilian regions, answered an electronic survey about clerkship rotation sites and whether they are shared with others students, medical or not, and residents from the school and others in public or private institutions, and also the influence of sharing.

Summary of Results: Around 50% of the schools share with university students and residents, but only 1/3 with technician students; 72,5% from same institution and 35% from other institutions. Sharing with institution residents helps in 91% of cases. Other health professional’ students reported no damage in 50% of cases and in other private institutions students on the same course reported damage in 18% of cases.

Discussion: The need to share in clinical clerkships sites is increasing in Brazil, mainly because of the growing number of medical schools. Sharing with members from the same institution, mainly residents, is good and helps students. Other health professional students don’t have a problem with this. Problems were reported with other private school students, perhaps because of financial problems.

Conclusion: Sharing clinical clerkship sites is important and can improve students’ skills of learning in interprofessional teams for health and social care, but it needs to happen in a harmonious way without financial interests. In Brazil, public medical schools have financial problems and this can affect students sharing learning spaces.

Take-home Message: Sharing teaching and learning spaces is good, but we need to take care when sharing. It is necessary to prevent damage to the students and mainly to the patients. Financial interest should not interfere, mainly in favor of the private rich medical schools and for profit medical education.
**#3EE  Posters: Faculty Development**
**Location: Hall 6**

**#3EE01 (489)**
**Roadmap to Success: Conceptualizing Faculty Development**

Elisabeth Schlegel, Hofstra Northwell School of Medicine at Hofstra University, Hempstead, USA
Li Ma

**Background:** Curriculum planning and science teaching are core responsibilities of new basic science faculty joining medical schools. However, integrated curricula and student-centered education require careful planning of the faculty development process to ensure thorough exposure to curricular landscape and pedagogic methods, as well as acquiring new educational skills, practice and reflection.

**Summary of Work:** Effective faculty development is vital to not only support a successful transition into a new institution but also invigorating and stimulating student learning outcomes. By retracing the fundamental steps completed when first generating and then teaching within a basic science curriculum thread, a generalizable faculty development roadmap was developed.

**Summary of Results:** Establishing a roadmap of key events and impacting activities provides a big picture view allowing new joining faculty to get familiarized with the educational environment. Thus, multiple responsibilities and challenging demands originating from different levels of institutional medical education planning and implementation can be streamlined in an organized fashion.

**Discussion:** Faculty development as collection of educational interventions aims to fit the curricular context and pedagogic needs of an institution. Pedagogically highly effective program offerings or developmental activities can be streamlined into a step-by-step process. A conceptual view of individual components of faculty development displays the complete approach at a glance.

**Conclusion:** Developing and tailoring faculty development to institutional contexts and needs poses challenging demands to new faculty. A generalizable faculty development roadmap was developed to provide the big picture and a sense of direction. Conceptualizing requirements and related activities allows for transitioning into a new role at an individual pace.

**Take-home Message:** Careful planning of the faculty development process allows new faculty entering the educational landscape of an institution at individual pace. Educational planning and teaching responsibilities can be streamlined into a step-by-step process providing a conceptualized big picture. Academic responsibilities and related pedagogic methods and activities can be recognized with ease.

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**#3EE02 (343)**
**Enhancing the effectiveness of faculty development for healthcare professionals using instructional design**

Audrey Lin, Khoo Teck Puat Hospital, Yishun, Singapore
Vaikunthan Rajaratnam, Khoo Teck Puat Hospital, Yishun, Singapore
Cheryl Wong, Khoo Teck Puat Hospital, Yishun, Singapore
Tengku Puteri Zahrah-Nur, Khoo Teck Puat Hospital, Yishun, Singapore
Grace Goh, Khoo Teck Puat Hospital, Yishun, Singapore

**Background:** Assessing the effectiveness of the learning programs (i.e. workshops, courses and conferences) in the Faculty Development Program (FDP) has been a challenge in a busy tertiary hospital. This study aims to evaluate the usefulness and relevancy of the FDP curriculum.

**Summary of Work:** The ADDIE (Analysis, Design, Development, Implementation and Evaluation) model was adopted for this initiative. A learning needs analysis was performed through a survey and the findings were used to design and develop the core curriculum. Relevant programs were implemented and evaluated through soliciting responses from participants.

**Summary of Results:** We conducted 9 workshops with 193 participants, where 87% were doctors, 6% were nurses, 7% were Allied Health Professionals. 165 response (85%) was obtained and most respondents (78%) fed back that their learning needs were met. Quantitative survey results are encouraging and qualitative analysis has added robustness to our data.

**Discussion:** A structured FDP provides our educators with relevant and contextual competencies needed to educate their learners. As the clinical environment is dynamic, it is important for the curriculum to stay updated to fulfill the needs of the faculty. This can be achieved through regular learning needs analysis using ADDIE model.

**Conclusion:** This study showed that the ADDIE model is useful in designing FDP to ensure contextual and relevancy of the program. An in-depth survey was carried out to understand the qualitative factors and results showed that this model identify areas of enhancement in FDP through understanding the faculties’ learning needs.

**Take-home Message:** Faculty Development Program is essential in developing the faculty members to train the next generation of healthcare learners. Efforts must be made to ensure that the design of the FDP be kept relevant, contextual and authentic to the faculty.
#3EE03 (3153)
There are no shortcuts to success - what faculty development activities can tell about your examination culture

Charlotte Leanderson, Karolinska Institute, Stockholm, Sweden
Wilhelmina Ekström
Peter Henriksson
Agneta Månsson-Broberg
Riitta Möller

Background: Pedagogical research support multiple, targeted, competency based assessment. In order to discuss and visualize the work-place based assessment (WBA) process, at the medical program at KI, a faculty experiential learning retreat was arranged. The aim was to discuss and develop common rubrics for assessment of seminars and work-place based assessment.

Summary of Work: Faculty (N= 45) and student representatives (N=6) were invited to a 2-day workshop. Participants individually analyzed consultations in psychiatry and medicine using existing templates. A template for seminars was evaluated correspondingly. Individual evaluations followed by small group discussions, criteria writing and then a consensus discussion according to modified Delphi.

Summary of Results: Participants found it difficult to differentiate between aspects and criteria. It was stated that template and criterion should be reasonably complex, concrete, comprehensible and easy to apply. Templates were inconsistently used, often lacked criterion and used for an overall assessment instead of a competency-based specific feedback in certain aspects.

Discussion: Different levels of knowledge in different aspects of assessment within the group of faculty and teachers were visualized. There is an overall need for clarification of terminology and how to apply templates. The perceived need for clarity and simplicity regarding criterion is in alignment with published results.

Conclusion: This 2-day workshop identified a need of alteration in the assessment culture. A strive towards a more targeted competency based assessment is required. Criterion specific templates for workplace based assessment and seminars will be implemented and continuously evaluated in dialogue with faculty.

Take-home Message: An experiential learning workshop can reveal and identify systems error in assessment culture.

#3EE04 (1779)
Teacher formation needs: Design and Evaluation of a Scale of Teacher Formation Needs in Health Sciences

Constanza González, Universidad de Concepción, Concepción, Chile

Background: Teacher formation is a permanent process for professional improvement, based on the needs of teacher training. The diagnosis of these needs is the first step to design teacher formation strategies. The objective is evaluate the psychometric properties of a Teacher Formation Needs Scale for health sciences teachers in Concepción, Chile.

Summary of Work: Non-experimental, quantitative and cross-sectional study. It evaluates the Factorial Structure of the Teacher Formation Needs Scale for Health Sciences of 62 items in a sample of 251 teachers of Chilean Health Sciences. Exploratory Factor Analysis was performed with the program STATA. The statistics used were KMO, Kaiser-Guttman and Cronbach alphas.

Summary of Results: The exploratory analysis shows that the Teacher Formation Needs Scale for Health Sciences is composed by 62 items organized into 6 factors: Teaching planning, Integral formation of student, Assessment strategies, Educational Research, Educational Management and Use of TICs; All with an adequate Cronbach alpha reliability.

Discussion: The needs of formation in health sciences teachers are specific to the field of Medical Education and respond to the activities and roles of a classroom teacher and clinical tutor in the national academic context. The identification of these needs are essential for planning strategies that helps professional teacher development.

Conclusion: The six factor structure, considering 62 items, shows theoretical interpretability and diagnostic utility, supporting its construct validity.

Take-home Message: Before planning teacher formation strategies, teacher formation needs must be identified.
#3EE05 (881)
Faculty Development - Lessons Learned from a Process-oriented Program

Cheo Lian Yeo, Singapore General Hospital, Singapore
Ereno Imelda Lustestica, Singapore General Hospital, Singapore

Background: Process-oriented faculty development programs may be organized to aid participants in enhancing personal reflection and forming supportive interpersonal relationships. The Singapore Neonatal Resuscitation Course (SNRC) Program designed a training curriculum to promote acquisition of specific teaching skills that also promoted reflection and relationship formation amongst course instructors.

Summary of Work: Thirty-five SNRC instructors attended training conducted by a regional instructor. Training program consisted of an online module and 1-day training on teaching of performance and integrated skill, design and conduct of resuscitation scenarios, and debriefing skills. Attendees reflected on training and completed survey detailing impact on teaching and personal growth.

Summary of Results: Training met the learning objectives of all attendees with personal growth in knowledge and specific skills inclusive of the design of neonatal resuscitation scenarios, the conduct of simulation-based training and techniques to facilitate self-reflection among learners. Qualitative report highlighted the impact of training environment on learning.

Discussion: Using qualitative methods, we examined the survey findings as interpretive lenses. The identification of personal strength and weakness in the delivery of resuscitation and transformation in relationships with each other created the opportunity, and the means, to address and reshape norms and teaching practices at the institution.

Conclusion: Process-oriented faculty development programs foster growth of knowledge in individual learners, contribute to transformation in relationships, thereby influencing teaching practices and standard of resuscitative care of newborns. Feedbacks obtained from the pioneer training program will benefit the organization of future faculty development programs.

Take-home Message: Process-oriented faculty development program for instructors benefits not only the individual teacher but brings about transformation of groups of instructors changing the norms that regulate the practice of neonatal resuscitation. The change in practices has possible positive influence on the standard of acute neonatal care.

#3EE06 (558)
Development and implementation of a faculty development program for dental faculty addressing pre-clinical teaching and clinical supervision and assessment of students’ competencies

Hanan Omar, International Medical University, Kuala Lumpur, Malaysia
Siew Liang Lin
Mandakini Mohan
Shekhar Bhatia
Christopher Vincent
Toh Chooi Galt

Background: Faculty development of clinical teachers have been found to raise awareness of the teachers on what their students really learn and motivate them to become better teachers and supervisors. A faculty development program was developed in a dental school to standardize, pre-clinical teaching, clinical supervision and assessment of student competencies.

Summary of Work: The program involved an online preparatory phase and a two-day workshop involving discussion of strategies to enhance students’ learning experience, assessment of various types and standards of dental work using OSCE stations and ending with debriefing of staff’s performance. Students’ evaluation of staff performance was conducted using an online questionnaire.

Summary of Results: A total of 30/33 staff attended the program, yielding a participation rate of 90%. About 77% of the students agreed that the supervisors listen to the learners, engage them through asking effective questions, respect learners’ emotions and experience, provide clear explanations, stimulate learning and provide constructive feedback.

Discussion: All activities extended over a four-month period. The online preparatory material and OSCE stations were contributed by staff teaching each type of dental work. Participants viewed the FDP program as a positive learning experience and the online availability of the preparatory materials provided flexibility of access to the materials.

Conclusion: The program stimulated collaboration between experienced and newer faculty in planning of the various activities. From positive students’ feedback, the FDP was effective in standardizing pre-clinical teaching and clinical supervision in the school. Staff were confident to use the assessment rubrics for assessing students’ competencies.

Take-home Message: Periodic workshops to calibrate staff’s assessment and feedback of students’ work is useful to standardize pre-clinical teaching and clinical supervision amongst experienced and newer staff and enhance students’ learning experience. A pre-workshop preparatory phase is useful whereby staff can access relevant information to be better prepared for the workshop.
**#3EE07 (1628)**
Virtual reality studio and standardized students used in clinical teaching skills training for new faculty members

Ling-Yu Yang, National Yang-Ming University, Taipei, Taiwan
Chen-Huan Chen
Jing-Feng Linng
William J Huang

**Background:** Simulation has been widely adopted in modern clinical education, and the application used for faculty development is still developing. This study reported our experiences in using virtual reality studio, standardized patients and standardized students to enhance teaching skills in clinical setting for new faculty members.

**Summary of Work:** By using multiple projectors, the virtual reality simulation studio was designed to simulate various clinical environments, including hospital ward, out patient clinic, operating theater and podium of lecture hall for training new faculty members. Different clinical scenarios were designed to challenge trainees how to manage difficult students or situations.

**Summary of Results:** We have developed 6 virtual reality clinical settings and ten cases of difficult students and clinical teaching situations. The trainees satisfied the authentic experiences by exploring the case scenario in the studio. The performance of the new faculty, tested with objective-structured teaching examination (OSTE) immediately after the workshop, was good.

**Discussion:** Virtual reality studio plus traditional standardized students or patients makes new faculty more confident in facing difficult clinical teaching situations. It also let senior faculty have a chance to give a direct observation, evaluation and feedback to new faculty’s teaching skills. It makes new faculty more competent and self-confident.

**Conclusion:** Virtual reality studio plus standardized students provides secure environment for trainees, and avoids the concern of patient privacy in learning clinical teaching skills. The senior instructors can demonstrate teaching skills in this special studio. The teaching and learning process can also be recorded for future education activities.

**Take-home Message:** Virtual reality studio is an innovative modules for faculty development. It provides trainee a safer environment to learn, and opportunities of repeated practice before going to the real clinical settings. The modality in training clinical teaching skills for new faculty members is effective and may be applied world widely.

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**#3EE08 (76)**
Centre for Medical Education Scholar (CenMED Scholar): An adaptive faculty development platform

Shuh Shing Lee, National University of Singapore, Singapore
Ashokka Balakrishnan
Su Mei Lee
Chong Hui Ann Fong
Dujeepa Samasekera

**Background:** Although several activities were suggested by Steinert (2010), workshops and seminars remain the most commonly adopted formats in faculty development (FD). Nonetheless, this mode of training is limited to numbers of trainees and assuming participants level of understanding is the same.

**Summary of Work:** The Centre has developed a FD platform to train busy clinicians and educators spread across a wide geographical locations at different training sites to provide Just-In-Time (JIT) learning and adapted to the learners level of learning through analysing the strengths and weaknesses of the participant.

**Summary of Results:** The website will be showcased during the presentation.

**Discussion:** The development based on adaptive learning optimised the delivery of the desired content and based on individual needs. It assesses not only what a learner knows now, but also determines the activities delivered in what sequence and which level, most greatly increase learner’s motivation on learning.

**Conclusion:** CenMED Scholar provides a dynamic platform on how faculty development should be in future by leveraging the advancement of current technology.

**Take-home Message:** Harnessing technology with underpinning teaching and learning theories in improving faculty development is crucial. Not only more busy clinicians and educators can be trained, they can be trained anywhere, anytime and any pace that they like.
**The Community of Medical Educators in Training: A Multidisciplinary Trainee-Led Education Fellowship**

**Matthew Stull, University of Michigan Medical School, Ann Arbor, USA**
Craig Alpert
Brendan Munzer
William Peterson
Matthew C Konerman
Sally Santen

**Background:** Medicine depends on experienced practitioners to teach the next generation of trainees. Most physicians teach without formal teacher training and many academic medical centers acknowledge successful academic clinicians must also be successful educators. Currently, there are limited opportunities for post-graduate trainees (PGT) to participate in medical education development programs.

**Summary of Work:** The Community of Medical Educators in Training (CoMET) aspires to build knowledge and skills for PGT committed to medical education while providing a community of like-minded individuals. The program’s mission to promote teaching, discovery, and inspiration of the next generation of medical education leaders through multidisciplinary collaboration and development.

**Summary of Results:** Twenty-eight PGT across one large academic institution were selected from a competitive application cycle to participate in a year-long curriculum while designing an individual scholarly education project. While faculty sponsor and mentor the community, the curriculum and community is initiated and led by trainees with uniformly positive reception from learners.

**Discussion:** The CoMET fellowship promotes self-reflection and mindfulness to teach the next generation of medical education leaders through collaboration and development. The close community formed in such a model not only promotes content learning but also builds connections across medical specialties to allow networking and professional development of early career medical educators.

**Conclusion:** The CoMET Fellowship provides twice-monthly opportunities for budding medical educators to build knowledge and skills in teaching and educational leadership while still completing clinical training. By augmenting teaching skills earlier, we anticipate this model will allow PGT to transition into medical education roles more seamlessly and successfully.

**Take-home Message:** The CoMET Fellowship is a novel trainee-directed multidisciplinary community that aims to develop the next generation of medical education leaders through collaboration between trainees with faculty mentorship and support.

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**Empowering change - a faculty development Program for multipliers from rapidly growing economies**

**Fabian Jacobs, Center for International Health-University Hospital of LMU, Munich, Germany**

Martin Fischer, Institute for Medical Education-University Hospital of LMU, Munich, Germany
Matthias Siebeck, Center for International Health-University Hospital of LMU, Munich, Germany

**Background:** Due to the rising importance of sustainable approaches to support for local higher education institutions, it is crucial to promote the development of faculties in DCs. By strengthening local opportunities for faculty the education system will benefit on different levels and brain drain is being antagonised.

**Summary of Work:** The Center-for-International-Health (CIH) conducts yearly Academic Teacher Trainings (ATTC) since 2010 in Munich with scholarships for participants from DCs, self-funded participants and participants from LMU. It consists of a preparatory phase in the home country, a 2-week presence phase in Munich and a subsequent transfer section in the home institution.

**Summary of Results:** More than 150 key staff members from over 20 countries have been taught following a train-the-trainer approach supporting diversity in teaching. The course offered various modules related to teaching and students’ assessment including problem-based learning. Surveys among all participants demonstrated the relevance and achieved outcomes of the courses.

**Discussion:** The International Academic-Teacher-Training-Course (ATTC) supports the development of globally applicable approaches in medical education. It is carried out by the CIH and Chair of Medical Education and is embedded in a strong network for over 14 years. The courses were implemented in different CIH activities at global partner institutions.

**Conclusion:** In future a cornerstone of excellent medical schools are transnational approaches in which internationalization is integrated and embedded within a curriculum and involves collaboration between a number of schools in different regions and countries. Therefore, the Center-for-International-Health (CIH) is empowering faculty development and a use of modern teaching methods.

**Take-home Message:** Overall goal is to train scientists to become excellent teachers, researchers, multipliers and change agents in the field of medical education and to enable medical teachers to develop locally applicable medical teaching methods. Professionalization of medical education is a key factor for sustainable development of health care systems worldwide.
What components of the Interprofessional Applied Practical Teaching (INTAPT) Faculty Development course do participants identify as crucial to their personal and professional development?

Abbas Ghavam-Rassoul, Department of Family and Community Medicine, University of Toronto, Toronto, Canada
Judith Peranson, University of Toronto, Toronto, Canada
Ancy Jacob, University of Toronto, Toronto, Canada
Jessica Bytautas, University of Helsinki, Helsinki, Finland
Helen Batty, University of Toronto, Toronto, Canada

**Background:** The INTAPT course is a long running foundation course for several Health Professions Teacher Education Programs (certificate, fellowship and master’s). Participants routinely report global satisfaction and positive learning and professional outcomes. We sought to identify the most significant content and process components of the course from the perspective of participants.

**Summary of Work:** Participants were recruited from the 2014/15 and 2015/16 cohorts. We asked participants to write a brief narrative reflection about the key element of the course that had the greatest impact on their personal and professional development. We analyzed their reflections using a descriptive qualitative method to identify themes.

**Summary of Results:** Participants identified a variety of components as helpful including learning theory, running a workshop, creating a poster, interactive teaching, being challenged, the process of group work, developing a sense of community and creativity. A range of individual and group, and face-to-face and at home activities were described as having value.

**Discussion:** Participant identified elements resonate with the literature. Participants valued being challenged and succeeding in real life tasks such as running workshops or designing academic posters. The impact of group work and building community, and opportunity to demonstrate proficiency in new skills were also identified as crucial elements of program design.

**Conclusion:** Participants in this study identified specific elements of a complex course that are helpful to their development. Our findings confirm that a ‘smorgasbord’ of in-class and individual activities aid in addressing both personal learning needs and cultivating a sense of professional preparedness amongst health professional teachers.

**Take-home Message:** As participants are likely to identify different elements in a course helpful in meeting their personal and professional learning goals, faculty developers should include a mix of individual and group activities, work to challenge participants, and provide opportunities for practice and mastery as part of a successful course design.

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A comparison of standards for medical training during the final year in Germany 2013 versus 2016

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Katrin Schüttpelz-Brauns, Medical Faculty Mannheim, Heidelberg University, Germany
Janine Günther, Competence Center for Evaluation of Teaching in Medicine, Medical Faculty Freiburg, Heidelberg University, Germany
Claudia Grab, Medical Faculty Ulm, Germany
Erika Vögele, Medical Faculty Tübingen, Germany
Kathrin Nühse, Medical Faculty Mannheim, Heidelberg University, Germany

**Background:** In 2013 we conducted a survey to capture the baseline status of final year education. After implementing a manual and a training program for medical teachers in the final year, we repeated the survey in 2016 to find out if these actions had an effect on standards of medical training.

**Summary of Work:** Both times we asked medical teachers involved in training during the final year of five Medical Faculties in Baden-Württemberg, in 2013 with a paper and pencil questionnaire (68 items), 2016 with a slightly modified online survey. We compared the data concerning essential standards of medical training in the final year.

**Summary of Results:** 503 medical teachers answered the survey in 2016 (2013: N=237). In comparison to the results of 2013 the use of logbooks increased from 67% to 89%. In 2016 students were more often observed: 21% versus 7%, but not in a standardised way. Teaching ward rounds decreased from 72% to 54%.

**Discussion:** Legal issues increased the use of logbooks. An increasing number of medical teachers recognises the impact of student observation; however this standard is still on a low level. Informal interviews with final year students are established, especially at the end of rotations. Teaching ward rounds seem to have lesser significance.

**Conclusion:** The 2016 survey reached an essential part of medical teachers. There is a trend towards training with logbooks and more (standardised) observation of students – and therefore an improvement in standards. However almost 80% of medical teachers indicated, that they don’t observe - here we see room for improvement.

**Take-home Message:** To implement and improve standards of the final year takes a long time and needs a great effort in training medical teachers!
Less is more? Evaluation of a curriculum change in a professional development course for medical and biomedical teachers

Elizabeth Miles, St George's, University of London, London, UK

Background: Guided by stakeholder input and professional requirements, St George’s, University of London redesigned its Postgraduate Certificate in Healthcare and Biomedical Education (PGCertHBE), responding to participant feedback that course requirements, particularly assessment elements, were excessive. The key underpinning principle of reflective and experiential learning enabling individual and professional development was retained.

Summary of Work: During 2015 and 2016, participants completing old or new versions of the PGCertHBE rated their competence from 1 to 5 (highest) in fifteen teaching-related activities before and after the course, quantified the contribution of nine particular elements to their development as teachers and scored and commented on overall course value.

Summary of Results: Median post-course competence scores for all fifteen activities were identical or similar for old and new programmes and overall course ratings were identical. Participants on both programmes identified teaching and assessing experiences, teaching observations, feedback from learners and educational supervision as making significant contributions to their development as teachers.

Discussion: Running the programmes in parallel provided an opportunity for comparison. Median scores showed no difference in overall participant achievement or course ratings. Curriculum elements supporting reflective and experiential learning were identified as having the highest impact on participant development. Other internal and external evaluation measures confirmed maintenance of academic standards.

Conclusion: PGCertHBE curriculum features enabling participants to gain competence in a range of teaching-related activities have been retained whilst reducing assessment and attendance components. Together with other evaluation measures, results indicate that the new programme meets participant, institution and professional requirements, promoting an applied and scholarly approach to teaching and learning.

Take-home Message: Focussing on the key pedagogical principles and practice of our professional development course for teachers enabled us to redesign and reduce the curriculum, particularly assessment elements, without decreasing participant ratings or other evaluation measures. Given the increased suitability for this busy group, it appears that less can be more.
#3EE15 (2936)
Cross-cultural Training of Trainers in Primary Mental Health Care in Moldova. The tEACH experience

Jane Ege Moeller, Center for Health Sciences Education, Aarhus University, Aarhus, Denmark
Evelyn van Weel-Baumgarten, EACH-International Association for Communication in Healthcare, Radboud University Medical Center, Nijmegen, Netherlands

**Background:** Evidence shows that cross-cultural teaching involves various challenges. We present experiences from a cross-cultural train-the-trainers project in Moldova. The project-aim was to equip a group of trainers with the facilitation skills to train more than 1000 primary health care providers the skills for primary mental health care, including communication skills.

**Summary of Work:** Trainers from tEACH (sub-committee, EACH: International Association for Communication in Healthcare) undertook the training in cooperation with local and international stakeholders. The project consisted of 3 weeks of training using experiential teaching methods. Twenty participants attended and practiced content and teaching methods, including interactive lecturing, role-play, feedback and using video.

**Summary of Results:** The majority of the participants reported that they acquired helpful key facilitation skills. They valued practicing and receiving feedback. However, our learner-centered approach was occasionally perceived as a lack of structure. Some reported that the training involved more focus on clinical communication skills than relevant in a Moldovan context.

**Discussion:** Across cultures different perspectives exist on the value of clinical communication skills. A learner-centered approach can be perceived negatively, in a learning climate characterized by being ‘stability seeking’ and with low degree of ‘uncertainty acceptance’. Only continuous dialogue with all stakeholders makes this type of training successful.

**Conclusion:** Different cultures have different educational climates. A learner-centered approach can be perceived negatively and teaching medical practitioners clinical communication skills is not necessarily perceived as relevant. The tEACH-expertise can support trainers in communication skills across cultures by taking these differences into account.

**Take-home Message:** Cross-cultural train-the-trainers courses in facilitation- and clinical communication skills demand more time, attention to cultural differences, and continuous dialogue with local stakeholders than usual in order to be successful.

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#3EE16 (2815)
Experiences after the establishment of a blended learning teacher education program for new staff members at medical universities in Hungary

Levente Kiss, Hungarian Society of Medical Education and Health Science; Semmelweis University, Department of Physiology, Budapest, Hungary
Katalin Barabás, Hungarian Society of Medical Education and Health Science; University of Szeged, Department of Behavioral Sciences, Szeged, Hungary

**Background:** The deans of Hungarian medical universities have reached an agreement in 2013 that young new staff members must complete a brief course that would help them in their teaching work. The blended learning course was then designed an established in 2014 and 2015 by experienced educators from each university.

**Summary of Work:** With the current presentation we aim to provide our experiences after the first 2 years of the programme. These relate to the implementations of the programmes at the involved medical universities and we used feedbacks after the consultations to get an insight about the perceptions of the participants.

**Summary of Results:** Above 200 participants, mostly from clinical departments took part in the course. Based on the feedbacks the participants had mixed feelings towards the material and along the many enthusiastic participants there were many who were hugely sceptical and negative about the whole concept of faculty development.

**Discussion:** Skepticism, work overload and misunderstandings about the key technical terms related to medical education can hold back the successful implementation of a faculty development program. Participants often complain about more pressing problems that affect their everyday practice than about the problems related to their teaching methods.

**Conclusion:** Although very many young teachers are enthusiastic about improving their educational training there is also a prevailing, parallel culture of negligence towards professional medical education which should be addressed by incentives that reward and expect quality rather than quantity of teaching.

**Take-home Message:** In order to improve quality of teaching at universities it is important to give value to exceptional educational activities and repeatedly emphasize the importance of dedicated teaching.
Integrating simulation in medical curriculum – An experience of using workshops for faculty development

Nasir Ali Afsar, Alfaisal University, Riyadh, Saudi Arabia
Muhammad Zafar Chaudhary, Alfaisal University, Riyadh, Saudi Arabia

Background: Integrating simulation in medical curriculum is on rise to improve students’ learning, confidence and performance in clinical practice. The best way to integrate depends on the curriculum structure in an institution. We conducted workshops for academicians to nurture best practices in designing a simulation-based curriculum. Here we report our experience.

Summary of Work: A validated survey was distributed to check the participants’ knowledge about clinical skills and simulation adjuncts as well as their perception regarding designing an integrated curriculum before and after each workshop. Relevant resource material was provided. Subgroup data analysis was carried out. A p-value <0.05 was considered significant.

Summary of Results: 31 individuals (male 54%) attended workshops at UAE, Saudi Arabia and Jordan. 86% had never attended such workshops. 48% had no teaching experience. Participants’ ability to describe clinical skills, simulation adjuncts and fidelity was significantly improved. Reported pre-workshop ‘confidence to integrate simulation in curriculum’ inverted post-workshop, especially among academic novices.

Discussion: Participants admired the workshops and found them helpful due to structured sessions, resource material, experienced facilitators and ample opportunity for hands-on practice. Their awareness about integrating simulation-based sessions improved. Changes in perceived confidence pre-/post-workshop showed paradigm shift to perceive reality about their skills to integrate simulation in a given curriculum.

Conclusion: The participants appraised the workshops, found them useful and effective in improving their awareness regarding integrating basic clinical skills and simulation adjuncts in medical curriculum. Perception of the novice academicians tends to be elated about curriculum integration which was self-corrected after the workshop.

Take-home Message: Conducting workshops for faculty and allied health professionals is an effective method of developing their proficiency to integrate basic clinical skills and simulation adjuncts in medical curriculum, provided such sessions are well designed, structured, supported by relevant resource material and offer plentiful hands-on practice.
#3FF  Posters: WBA and Assessment

General

Location: Hall 6

#3FF01 (35)
One year experience with a national postgraduate year 1 (PGY1) assessment framework in Singapore

Yong-Kwang Tay, Changi General Hospital/SingHealth Residency, Singapore
Marie Lee, SingHealth Residency, Singapore
Yvonne Guat-Keng Goh, Changi General Hospital/SingHealth Residency

Background: Before 2014, assessment of PGY1 doctors was based on various forms used by each department the doctor was posted, which differed among hospitals, making comparisons from various programs challenging. From May 2014, a national assessment framework was introduced. The aim was to have a common assessment and education experience.

Summary of Work: We report our experience with this common assessment framework: monthly P1 supervisor report (medical knowledge, patient care), P2 multirater form (professionalism, interpersonal/communication skills); P3 end of posting report (summary P1/2 forms). We also compared the performance of the matched categorical PGY1 residents to the generic unmatched residents.

Summary of Results: The P1 form uses a 3 point scale: "Needs improvement", "Satisfactory", "Above expected". Some supervisors graded all PGY1s as "Needs improvement". The P3 form assesses developmental plans where the PGY1 needs closer monitoring. Many supervisors however were highlighting areas that the PGY1 was competent in.

Discussion: In 2014/2015, 100 doctors were posted to SingHealth Transitional year (TY) residency program: 21 categorical, 79 generic residents. From the P1 forms, there was a significant difference in the average score between the 2 groups: Categorical TY, 2.43 vs generic TY, 2.5 (p = 0.038, unpaired student t test).

Conclusion: 20 out of 79 generic TY residents (25.32 %) were matched to a specialty residency program. The average P1 scores of the generic TY residents who were matched (2.55) were similar to those who were not matched (2.50, p=0.18). Assessments of PGY1s should be at their period of training.

Take-home Message: Regular briefing of the supervisors helped to decrease these challenges. Recently, we have instituted an online platform to train the faculty in the assessment of the PGY1s. Generic TY residents performed better than the categorical TYS, perhaps generic PGY1s worked harder in order to get matched to a program.

#3FF02 (2099)
A Workplace Based Assessment Tool Used for Assessment of Intern Performance – 10-year Results

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Background: All graduating medical students in Hong Kong must complete 12 months of hospital-based internship training to register as a doctor. An independent multi-dimensional system of workplace-based assessment has been developed and successfully used for monitoring and benchmarking performance.

Summary of Work: Preceptors are trained to assess the following 11-categories - Professional Knowledge; Clinical Skills; Attitude towards patients; Attitude towards staff; Willingness to learn; Organizational ability; Clinical judgment; Educational activities; Medical language; Communication Skills, and Sense of Responsibility on a 5-point Likert scale with 1 being least competent.

Summary of Results: Data of 2867 intern evaluations shows an overall mean of 3.9 with continuous improvements in year on year performance particularly in the following categories “Attitude”, “Willingness to learn” and “Responsibility” – Mean 4.3. Data from both local and overseas graduates can be compared and a benchmark plot has been constructed.

Discussion: The assessment report provides solid evidence of the training performance of each intern from the workplace. Interns who score below 2 in any of the assessment categories are flagged and appropriate remedial interventions/counseling is organized. Despite its summative use the WBA provides an opportunity for formative intervention and benchmark comparison.

Conclusion: Recent 10-year data analysis from a robust fit-for-purpose WBA Assessment tool shows improvement in the overall performance of interns from both medical schools in Hong Kong. The utility of this tool lies in the timely formative interventions that it facilitates thereby leading to improved intern behaviors.

Take-home Message: Well planned and well constructed WBA tools provide valuable information about intern performance and may be used as a benchmark tool.
#3FF03 (31)
What do trainee doctors and their trainers say about workplace based assessments? A survey of UK based junior doctors and their supervisors

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Background: Foundation Doctors complete six 4-month placements following graduation. Mandatory assessments are conducted at the end of each placement which forms the summative assessment of overall performance. These determine progression to further postgraduate training. We explore the trainees’ and trainers’ views on the assessment process including its usefulness for professional development.

Summary of Work: Two 10-item questionnaires (one for trainers and one for trainees) were completed anonymously by 22 trainers (clinical and educational supervisors) conducting the assessment and 17 trainees (Foundation Year 1 & 2) in a teaching hospital in the North West of England in 2015.

Summary of Results: Most supervisors had formal training (68%). A majority (59%) believed assessment was useful for determining engagement and assisting a poorly performing trainee. Trainees believed the assessment was useful for recording training and achievements (70%) and identifying learning needs (65%). Most (58%) believed feedback helped boost their confidence and improve performance.

Discussion: Although a small sample the study provides interesting insight into an important summative assessment for the first time. This study highlights the importance of timely, structured feedback in the workplace that would identify the learning needs and improve performance.

Conclusion: A majority of trainees and trainers found the assessment useful; however, improving the quality of the process will increase its value for continuing professional development. Trainers require more time and resources to improve the quality of the assessment and its value for the trainees.

Take-home Message: The assessment is a good opportunity to provide useful structured feedback that would improve trainees’ performance in the work place. However, better infrastructure such as IT service and more time and guidance for trainers will significantly improve the quality of the process.

#3FF04 (597)
Attitudes and philosophies of academics and work-based educators towards assessment of clinical competencies in dietetics

Simone Gibson, Monash University, Melbourne, Australia
Claire Palerma

Background: Making decisions regarding student competency assessment is challenging and involves the input of multiple stakeholders in both the academic and work-based settings. This study aimed to explore the attitudes and behaviours of academics and work-based clinical educators and their impacts on assessment.

Summary of Work: Ten focus groups with experienced academics from ten Australian universities involved in student dietitian training explored views on competency-based assessment (n=58). Surveys (66-item, open-ended and Likert scale) then explored clinical educators’ attitudes to assessing competency across 17 acute and sub-acute hospitals (n=26). Views of the different groups were analysed separately.

Summary of Results: Focus groups acknowledged: the relationship between competency and future employment; holistic assessment; professionalism and challenges with a one-size fits all approach. Contrastingly, the majority of hospital-based clinical educators reported: preference for a single standardised tool; the importance of quantifiable objective measurements; and separate assessment for different domains of practice.

Discussion: Academics appreciated of the complexity of competency assessment along with its potential for subjectivity and its connection with the prospects for graduate employment beyond hospital settings. Clinical educators’ views were more focussed on the hospital environment and they valued the concepts of objectivity and validated, standardised tools.

Conclusion: Attitudes to assessing competency for work-based performance differed. Further training of clinical educators may develop their understanding of the complexities involved in competency based assessment. This includes extending their understanding of competency assessment beyond the clinical domain and the role of self and subjectivity.

Take-home Message: Competency-based assessment is complex and related to future employment roles which are rapidly evolving in health care and dietetics. Clinical educators require further training in making assessment decisions and be supported to acknowledge their intrinsic and external drivers that influence these judgements.
#3FF05 (3307)
Assessment in the real world: Resident perspectives on assessment of competency during ambulatory rotations

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Shiphra Ginsburg, University of Toronto, Department of Medicine, Toronto, Canada
Heather McDonald-Blumer, University of Toronto, Department of Medicine, Toronto, Canada
Ryan Brydges, University of Toronto, Department of Medicine, Toronto, Canada
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**Background:** Practical implementation of meaningful methods to assess residents is a challenge facing medical educators. Knowing how residents perceive the assessment process in the ambulatory setting can inform the structure and format of resident assessment to facilitate its successful implementation.

**Summary of Work:** Semi-structured interviews were conducted with 9 residents to elicit their perspectives on assessment in ambulatory rotations. Participants were shown three assessment tools to stimulate discussion. Data was analyzed with Nvivo-11 software using grounded theory methods.

**Summary of Results:** Residents identified that assessment should be timely, accurate, based on direct observation, and facilitated through standardized and readily accessible tools. Participants identified several barriers for assessment including time limitations, resident anxiety, and faculty's ability and/or willingness to assess. A central theme of tensions became apparent during the analysis.

**Discussion:** Tensions included: (1) Time limitations (assessment versus patient care); (2) Resident anxiety (desire for assessment versus anxiety about performance); (3) Faculty performance (residents’ desire for assessment versus faculty competence to assess); (4) Instrument design (desire for standardization versus concerns about validity); (5) Sampling (serial preceptors versus longitudinal assessment).

**Conclusion:** Participants described challenges and ideal properties of assessments, which map well onto best practices in the literature. Identifying these properties could help facilitate implementation. However, in considering how to overcome identified barriers, participants’ views revealed significant tensions when trying to manage conflicting priorities, which require attention during assessment program design.

**Take-home Message:** This study identifies several tensions potentially affecting residents and faculty which can impact resident assessment in the ambulatory setting.Acknowledging and managing these might be beneficial in optimizing the assessment process.

#3FF06 (2623)
What happens when a medical school changes assessment from summative to formative?

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Avril Dewar, University of Edinburgh, Edinburgh, UK
Helen Cameron, University of Edinburgh, Edinburgh, UK

**Background:** Formative assessment should inform learners so they may better meet learning outcomes. Advocates argue that, compared to summative assessment, formative assessment is less pressured, allows learners to test novel strategies and set their own pace. However, the efficacy of formative assessment in promoting learning and improving pass rates remains understudied.

**Summary of Work:** In an MBChB, we evaluated performance on assessments – including MCQs, case reports and supervised learning events – over two years. In year 1, all were summative progression hurdles. In year 2, all were formative. We evaluated the transition from summative to formative for each assessment and final year marks.

**Summary of Results:** Our work allowed for a comparison of assessments where the only changed variable was whether the assessments were summative or formative. We report on the effects of the transition and how it impacts different students.

**Discussion:** Moving from summative to formative assessment can lead to significant changes in student behaviour and performance, and these changes may not match staff expectations. While challenging to perform, the “matched” analysis described here is extremely useful in providing hard data on important changes to a curriculum.

**Conclusion:** Formative assessment is widely supported, and our work helps quantify its benefits and limitations. Of particular importance is the need to recognise how different types of students – especially those excelling and those at the pass/fail borderline – may respond differently to such changes.

**Take-home Message:** While formative assessment may be beneficial, it is essential that plans to monitor transitions away from summative assessment are put in place before the changes occur. Analysis strategies should be prepared in advance, with a view to monitoring the impact of such transitions carefully.
#3FF07 (3129)
**Course alignment in a distributive model: A qualitative exploration of preceptor assessment of student performance in clinical pharmacology in a distributed veterinary medicine curriculum**

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*Paul Gordon-Ross*
*Martina Haupt*
*Peggy Barr*

**Background:** Veterinary medical graduates are expected to be competent in clinical pharmacology. During clinical training, the assessment of student knowledge and skills is performed by third party preceptors. Understanding the actions and behaviors preceptors equate with adequate knowledge and skills in pharmacology is essential to maintaining course alignment and curricular.

**Summary of Work:** The purpose of this study is to explore how third party preceptors assess student competency. Specifically, what actions and behaviors of students do preceptors use to assess student pharmacology knowledge? Preceptor interviews were qualitatively analyzed for emergent themes that illuminate the preceptor’s process for assessing student knowledge.

**Summary of Results:** Emergent themes from the initial pilot study include, the expectation of specific knowledge versus procedural knowledge, preceptor styles of inquiry and perceived student enthusiasm and engagement in their clinical patients. Qualitative analysis of course syllabi revealed generalized expectations for clinical skills, but not pharmacology specific knowledge and skill expectations.

**Discussion:** Preceptors described many behaviors use for in assessing competence. Differences in expectations appear to correlate with discipline. Syllabi provided generalized guidance for preceptors with regards to assessment; thus, there appears to be misalignment between course objectives and preceptor assessment. Species specific expectations should be explicit to syllabi and preceptor training.

**Conclusion:** Gaps between course objectives and preceptor assessment have been identified and explored. By understanding the assessment process used by preceptors in pharmacology, curricular designers and course leaders can ensure course and curricular alignment. This study could be adapted to review other specific domains within veterinary medicine and other healthcare fields.

**Take-home Message:** Aligning assessment with course and curricular objectives optimizes student learning. This study demonstrates a scholarly way to approach the assessment process of third party clinical preceptors, identify gaps and influence future course revisions. This process can be adapted to other disciplines and used as a routine part of curricular review.

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#3FF08 (1886)
**Programmatic assessment for the DVM competency-based program at the University of Montreal**

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*Marilou Bélisle, Faculté de l'éducation, Université de Sherbrooke, Sherbrooke, Canada*

**Background:** Programmatic assessment was implemented for the competency-based DVM program to optimize and combine learning with decision making and curriculum quality assurance. Published recommendations (Vandervleuten et al. MedTeacher 2015) were followed to validate that all essential elements had been considered in our curricular reform.

**Summary of Work:** Recommendations to develop a master plan for assessment, promote meaningful feedback, provide mentoring to learners, ensure trustworthy decision making, organise intermediate decision-making and use the assessment process for curriculum quality assurance were compared to the educational concepts and tools developed for the new competency-based program.

**Summary of Results:** A competency development and evaluation pathway (CDEP) was designed to place “assessment for learning situations” (ALS) within existing courses and rotations of the program. Learners reflect on their progress within the CDET using a mentored portfolio.

**Discussion:** The CDEP provides data for internal quality assurance and external accreditation requirements. The majority of published recommendations for the implementation of programmatic assessment were validated among the educational tools and procedures developed for the competency-based DVM indicating that this approach was successfully implemented.

**Conclusion:** Following published recommendations for implementing programmatic assessment was an effective means of validating the pedagogical concept and tools developed for the competency-based DVM program.

**Take-home Message:** The competency-based DVM program at the Université de Montréal rests on a valid programmatic assessment approach.
#3FF09 (271)
All aboard the programmatic assessment express! First stop: learning portfolio

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Background: In 2016, School of Medicine (Fremantle) of the University of Notre Dame Australia began to think about a different way of assessing students, making a transition from a small number of high stakes assessments to a larger number of low stake assessments or data points. This paper shares its journey.

Summary of Work: The existing portfolio was re-engineered, providing students with a range of opportunities to monitor their learning across domains of Personal and Professional Development, Population and Preventative Health, Basic and Clinical Sciences and Communication and Clinical Practice. These opportunities were mapped against annual goals which in turn articulate into graduate attributes.

Summary of Results: The enhanced learning portfolio was implemented for first year medical students in 2017. The change precipitated a shift in thinking about how the portfolio can help scaffold student learning. A new mentor role was established, along with tools to help students interpret data points and gauge progress against annual goals.

Discussion: Many challenges emerged in the first year of implementation, including how to: technically support a shareable portfolio; assure quality mentoring; encourage staff and student buy-in; provide student choice in the development of data points. In confronting these challenges, the portfolio is driving change towards more sophisticated and enlightened assessment processes.

Conclusion: Broadening and deepening the learning portfolio has both enriched student learning and provided a greater level of confidence in decision-making around student progression. The enhanced portfolio currently complements end-of-year examinations, but the mix between high and low stake data points will evolve now that a systematic framework in in place.

Take-home Message: Educational literature suggests that learning portfolios have multiple dimensions. They can store and manipulate information, provide evidence to demonstrate competence and assist in reflection. This study posits that the learning portfolio can also be a change mechanism, certainly in offering a canvass to imagine sophisticated and enlightened conceptions of assessment.

#3FF10 (1863)
Use of Test-Enhanced Learning Method in Teaching of Electrocardiogram Interpretation

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Background: Electrocardiogram (ECG) interpretation is an important skill for physicians. The Test-Enhance Learning (T-EL) method, which emphasizes repetitive information retrieval and feedback, may promote learning of this skill. The aim of the study was to determine the students’ attitudes and knowledge of ECG interpretation skill that impacted by the T-EL method.

Summary of Work: Fourth-year medical students at Chulalongkorn University participated in a 1-hour ECG lecture. They were asked to review course contents using self-study tools, including one developed by the T-EL method (ECG-T-EL). Four weeks later, the student’s attitude and the students’ knowledge were evaluated using 4 point-Likert scale questionnaire and ECG exam.

Summary of Results: 186 students were enrolled. ECG-T-EL was the most common choice that improved their confidence, memory, and learning experiences on the average scores of 3.6, 3.5 and 3.3, respectively. Knowledge of the students using ECG-T-EL more frequently (3rd-tertile) is significantly higher than the least frequent users (1st-tertile) with p-value = 0.04.

Discussion: ECG-T-EL, an educational tool composes of ECG tests with immediate answers and explanation, requires the students to exercise their ECG interpretation. Therefore, students have to go through the process of retrieving their memory (the main idea of the T-EL) which leads to the skill-retention that improves memory and user’s confidence.

Conclusion: The ECG interpretation skill can be improved by focusing on T-EL method. More frequent usage leads to more prominent result. Moreover, learning from the ECG case studies with immediate feedback helps building the students’ enthusiasm and confidence in ECG interpretation.

Take-home Message: Like many other skills in medicine, ECG Interpretation skill can be taught in various methods other than traditional passive didactic lecture. In a present study, the ECG interpretation skill can be improved by T-EL methods of learning which students were enthusiastic to become an active, self-learning learner.
#3FF11 (1872)
French innovative national medical ranked exam: The organisation of a local mock exam by an intergenerational partnership

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Background: French Medical studies are sanctioned by an innovative national ranked exam on touchpads, that takes place simultaneously in the 35 French faculties. This exam determines students’ specialty and town of residency according to their ranking. Such high stakes make students seek additional training, under exam conditions.

Summary of Work: Under student impulsion, a mock exam was organised at Lyon-Est faculty of Medicine. A close collaboration between students, residents, teachers and administrative personnel enabled this real condition mock exam. Students had access to the necessary equipment (Touchpads) and residents created the subject based on their own experience of it.

Summary of Results: Residents’ and teachers’ collaboration ensured the subject’s quality: requirements of the national ranked exam were met in a 3-hour-long test. Detailed answers were given and explained by residents after the mock exam. 496 students (more than half) participated, of which 96% were satisfied by the event and the 111 questions.

Discussion: The collaboration between teachers’ expertise and the experience of the residents who passed this exam only a few years ago produced a high quality mock exam. The energy and motivation of students who organised this test triggered a massive participation for this first, and successful, edition of extra training.

Conclusion: This successful organisation was possible thanks to the skills of everyone implicated in this mock exam: students’ motivation, residents’ willingness to help and experience, teachers’ expertise and support. This illustration of efficient collaboration between actors of the faculty, could set an example for future projects.

Take-home Message: Using touchpads and an online questions database, students, residents and teachers get involved in an innovative assessment method. So let students take charge of their training, their motivation and ideas could surprise you, particularly in an innovative context!

#3FF12 (2365)
A qualitative description of the nature of limitations evident in MSc dissertations

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Derek Jones, University of Edinburgh, UK
Tim Fawns, University of Edinburgh, UK
Michael Ross, University of Edinburgh, UK

Background: In marking MSc dissertations, our experience is that students often make the same mistakes seen in previous assignments. In our aim to improve student work we sought to understand what these common mistakes are and how we might help students to avoid them.

Summary of Work: Markers’ feedback on 86 MSc in Clinical Education dissertations, submitted between 2009-2016, was analysed in relation to the limitations identified with students’ work. Limitations highlighted by assessors include students’ failure to provide detail, persuade, align, and synthesise their work. A checklist was produced, with accompanying guidance for students and supervisors.

Summary of Results: Grades awarded to students are influenced by generic academic skills such as developing an argument, in addition to competent completion of components of the dissertation (methodology, literature review etc). Results focused on identifying common issues that have had a negative impact on the marks received for past dissertations.

Discussion: Rather than simply identifying common limitations or discerning their relative frequency, we explored the nature of those limitations with a view to understanding common weaknesses; putting us in a stronger position to advise students not just on what needs to be done but how they can learn to do it.

Conclusion: Our analysis has provided a basis for our checklist and guidelines to help to ensure that dissertations cover all the key elements; simply describing the necessary elements does not guarantee a good mark. Our findings should be used as a basis for conversations with future dissertation students.

Take-home Message: We can now advise students about both what needs to be done and how it should be approached, when submitting a masters dissertation. The checklist will also benefit new supervisors and markers on the nature of masters level scholarship.
The assessment of Metacognition: a view from the other side

Ruy Souza
Wendell Rabelo

Background: Metacognition refers to the idea of thinking about "thinking", knowing about one's own knowledge, and reflection about actions. Its roles in the learning processes are well known in literature, as well as its influence on students performance, therefore its assessment should become a important part of the teacher task.

Summary of Work: Volunteers answered six consecutive MCQ tests on clinical neurology, defining their confidence level in answering each item correctly. The results were categorized in four variables described: usable knowledge, casual score, hazardous ignorance, and usable ignorance. The categories were compared with the students results in the MCQ test.

Summary of Results: 1798 itens were analysed. Numbers found for usable knowledge and usable ignorance are satisfactory, being 62.7% and 44.2%, respectively; however, when students with higher and lower grades are studied separately, an alarming difference is noted between cognition and metacognition. There is also some correlation between some item parameters and metacognition.

Discussion: Assessment of metacognition reveals that there is difference between two opposite group of students. That would not be found if students were evaluated only in a score system, since the majority of students would have passed. Also, attention should be given to item characteristics, as it may influence student’s metacognition.

Conclusion: Students should not to be assessed only in a traditional perspective, focused basically in cognition. Instead, teachers should start to assess metacognition, in order to understand differences between students performance as a way to a better formative assessment, assistin students who need a greater educational support.

Take-home Message: Students must have their metacognition assessed, as it may reveal aspects of the learning process that traditional system fails to inform.

Triple Jump Assessment Revisited: Automated System Design for its Application at Facultad de Medicina, UNAM

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Background: An automated system was designed for the application of an assessment similar to the “Triple Jump” in two medical curriculum courses based on PBL. Once the “Triple Jump” structure modification was made with 6 cases and the system was developed, it was applied to 320 students.

Summary of Work: The system includes publicly licensed software instruments; a systematization scheme to apply exams constituted by an administration sequence used to register items or cases, level and type of answer; an application sequence necessary to solve the exam; monitorization and results output reviewing student advancement and statistical results.

Summary of Results: A pilot study with 40 students assessed the system’s efficiency that permitted the correction of problems found during the application – font and title size and color. No problems were detected in monitorization and results output. Base on the above it was applied to 320 students.

Discussion: The collaborative work developed in this project is an essential element in obtaining positive results. Problems found were corrected.

Conclusion: The challenge of designing an automated system for the application of the “Triple Jump” Assessment to a large number of students generated collaborative work between systems engineers and medical professors. Free software was used, specific applications, real-time monitorization and statistical results.

Take-home Message: It is feasible to design automated systems according to specific types of exams, utilizing free software while at the same time favoring collaborative and interdisciplinary work between engineers, medical professors and education specialists.
Validation of the German “Teamwork Emergency Assessment Measure” TEAM – a study with student and expert raters

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Background: The “TEAM” (Teamwork Emergency Assessment Measure) is an established, valid and reliable tool to measure the performance of medical teams. However, up to now no German equivalent exists to quantify team performance in emergency settings. Therefore, our goal was to translate TEAM into German and to validate this new version.

Summary of Work: TEAM was translated using the TRAPD-methodology. The German version was consented by two investigators and a native speaker. For validation, performances of seven teams of final-year medical students, who underwent six emergency simulations each, were rated by two independent raters, who had undergone a rater training, using the German TEAM.

Summary of Results: Pairs of an expert and a student provided independent ratings. Our analyses showed a Cronbach’s alpha of alpha=.94 and an inter-rater-reliability of ICC=.68. Students rated performance consistently and independently of their input, whereas experts rated performance more similarly. A principal component analysis showed one underlying factor, explaining 64% of variance.

Discussion: The translated tool has an excellent internal consistency and a moderate inter-rater-reliability. This moderate reliability may be a hint that students and experts have different baselines to evaluate team performance, with the students generally providing higher ratings. “Teamwork” was confirmed as the sole underlying construct, like in previous studies.

Conclusion: The original TEAM is a validated and established tool to assess medical team performance. Our German translation shows comparable psychometric properties and can therefore be used in future teamwork-related studies. In our study, student raters showed a tendency to more lenient ratings, which should be further investigated.

Take-home Message: Comparable to the original TEAM, the German TEAM is a reliable and valid tool for measuring teamwork in emergency situations. Thus, it closes a gap and enables important teamwork-related research in German-speaking countries.
Do the exam and the learning objectives cross-match?

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Asma Mohamed Sharif, Al Neelain University, Khartoum, Sudan
Maha Elamin, Al Neelain University, Khartoum, Sudan
Emmanuel Tanyous, Ministry of Health, Riyadh, Saudi Arabia

Background: The learning objectives are achieved by applying corresponding teaching methods and further assessed via suitable methods. The objective of this study is to evaluate the students’ perception regarding the coverage and the matching of the exam to the intended learning objectives.

Summary of Work: This cross-sectional study targeted 6th year students (n=129) in Al-Neelain university, faculty of Medicine in February 2016 after their final pediatrics exam (Multiple Choice questions, short structured questions, objective Structured clinical exam). Methods used were close-ended questionnaire and structured interview with the head of the department.

Summary of Results: When asked about matching between learning objectives and exam, 60.8% of the students’ response ranged between (no) and (to some extent). Although the exam blueprint was done according to the curriculum document and the contents weight, one third of the students said that the exam covered the learning objectives.

Discussion: There is discrepancy between students’ perception and exam blueprint formation with regards to learning objectives coverage and matching. This may reflect problems in learning process in terms of quality of teaching and application of curriculum guidelines during the academic year.

Conclusion: The learning objectives and their forms of assessment do not match, according to the examinee’s perception. This gives impression that deeper issues related to teaching and curriculum are most likely present.

Take-home Message: Monitoring of educational processes and evaluation of the curriculum is essential to ensure achieving graduates’ competencies.
#3GG Posters: Curriculum Evaluation

Location: Hall 6

#3GG01 (1167)

Students' and Graduates' Viewpoints on the Compulsory Specialized Courses Syllabus in Reproductive Health PhD Program: A Qualitative Study

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Babak Hamidfar, Rahe-salam Research Institute, Isfahan, Iran

Background: Evaluation is one of the most common ways of improving educational systems. This qualitative study investigated students and graduates' viewpoints on the compulsory specialized courses syllabus in reproductive health PhD program.

Summary of Work: In this qualitative study with conventional content analysis approach, the data were gathered from 7 graduates and 16 PhD candidates of reproductive health through individual semi-structured interviews and evaluation of specialized courses and curriculum content analysis questionnaire in 2013-2014 academic years.

Summary of Results: Three main categories were extracted from participants' descriptions of compulsory specialized courses syllabus and the content analysis of the curriculum: the necessity of curriculum conformity to the mission of reproductive health, reinforcement of the society-oriented and clinical nature of specialized courses, and the revision of specialized courses' offering order.

Discussion: Participants stated that the existing curriculum is not sufficiently adequate to achieve the reproductive health's mission. The results showed that specialized courses including sexual health, social factors in reproductive health and middle age health had not been taken into account.

Conclusion: It is necessary to revise the curriculum of reproductive health PhD program. It is suggested that specialized courses should be revisited and developed in order to fulfill the mission of this field. It is essential that the society-oriented and clinical nature of the courses be reinforced.

Take-home Message: Policy makers should pay more attention to the revision of the curriculum and implement formative and summative assessments consistently in order to promote the quality of reproductive health PhD program.

#3GG02 (1337)

Possibilities of student evaluation - revealing the impact of adjacent subject-specific modules on an integrative module

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Philip Bintaro, MHH, Hannover, Germany

Background: Many modules in our study program are structured according to subjects. But in each year there is at least one interdisciplinary module. These integrate the training objectives across subjects and stress the learning spiral in the program. The relationship between grades for students and the student evaluation is also investigated.

Summary of Work: In the third year of study, “Clinical_Medicine_I” as a hinge between pre-clinical, clinical-theoretical and clinical-practical subjects provides the pathophysiology, clinic and therapy of 15 diseases. Because modules rotate during the academic year, each is offered three times. Students were examined at the end of each module and evaluate immediately afterwards.

Summary of Results: The fact that the results fluctuate constantly over these three measurement points, had been shown in an earlier study. The new study examines whether the assessment in the study year depends on the distribution of the grades or the time in the academic year when the evaluation takes place.

Discussion: The module structure is evaluated differently by the students in the context of their individual rotation sequence at the three measurement points. The distribution of grades as an indicator of the difficulty of the assessment, on the other hand, had a smaller effect on the evaluation by students.

Conclusion: Although the different position of the module was known from the beginning, depending on the rotation sequence in the study year, only one teaching concept was developed by faculty members and is taught at all times. The student evaluations reflect this in the answers to various questions.

Take-home Message: Student evaluations are suitable to detect suboptimal module realizations in relation to the fit of the module in the course of studies.
#3GG03 (1631)
Implementation of an online evaluation and assessment system for all AO veterinary educational events worldwide

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Toby Gemmill, AOVET Education Commission, Dübendorf, Switzerland
Mark Glyde, AOVET Education Commission, Dübendorf, Switzerland
Amy Kapatkin, AOVET Education Commission, Dübendorf, Switzerland
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Background: AOVET offer a wide range of educational events for fracture management and other pathologies in both small and large animals. The education commission, with a member from each main region where AOVET offers events, designed a new set of standard questions for administration before and after all educational events.

Summary of Work: Five questions were created to gather participant information, e.g., years of experience, type of practice, self-assessed expertise. Seven postevent questions were designed to gather ratings on educational impact, learning objectives, content, faculty, etc.

Participants rate present and desired ability. The online system was introduced in 8 courses worldwide to date.

Summary of Results: 307 of 400 participants on 8 courses completed the precourse questions (77% average, range 52-95%). Two thirds completed the questions in <5 minutes. 171 participants completed the postcourse (63% average, 42-87%). 30% took 10 minutes. Every report was analyzed by the course chairperson.

Discussion: The response rates achieved in these first courses to use the new online system are quite high considering it is a new process involving varying audiences in international and national events. The time required by most responders is reasonable. Full rollout in all events requires ongoing communication and support.

Conclusion: The implementation of an online evaluation and assessment system for all AO veterinary educational events worldwide is a feasible method of gathering information, with response rates reaching good levels for making decisions before and after educational events. Translation of materials will help reach optimal response rates in all countries.

Take-home Message: Implementation of a standard set of pre and post event questions provides data to enable an international organization to adjust course content to meet specific participant gaps and to monitor and continually improve its curriculum and educational offerings by identifying trends and needs at global, regional, and national levels.

#3GG04 (1852)
Can we do it? Finding a practical approach to curriculum evaluation in a large residency program

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Background: The literature suggests that a retrospective pre/post self-assessment can be used for curricular evaluation, mitigates response shift, and correlates better with performance than a traditional pre and post-intervention self-assessment (Skeff K, et al; Hoogstraten J; Levinson G, et al).

Summary of Work: The Pediatric Primary Care Curriculum (PPCC) implemented a retrospective pre/post survey focused on 32 topics. One or two seminal statements described desired resident performance for each topic. Fifteen minutes of curricular time were allocated for the residents to complete the survey. Pre and post responses were compared with paired t-tests.

Summary of Results: 71/82 residents completed the paper survey (only 1/3 of residents completed the same survey online the previous year). Resident self-assessment of their clinical performance increased for all 37 areas of clinical performance (all p values <0.001), showing the value of the curriculum.

Discussion: The greatest increases in self-assessed ability to perform were for Literacy Development, Poverty, and Tuberculosis Screening, indicating the curriculum’s strength on these topics. The smallest increases were for Rhinorrhea, Antibiotics in Primary Care, and Temperament.

Conclusion: The residents identified Rhinorrhea, Antibiotics in Primary Care, and Fever <36 months as areas in which they performed well even before the PPCC, so these topics were omitted for the following year. Temperament was identified as a topic for curriculum revision to improve learning.

Take-home Message: The retrospective pre/post survey approach was easy to implement in a large residency program. It gave valuable information about the effectiveness of the curriculum based on resident performance and the data triggered targeted revision of some curriculum topics.
The assessment of performance of graduates from Naresuan Medical Faculty during their first year of practice: a three-layered-approach of feedback

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Sirikasem Siriluk

Background: The Faculty of Medicine, NU, aimed to train healthcare staff to alleviate the medical assistance in rural area. In preparation, the Faculty highlights the importance of feedback system to help its executives on policies concerning. Hence, a survey has been conducted using three layers of approaches in their 2014-year graduates.

Summary of Work: A cross-sectional survey of 73 doctors who graduated in year 2014 was carried out. Sample group is located within 11 provincial hospitals in the lower northern area of Thailand. The questions were using Likert scale and constructed to identify performances in three different approaches: (I) 5 domains of learning (II) 7-star-characteristics and (III) 5 smarts identities.

Summary of Results: The overall satisfaction of the performance (mean) 4.32±0.59. In 5 domains: ethics and moral = 4.44±0.59, knowledge = 4.28±0.61, cognitive skills = 4.27±0.62, interpersonal skills and responsibility = 4.41±0.56, and numerical analysis, communication and information technology skills = 4.28±0.57. The 7-star-characteristics: Empathy = 4.45±0.58, Managerial skills = 4.41±0.56, Care provision = 4.24±0.60, Decision making = 4.24±0.60, life-long learning = 4.27±0.65, community leader role = 4.30±0.63 and communication skills = 4.33±0.55. In 5 smarts identities: smart at work = 4.34±0.59, smart in people skills = 4.40±0.58, smart ideas = 4.28±0.64, smart life skills = 4.35±0.61 and smart problem solving = 4.27±0.62.

Discussion: The overall satisfaction of Naresuan’s graduated doctors was high in all 5-domains and the 7-Star-characteristics (80-90% points each), reflecting that our curriculum not only successfully fulfilled the national qualification framework for medical training, but also indicated other highly desired professional qualities within healthcare area.

Conclusion: The overall satisfaction of Naresuan’s graduated doctors was high, reflecting that our curriculum not only successfully fulfilled the national qualification framework for medical training, but also indicated other highly desired professional qualities within healthcare area.

Take-home Message: Reflecting of curriculum is not only successfully fulfilled the national qualification framework for medical training, but also indicated other highly desired professional qualities within healthcare area.

Validation Process for a novel Curriculum Evaluation System in Venezuela

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Background: In order to improve quality and social relevance of medical education, a curricular change to competency-based education was proposed in “Luis Razetti School of Medicine”. Our school of medicine, not used to curriculum evaluation, needs a novel and low budgeted curriculum evaluation system to build data on curriculum needs.

Summary of Work: We performed a validation process of four scales that comprise evaluation by: last year students, last year medical teachers, recent graduate medical doctors from this School of Medicine and first year postgraduate teachers. All scales designed to assess the success of actual curriculum and detect improvement opportunities for the future.

Summary of Results: In order to determine its content validity, Lawshe’s formula was used. In terms of reliability, the Cronbach Alpha Method was used. The results show an adequate content validity and construct, as well as high levels of reliability.

Discussion: These questionnaires consists of 13 questions, and are aimed at graduate and postgraduate medical teachers and students in Luis Razetti School of Medicine, whose main objective is to determine the contribution of the curriculum to professional formation for Venezuelan needs.

Conclusion: The School of Medicine Luis Razetti will generate for the first time statistically valid data about the usefulness of its curriculum for the training doctors in Venezuela.

Take-home Message: These instruments we propose can serve as a basis for similar work in other universities and faculties, thus establishing a curriculum evaluation policy that until now mainly is inexisten.
Follow up assessments of newly graduated physicians for improvement of the medical education program

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Background: The main objective of Udonthani Medical Education Center is to produce medical graduates who have sufficient skills and knowledge, and also work happily in the current health system. Student’s feedback is one of essential ways to evaluate and thus help to improve our medical education system.

Summary of Work: Self-assessment questionnaires were collected from newly graduated physicians during 2013-2016. Fourteen area of professional skills together with level of happiness during their work life were evaluated. Moreover, suggestions for improving teaching methods of each subject were also asked specifically.

Summary of Results: Results from 81 questionnaires revealed that newly graduated physicians had low confidence in 4 area: using evidence-based medicine in treatment, dealing with medico-legal cases, health promotion & disease prevention, and dealing with ethically sensitive cases. The majority of them feel “somewhat happy”. Positive trend was found over 4 years.

Discussion: The results reflected that our recent medical curriculum had weak points in the aspects of health promotion and prevention, experience in managing patients with complicated legal and ethical issues and soft skills. Without changing the main curriculum, the lacking skills must be add up in all opportunities including extracurricular learning.

Conclusion: Direct feedbacks from newly graduated physicians can help pointing out the weakness and unsatisfactory points in medical teaching system, thus could lead to better teaching methods, which consequently results in more competent and happier new physicians each year.

Take-home Message: To ensure quality of medical education, student assessments have to cover all possible skill area of desired physician, and have to be done regularly and continually from undergraduate until postgraduate.

Assessing residents in the workplace: A confirmatory factor analysis

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Background: Assessing medical school graduates in residency is an important outcome measure of an undergraduate medical education program. Our graduates are rated annually at the end of PGY-1 by resident program directors using a 9-item instrument. Exploratory factor analysis produced a two-factor model (clinical acumen & human sensitivity).

Summary of Work: Performance data of recent graduates (Classes 2012-2015) were collected and subjected to a confirmatory factor analysis to validate the underlying factor structure of our assessment tool. Scale reliability was also examined. Each participant provided written consent allowing us to obtain their data.

Summary of Results: Post-graduate assessments were collected on 493 (73.3%) graduates. Fit indices included comparative fit index (CFI) = 0.98, root mean square error of approximation (RMSEA) = 0.09 (0.07 – 0.11), standardized root mean square residual (SRMR) = 0.03 and normal fit index (NFI) = 0.97. Cronbach’s alpha ≥ 0.93.

Discussion: The two-factor model (clinical acumen and human sensitivity) for assessing medical school graduates at the end of PGY-1 was supported by the fit indices suggesting that the model is plausible.

Conclusion: The confirmatory factor analysis corroborated the two-factor solution previously generated by an exploratory factor analysis. The clinical acumen factor is comprised of 5 items while the human sensitivity factor is comprised of 4 items.

Take-home Message: The confirmatory factor analysis supported the construct validity of our 9-item instrument used to assess the performance of medical school graduates in residency.
Comprehensive program evaluation based on Kirkpatrick model

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Background: In order for program evaluation to be performed in a holistic and effective way, it is necessary to integrate planning, formative, and summative evaluation. The purpose of this study was to analyze the case of a comprehensive program evaluation on a continuing professional development program for health professionals in Laos.

Summary of Work: Kirkpatrick model was used for planning, formative, and summative evaluation. Planning evaluation has played an important role in the planning and development of the program, and formative evaluation has been used to improve the program through ongoing implementation. The summative evaluation was conducted after the end of the program.

Summary of Results: The comprehensive program evaluation results showed that there was a continuous increase of the satisfaction and the transfer of the trainees, especially in the early period of the program. The medical practice in the district hospitals and the relationship among the central, provincial, and district hospitals were much improved.

Discussion: The continuing professional development program, which was planned and implemented based on the comprehensive program evaluation model, was effective according to the evaluation results. This study showed that it is possible to use Kirkpatrick model by performing all the roles of planning, formative, and summative evaluation in a comprehensive way.

Conclusion: Through this study, it will be possible to expand the theoretical concept about the comprehensive role of program evaluation beyond the existing divisional concept. In addition, comprehensive evaluation of educational programs could be expanded, which will ultimately contribute to the quality improvement of continuing professional development programs for health professions.

Take-home Message: This study showed that it is possible to use Kirkpatrick model by performing all the roles of planning, formative, and summative evaluation in a comprehensive way. Comprehensive evaluation of educational programs will contribute to the quality improvement of continuing professional development programs for health professions.

How do MD students rate their competencies at the time of graduation? A national survey in Iran

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Background: Each year about 6000 students graduate from MD program (in 63 medical schools) and receive permission to work independently in Iran. There are some concerns about their competencies as well as the performance of different medical schools in providing enough training that have been addressed in this survey.

Summary of Work: A self-administered questionnaire addressing expected MD competencies in four categories (Management of 191 common disease and problems, 39 procedural skills, 15 issues in health system management, 16 personal and communication skills) distributed among a random sample of medical students who would be graduated within two months in 45 medical schools.

Summary of Results: According to the 445 completed questionnaires from 35 medical schools, mean scores were between 55-85% of total score. In procedural skills, health system management, and personal skills, students of big and small size medical schools rated themselves higher than those of medium size schools.

Discussion: Students’ self-assessment of competencies reflect both previous learning and practice experiences and their self-esteem. It seems that most MD graduate feel enough competent to work independently. Also students in small schools (although with less admission scores, but probably experiencing closer contact to faculty members and clinical environment) were more confident.

Conclusion: Self-assessment surveys at the time of graduation may provide good information about schools’ performance and curriculum outcomes. According to this study in Iran, more focus on learning experiences in medium size schools is essential. Also individual schools should investigate learning outcomes that less attended and plan to improve the process.

Take-home Message: Graduation surveys may be modified to address program-specific learning experiences and outcomes that cumulatively reflect program success at the school level. A global self-assessment about competencies may complement it, too. This data could be used both for curriculum revision and planning targeted professional development programs in the health system.
Advancing Medical Education Globally: A leadership-initiated project to examine one university’s medical education processes in order to enhance medical education capacity globally

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 Onala Telford
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**Background:** Duke University School of Medicine is a top-ranked USA medical program which seeks to prepare engaged physician scientist leaders to meet global healthcare demands. Leadership initiated a year-long project to investigate the school’s processes and capacity for supporting global partners interested in addressing their local medical education needs.

**Summary of Work:** A project team consisting of a physician, a project manager, and a PhD researcher in education investigated how medical education is provided at Duke. The intended outcome of the project was to support future projects with global partners via the analysis of primary resources and interviews with subject matter experts.

**Summary of Results:** Seventy interviews of education experts were completed across the university’s medical campuses in the USA and Singapore. Interviews were transcribed and coded. Data was assimilated to create 11 logic models depicting the processes and external factors involved in the comprehensive provision of medical education.

**Discussion:** In addition to understanding the processes involved, the logic models provide insight into the impact of culture and context in the provisions of medical education. By analyzing the interplay of process and cultural contexts Duke is able to guide others to enhance educational efforts and meet their unique needs.

**Conclusion:** Investigating the university’s medical education programs on two continents allowed leadership to collect valuable resources and analyze the complex processes involved in providing high-quality medical education. With these tools in place leadership now is prepared to strategically support the needs of global partners to advance medical education.

**Take-home Message:** Culture and context play a role in the provision of medical education. By analyzing the impact of culture and context across Duke’s global campuses, this comprehensive approach to analyzing how education is provided will enable the university to assist other countries in developing their initiatives within their own unique context.

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Assessing Student Attitudes of Interprofessional Learning Experiences: A Mixed Methods Approach

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**Background:** Interprofessional education (IPE) is a focused interest of all health professions programs at our institution. The assessment of our IPE has historically focused on gaining feedback about the individual activity, rather than gathering information about learners’ experiences and attitudes across the curricula. This project seeks to address this gap.

**Summary of Work:** This project encompassed a mixed methods approach. Qualitatively, 4 focus groups within a single cohort of matriculating learners across health professions programs were conducted. Quantitatively, all students within same cohort were invited to complete the Interprofessional Attitudes Scale (IPAS), which is aligned with the Interprofessional Education Collaborative (IPEC) competencies.

**Summary of Results:** Qualitative analysis from transcripts revealed learners identified all IPEC domains. Yet, their comments most often centered around communication, teamwork and delineation of roles/responsibilities. Quantitative analysis of IPAS data showed strong agreement (mean = 6.5) with items related to all subscales, with exception of the Interprofessional Bias subscale (mean = 4.8).

**Discussion:** Students felt a high quality IPE experience is characterized by activities that dispel misconceptions of other professions, are mandatory and interactive. Moving forward, we will replicate focus groups and survey administration annually until cohort graduation. In focus groups, we will address lower ratings on the IPAS Interprofessional Bias subscale.

**Conclusion:** We learned from focus group participants that students consistently desire to engage in meaningful IPE experiences as an expectation of their curricula. Additionally, they prefer real-life IPE experiences, modeled by healthcare teams. Focus group themes were consistent with results from the IPAS.

**Take-home Message:** Student expectations are valuable in strategic planning for future IPE activities. Analyses of qualitative and quantitative outcomes help establish baseline curricular offerings, inform the refinement of IPE and provide faculty an indication of student expectation. These results may inform other institutions seeking to design IPE activities across health professions programs.
### #3GG13 (2979)
QR code electronic feedback - saving time, saving trees

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**Background:** Feedback is an essential part of teaching assessment, vital to improve both students and teachers experiences. Studies show that electronic forms often have poor response rate therefore to overcome this simple but significant hindrance we developed an instantaneous QR code system, which linked to an online survey device.

**Summary of Work:** Approximately 200 hundred hours of teaching sessions have been surveyed using our QR system and data collection is continuing until the end of the academic year. Response rates are being calculated and time, energy and financial savings estimated using online resources and experiences of our administration staff.

**Summary of Results:** The study is not yet complete however is currently showing response rates of 78% vs 33% when compared with URL feedback tools alone. Analysis of 33 students responses suggests 91% are in favour of QR feedback over a paper, with themes of ‘ease’ and ‘saving paper’ being independently suggested.

**Discussion:** Following the completion of project the authors hope to show that this is not only an innovative and financially viable alternative to other forms of feedback collection but is also acceptable, and indeed preferred by students. Time, energy and financial savings including staff time are currently being calculated.

**Conclusion:** This study continues and aims to be complete by 31st July 2017. At this time an entire academic year of teaching will have been reviewed and analysis generated.

**Take-home Message:**  • Converting to QR electronic feedback produces higher response rates than URL or paper systems;  • Significant savings on time, carbon footprint and money can be made using this system;  • Students find this system not only acceptable but preferable.

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### #3GG14 (2024)
Is feedback a self-serving crankshaft?

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**Joseph Gafton**  
**Lisa Murphy**  
**Hannah Costello**  
**Gabriel Doctor**  
**Ibrahim Sheriff**

**Background:** Collecting student feedback forms is thought to improve teaching quality by facilitating student and tutor reflection. However it is unclear how often students complete feedback forms thoughtfully producing insightful responses. This study asks: are feedback forms constructive, or is it a crankshaft exercise with a self-serving purpose?

**Summary of Work:** In a busy London district general hospital standardised feedback forms from Foundation doctor-led teaching sessions were analysed over a one year period. The number of open questions left blank was collated and deviation in Likert scale responses were calculated. A focus group asked students about their opinions around giving feedback.

**Summary of Results:** Feedback from the teaching sessions was collated. Free text questions were frequently left blank, and Likert scales were identical for all questions. Final year students provided more critical feedback than year 3s. The more intimate the teaching session the better the quality of feedback.

**Discussion:** Feedback helps students and tutors to reflect on knowledge gained and areas to improve respectively. However, feedback is often viewed as a ‘tick box exercise’ at the end of sessions. Time given for students to complete feedback is crucial, as well as raising awareness of the importance of good feedback.

**Conclusion:** Feedback is important but is frequently disregarded. Standardisation and improvement of the feedback process, together with greater student engagement and more time for students to complete could improve feedback. We present an updated, improved feedback form based upon our findings.

**Take-home Message:** Feedback is often a missed opportunity for reflection. In order to improve feedback accuracy, students should be afforded encouragement and time to reflect on the teaching session. We suggest standardisation, and quality improvement of feedback forms to ensure feedback is more than a self serving exercise.
Evaluating Transformative Outcomes in Academic Medicine: Using the "Most Significant Change" Technique at the University of Zimbabwe College of Health Sciences

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**Background:** Evaluating outcomes from medical education programs intended to transform attitudes or influence career trajectories using conventional methods of monitoring is often difficult. To address this problem, we adapted the most significant change (MSC) technique to assess the impact of the Medical Education Partnership Initiative (MEPI) at the University of Zimbabwe.

**Summary of Work:** Evaluators from the Universities of Zimbabwe and Colorado collaboratively applied the MSC technique to systematically examine levels of personal significance and positive transformation attributed to MEPI participation. We conducted and analyzed 28 interviews and prepared participant profiles with representative quotes. Stakeholders selected themes and stories representing the most significant changes.

**Summary of Results:** Six outcomes (aligned with MEPI goals) were expected—becoming a better teacher, becoming a better clinician, increased interest in teaching, increased interest in research, new career pathways (including commitment to practice in Zimbabwe), and improved research skills. Three themes were unexpected—increased confidence, expanded Interprofessional networks, and improved interpersonal interactions.

**Discussion:** Most MEPI program leaders reported our results gave them a greater understanding of the personal and cultural impacts of the programs than they would have gotten from conventional methods alone. However, the MSC is a time-intensive method and likely not cost-effective for monitoring for accountability purposes.

**Conclusion:** We found MSC to be a useful and systematic evaluation approach for large, complex, and transformative initiatives. MSC seemed to encourage participant reflection, support values inquiry by program leaders, and provide insights into the personal and cultural impacts. Additional trial applications of the MSC technique in academic medicine are warranted.

**Take-home Message:** In our study, the MSC technique contributed to meaningful program evaluation. It appears to be especially suitable to assess “hard to measure” outcomes (e.g., Interprofessional collaboration, leadership, empathy, professionalism, cultural change). MSC results have the potential to contribute to greater understanding of the effective preparation and support of medical educators.

Using the Most Significant Change method to show the impact of Ontario’s first hospital-based student-led Concussion Clinic

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**Background:** Holland Bloorview Kids Rehabilitation Hospital launched the first interprofessional student-led concussion clinic in 2016. Comprised of rehabilitation science students and supervised by hospital staff, this clinic provides education and research around concussion management. We used the Most Significant Change method to understand the value of this clinic to Holland Bloorview.

**Summary of Work:** The Most Significant Change Method included 5 phases: 1. identified individuals/groups exposed to the clinic; 2. solicited change stories from a sample of those individuals; 3. validated the stories and generated a theory of impact for the clinic; 4. determined next steps for the clinic; 5. shared our learnings.

**Summary of Results:** Stories of change included the following: 1. increased knowledge of concussion management both from the students and clients/families; 2. improved client outcome through access to research project; 3. increased self-efficacy in students ability to collaborate with clients and families around concussion care; 4. a reduction in “time to treatment”.

**Discussion:** Stories of change and impact came from all stakeholder groups involved with the clinic. The program impact theory describing how the clinic was achieving impact was visually rendered. Hopes for the clinic’s future were well articulated and barriers/opportunities for growth were clearly outlined by those interviewed.

**Conclusion:** This educational model is a living blend of research, clinical care and education. Early engagement with all stakeholders is critical to its success. Future possibilities for the clinic continue to emerge and are directly dependent on the ongoing telling of the impact story of the clinic.

**Take-home Message:** This clinic could be the blueprint for other similar clinics in the future. The clinic is part of a complex education and healthcare system and requires adaptability and the purposeful collection of information to show its value so that next steps can be determined and its potential can be realized.
#3GG17 (853)
We Are All in This Together: Creating a Professional Development Conference for Premedical Advisors

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**Background:** For 40 years, medical schools across Kentucky offered a biannual conference for premedical advisors providing updates on selection practices and changes in the medical school settings. Recently, advisors requested a refocus on premedical preparation at the college level, departing from updates on research, clinical and educational missions of medical schools.

**Summary of Work:** Telephone interviews were conducted with all chief premedical advisors across Kentucky. Identified conference topics included: academic preparation for medical school; deficiencies in content knowledge or habits of learning that contribute to academic difficulty; critical thinking skills; learning disabilities; and areas of student development such as teamwork, collaborative learning, and leadership.

**Summary of Results:** Medical school speakers reviewed the medical curricula and discussed academic and personal factors that contributed to success or struggles in performance and discussed prerequisite coursework. Area Health Education Center leaders described pipeline initiatives for high school and college students and use of medical school admission data to target outreach activities.

**Discussion:** Now integrated in the conference programming, advisors presented replicable initiatives. Undergraduate courses on shadowing physicians, research and statistics, and a linked science/humanities course emphasizing critical thinking were described. Talks addressing student preparation and advising included: MCAT preparation, development of electronic advising resources, committee letters, and practice interviews for applicants.

**Conclusion:** Conference presenters represented medical schools, colleges, and AHECs. The revised conference programming provided a broader range of input from institutions across the state. Advisors, faculty, and directors of experiential activities left with inspiration for premedical program enhancements and a stronger sense of their role in the pipeline of medical education.

**Take-home Message:** While it is useful for medical schools to share changes in admissions procedures and advances in their missions, we do not work in isolation. Many partners help prepare students for success in medical school. Understanding what our partners do and how their efforts contribute is important information across all stakeholders.

#3GG18 (3372)
Cognitive Load Theory as a Framework for Examining Written Course Evaluations

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Soma Wali

**Background:** Cognitive Load Theory (CLT) builds upon the cognitive architecture underlying human memory. Three types of cognitive load constrain working memory, which temporarily stores new, incoming information: intrinsic, extrinsic and germane load. Increasingly, CLT is gaining popularity as a framework to design, develop and evaluate curricula in medical education.

**Summary of Work:** Recent studies indicate that cognitive load can be measured with high reliability, based on which tasks reconceptualized to maximize student learning. In this retrospective study, we contend that student written evaluations in a preclinical course can be dissected to gauge cognitive load experienced by students to calibrate instruction.

**Summary of Results:** We examined 122 student comments elicited from 176 first year medical students enrolled in a 5-week preclinical Block, on lectures, labs, and review sessions. Comments were coded according to intrinsic, extrinsic or germane cognitive load. Overall Block evaluations on nine criteria ranged from 3.6-4.5 on a five-point Likert scale.

**Discussion:** We found evidence of moderate to high levels extrinsic load, including references to course organization, clarity, expectations, quality of materials. Intrinsic and germane load were also referenced by students. However, comments also revealed desirable levels of cognitive load. These results provide a structure for interventions to improve curricular delivery.

**Conclusion:** We used CLT to examine the efficacy of instructional tasks embedded in curricula within limitations of working memory via extensive student evaluations. Medical education is challenged by ever increasing, staggering body of knowledge which is overwhelming when designing curricula. CLT offers a robust framework for shaping new and existing curricula.

**Take-home Message:** CLT consolidates decades of research to illuminate the cognitive infrastructure underlying three dominant channels of human memory: sensory, working and long-term memory. CLT can be employed to calibrate instruction anchored on how adults learn across disciplines. Student evaluations examined within CLT framework can be successful in customizing learning interventions.
Background: Program satisfactory survey is an important tool monitoring educational quality and indicating deficiencies of training programs. But there are still few medical students willing to give negative feedback regardless anonymous or not. This research aims to discover if it is cultural basis or educational driven daring to express their opinions.

Summary of Work: Medical students and trainees doing their clinical rotation in E-Da Hospital were classified into four groups- international medical students, ordinary domestic medical students, traditional medicine medical students, and Taiwanese international medical graduates (IMG) completing their education abroad. Satisfactory surveys were conducted anonymously at the end of each clinical sessions.

Summary of Results: International medical students from I-Shou University gave the lowest satisfactory scores with highest diversity (4.16/5, SD=0.62), while ordinary domestic medical students graded high with lowest variability (4.77/5, SD=0.42). Even if divided into departments for evaluation, the international students group also showed significant differences in some departments e.g. neurosurgery and dermatology.

Discussion: According to results, the international medical students showed more confidence to give detailed descriptive feedback, lower satisfactory scores, with higher variability. The other three groups sharing similar cultural backgrounds, regardless their curriculum (medicine vs. traditional Chinese medicine) or educational environment (domestic vs. overseas), tended to express less but score high.

Conclusion: Cultural background seems to affect students’ response behavior more than later pedagogic medical education. Conducting program evaluation, teaching survey or peer evaluation should take this variable into consideration to avoid over-optimistic or misunderstanding when operating clinical training program for culturally diverse trainees in one organization simultaneously.

Take-home Message: 1. Cultural differences can affect the evaluation criterion and feedback behavior of medical students and trainees for their clinical rotation program. 2. Oriental students tend to express less comments and give higher scores for their scoring objects even if they were educated in western society.

#3GG19 (2795)
Dare to speak out: is it intrinsically cultural basis or externally educational driven?

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#3GG20 (943)
Handovers, hierarchy, and why they matter for Scottish medical trainees learning about end-of-life care: Findings from a qualitative medical education study

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Background: Learning to care for dying patients presents complex challenges, e.g. handling uncertainty; negotiating unrealistic expectations. This qualitative study aimed to investigate the perceptions of newly qualified doctors of their undergraduate preparation for end-of-life care, their postgraduate learning in these situations, and barriers to this preparation and ongoing learning.

Summary of Work: Doctors working in South East Scotland who graduated in the previous two years were invited to participate in semi-structured interviews. Experiences and perceptions of learning when patients have deteriorated and/or died were explored. Data was recorded, transcribed verbatim and thematically analysed. All participants have been anonymised by use of pseudonyms.

Summary of Results: All fifteen participants had experience of end-of-life care. Undergraduate preparation was generally perceived as inadequate, e.g. for learning responsibilities of medical trainees in these circumstances. Challenges to workplace learning include lack of opportunity to find out patient outcomes after shift ‘handover’; feeling unable to discuss decision making with senior doctors.

Discussion: Both undergraduate preparation and postgraduate training for end-of-life care have been perceived as limited. Perceptions of hierarchy may reduce tendency to ask questions to senior staff when patients are dying. Furthermore, lack of continuity of care and feedback after the patient has been ‘handed over’ provides a dissatisfying training experience.

Conclusion: Undergraduate preparation for end-of-life care may be improved by explicitly defining the expectations of junior doctors when patients are dying. Work place changes (e.g. to shift system) may facilitate timely feedback and less disjointed learning. Work environments where junior doctors are valued and can comfortably ask questions should be fostered.

Take-home Message: Newly qualified doctors play an important role in end-of-life care, yet face challenges in learning about this complex area. Potential means of mitigating these challenges include: undergraduate teaching on responsibilities of the doctor; fostering workplace training environments with continuity of learning opportunities, and where trainees feel comfortable to ask questions.
Fostering compassion and humanity in medicine

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Background: Compassion in medicine is vital for patients to feel cared for. Evidence suggests that whilst multifactorial much of the low morale experienced by many doctors is due to the pressure of work combined with algorithmic working practices that have squeezed compassion out.

Summary of Work: The authors have employed curricular techniques to enhance compassion in undergraduate medical students in Germany and England. The use of daily mindfulness (non religion) exercises has been used to trigger reflection, to support compassion including of one-self (Berlin - Homerton Cards for daily reflection) and to strengthen attitude for humanity.

Summary of Results: Interviews with students demonstrate that: a, Students find triggers to reflection help them connect to humanity; b, Mindfulness is an acceptable means of supporting them, reducing personal distress & enhancing compassion

Discussion: We have seen through research that mental state where insight is possible about the distinction between self and other, without which we would experience empathic over-arousal and personal distress; this inhibits compassion.

Conclusion: Mindfulness is an useful adjunct to support compassion; listening with full attention; emotional awareness and self-regulation while caregiving; prosocial and positive regard for self and others. Evidence suggests that short-term compassion training increases prosocial behaviour in a newly developed prosocial game.

Take-home Message: The commitment to physical, emotional, mental, spiritual, and relational balance is essential during studies and beyond.

Looking at Medical Humanities Curriculum in Taiwan through the Lens of the Framework of the CanMEDS Milestones 2015

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Background: A radical and extensive curriculum reform of medical humanities has been carried out in Taiwan since the SARS outbreak a decade ago. This study aims at exploring the proportion, variety, and objectives of each medical school’s humanities curriculum in Taiwan in light of the CanMEDS competency-based model.

Summary of Work: The subject title, credit, teaching outline, learning objectives, lecturers, pedagogy, and reference of humanities courses in 12 Taiwanese medical schools were systematically searched by two researchers on-line. The extracted data were further analyzed under the framework of the Draft CanMEDS 2015 Milestones (file:///C:/Users/user/Downloads/canmeds-2015-draft-milestones-e.pdf) proposed for medical school fundamentals.

Summary of Results: The proportion of humanities courses among each school varies from 3.5% to 16.1%. Although 16 disciplines (e.g., philosophy, sociology or ethics/laws) were identified in total, the amount in each program varies from 3 to 11 domains. Inspecting them under the 24 key competencies, only 11(46%) to 20(83%) competencies were covered.

Discussion: The Draft CanMEDS 2015 Milestones provides two more stages (i.e., medical school fundamentals and early clinical activity) for medical educators to inspect the undergraduate curriculum in the conceptual framework of competency-based education. The reform of medical humanities curriculum could be informed and instructed by the CanMEDS milestones.

Conclusion: This study outlines the quantity, diversity, and quality of medical humanities curriculum and syllabus accessed on-line in Taiwan. Further surveys and field works are required for future educational reform.

Take-home Message: The Draft CanMEDS 2015 Milestones may bring insight to the development and reform of humanities curriculum in medical school.
LUX HUMANA – Bridging Science and Humanities

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Background: Medical humanities is an interdisciplinary entity encompassing humanities (literature, philosophy, ethics, history and religion), social sciences (anthropology, cultural studies, psychology, sociology, health geography) and arts (literature, theater, film, and visual arts), which have an application or are relevant to medical education or practice.

Summary of Work: Lux Humana is an action group founded by medical teachers and librarians in 2005. It offers collection of fiction and other non-medical books at the campus library. It organizes various medical humanities-related events and writing contests for medical students, medical teachers, doctors and public. The activities have influenced the medical curriculum.

Summary of Results: Lux Humana action group received the Cultural Award of the Finnish Medical Society Duodecim in 2006. The collection has grown from 1600 books to 4100. Lux Humana book reviews are regularly published in the Finnish Medical Journal. The faculty financially supports two cultural events per year from 2017 onwards.

Discussion: Lux Humana has received official acknowledgement in medical community and highly respected award. It has influenced medical curriculum at the University of Helsinki. Literature courses introduced by Lux Humana have been integrated into basic medical education and humanities influenced courses introduced in specialist training at the University of Helsinki.

Conclusion: Lux Humana has worked and acted over ten years on voluntary basis in an informal and economically non-profit way with a mission to promote humanities in medicine. Lux Humana has had impact on that humanities are being introduced into the medical curriculum at the University of Helsinki.

Take-home Message: Lux Humana’s work for promoting medical humanities has been acknowledged by the medical community and the medical education community in our country. Spontaneous and voluntary action has an impact both locally and nationally. Enthusiasm matters.
#3HH05 (2557)
Good health is a laughing matter: A good inspirational movie is a matter of education

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**Background:** Movies has been accepted as one of powerful teaching tools. Patch Adams, a 1998 semi-biographical comedy-drama film, has widely been used in several medical schools around the world, including in Humanistic Medicine II Class, offered for 3rd year medical students, Thammasat University, Thailand.

**Summary of Work:** A qualitative study aimed to review students’ reflection on the movie ‘Patch Adams’. After watching the film, 172 students were assigned to write a one-page reflective paper. The reflective essays were analyzed by content analysis technique.

**Summary of Results:** One hundred and sixty-eight students submitted their assignments, which was 97.7%. Beneficence was the most frequent mentioned ethical issues. Most students were inspired to be empathetic, to communicate well with others and to take good care of patients’ body and mind. Overall, students rated this activity 4.06 of 5.

**Discussion:** Other than medical ethics issues, students were able to differentiate desirable physician’s characteristics and harmful behaviours. Students found that either too rigid or too humorous was not always good in medical practice. The distinguish characters of Patch Adams such as determined, positive thinking and humble attracted medical students.

**Conclusion:** All students reported that they were inspired by Patch Adams to improve themselves to be a humanistic doctor in the future.

**Take-home Message:** Cinemeducation is one of the best ways to engage and inspire learners.

#3HH06 (2479)
What Could Possibly Go Wrong? Developing a North American-inspired model of Teaching Behavioural Science in the Middle East

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**Background:** Globally there is no consensus on how to integrate behavioural science in undergraduate medical curricula and few models to adapt. The nascent College of Medicine at Qatar University is structuring its behavioural science curriculum in alignment with the Association of American Medical Colleges’ recommendations (AAMC, 2011).

**Summary of Work:** From the onset, medical students are exposed to Behavioural Science through a tripartite pedagogical model consisting of Problem Based Learning, lectures, clinical placements in primary health centres and experiential review sessions. This case study documents some cleavages that have arisen when implementing the AAMC’s recommendations in a non-American setting.

**Summary of Results:** Preliminary observations suggest that this multifaceted approach provides opportunities for knowledge acquisition, authentic learning experiences and critical reflection of ethical and professional issues throughout the medical training. However, barriers have been encountered including: Western-centric textbooks; “universal” ethics, knowledge gaps, different expectations of doctor-patient encounters, and challenging social and cultural norms.

**Discussion:** The inclusion of behavioral sciences in medical education is a relatively new phenomenon in the Middle East. Using a North American inspired curricular framework has revealed the necessity to develop a behavioural science programme which addresses the cultural and religious specificities of our Arabian Gulf setting.

**Conclusion:** As the role of social factors in health and disease become better understood, greater emphasis will be placed on behavioural sciences. As medical education outcomes become global and the integration of psychosocial dimensions of medicine more commonplace, behavioral science curricula should reflect the health seeking behaviours of a global audience.

**Take-home Message:** Preclinical exposure to behavioural science provides students multiple platforms upon which to observe, engage and reflect on patient interactions, cultivate professionalism and apply knowledge in authentic settings. A unique constellation of academic, cultural, professional and ethical practices informed by scientific and religious knowledge must be considered in Arab, Muslim-majority contexts.
Clinical case conference with medical anthropologist – a strategy of integrating behavioral and social science into medical education

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Background: Though social and behavioral sciences (SBS) have been considered important to teach in medical education, barriers to their implementation remain in many countries. The aim of this study was to develop a structured model case conference with medical anthropologists as social scientists where participants can learn SBS in clinical context.

Summary of Work: We undertook action research to develop a structured model case conference. In 2015 and 2016, we conducted 4 case conferences for medical students at two universities and 4 conferences for family physicians in an academic meeting in Japan. Field notes we took and questionnaires collected from the participants were analyzed.

Summary of Results: We found both medical students and family physicians had eye-opening experiences when medical anthropologists gave them inquiries or conceptual frameworks from anthropologists' viewpoints. Patient confidentiality was an issue to be solved as we discussed various private issues with non-medical social scientists.

Discussion: These clinical case conferences gave medical students and family physicians opportunities to learn SBS in clinical context. However, considering the bio-psycho-social model theorized by George Engel in 1977, we were not able to deal much with psychological problems of patients.

Conclusion: Although medical anthropology is just one discipline in social sciences, this clinical case conference can be a model for medical doctors to collaborate with other social scientists and teach behavioral and social sciences in medical education.

Take-home Message: Clinical case conference with medical anthropologist can be a model to teach behavioral and social sciences in medical education.

Teaching humanistic medicine practice skills to residents in China

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Background: The current status of doctor-patient relationship in China is disappointing partly because traditional Chinese medical education provides little training on communication, collaboration, ethics and related psychosocial content. Hence, we have launched a course to train residents in humanistic medicine practice skills to empower them to establish a better doctor-patient relationship.

Summary of Work: Questionnaires were conducted before and after the course. A six-session selective course engaged in case-based learning was developed. Topics included being doctors with affinity, stories in emergency room, biopsychosocial communication skills, issues in internal medicine, issues in surgery, engaging emergency. Experience sharing, small-group discussions, video-show and scenario simulation were included.

Summary of Results: The most urgent needs of training on communication in residents were issues related to controlling medical errors, conflict situation and controlling crisis. Course selection was packed in half of an hour. Most of residents (130/136, 95.6%) reported satisfaction with the sessions. They hoped to do more practical exercises in future.

Discussion: This course provides residents with experiences, practice and direct feedback. Focusing on the real-world problems helps residents obtain the communication skills and the ability to deal with unexpected events with humanistic care. After the course, the residents can transform their attitude and improve their behavior and clinical competency.

Conclusion: Humanistic practice skills training course focuses on residents' need and offers an effective training pattern to develop humanistic communication skills, which improves the whole clinical resident training system.

Take-home Message: Communication skill training is welcome by the residents. Multiple approaches including experience sharing, small-group discussions, video-show and scenario simulation can be used. Teaching humanistic practice skills should be a part of resident training.
Impact of narrative medicine on medical students’ professionalism development: a qualitative study

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Background: Narrative medicine (NM) is medicine performed with narrative skill and considered as a model for medical humanism and effective medical practice. This study aims to qualitatively evaluate the impact of narrative medicine as a medical humanities (MH) education model on medical students’ professionalism development in a Taiwanese clinical setting.

Summary of Work: We used semi-structured interviews to explore 30 medical students’ MH training in NM, including development of writing skills (purposely sampled, 5 fifth-year, 10 sixth-year, 9 seventh-year, and 6 Post-Graduates: aged 22-30). Thematic analysis was used to examine the outcomes and impact of narrative medicine on this group of medical students.

Summary of Results: Four main themes were identified: (1) Self-exploration, powerful language was used as students recalled their interactions with patients; (2) Reflection, moving towards patient-perspectives and away from their personal perspective; (3) Professionalism development, students’ development of professional skills, medical knowledge, empathy, communication, patient-doctor relations and teacher’s role; (4) Subconscious process.

Discussion: Participants felt that learning through the NM differs from how they had imagined learning to be: following actual patient-interaction, they identified differing perceptions between ‘seeing’ and ‘doing’. Given the outcomes and impact of NM on medical students, we suggest that this could act as a model for future MH education.

Conclusion: Through students’ narrative writing following observation of, and interaction with, their patients, a process of self-exploration, reflection and professionalism development occurred within the clinical setting. Participants’ talk suggested they had begun to embody a medical humanities approach to their professional selves. Take-home Message: NM can facilitate medical students’ experiences of self-exploration and reflection, thereby enhancing students’ professionalism development through narrative medicine. Promoting this kind of learning within undergraduate medical education can have an impact on students’ professional identities as they begin to embody their doctor identity through a patient-centred narrative process.

Assessment of the equivalence of two translations of the Jefferson Scale of Empathy for Students (JSE-S): the European Portuguese adaptation and the Brazil-Portugal consensus version

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Background: Physician empathy has been associated with improved patient outcomes. There are two Portuguese student versions of Jefferson Scale of Empathy (JSE-S) - one developed in Brazil and another in Portugal - widely used in empathy research in the two countries. The existence of a consensus version would facilitate cross-country research.

Summary of Work: This study assessed the psychometric equivalence of a recently developed Brazil-Portugal consensus version (JSE-S-BRPT) to the European Portuguese adaptation (JSE-spv). 277 fourth- and fifth-year Portuguese medical students answered either the portuguese or the consensus version. We present item sensitivity, reliability, convergent and discriminant validities, and confirmatory factor analysis.

Summary of Results: The response rate was 71%. Item sensitivity was higher in the consensus version, whereas internal consistency, convergent and discriminate validities and construct reliability were comparable. Confirmatory factor analysis found adequate fit to the original three-factor model after minor modifications for both. However, loading values were considerably lower in the JSE-SBRPT. Discussion: Overall the psychometric properties were comparable. Nonetheless, the better factor loadings of JSE-spv suggest it is more suited for Portuguese students. The poorer psychometrics of JSE-S-BRPT is a side-effect of the adaptation for a broader audience, which reduced its validity in a specific sub-group of the population.

Conclusion: Suggestions are made regarding the revision of item content to ensure its correct comprehension. Further validation of the scale in the Brazilian context is required to ensure its proper application in cross-cultural studies, which might lead to a better understanding of effective empathy-developing strategies in medical schools.

Take-home Message: Ensuring that the two Portuguese JSE translations assess the same construct might be tricky. The direct comparison of two JSE-S versions makes this research a first of its kind.
Narrative approaches re-fuel dwindling empathy in the clinical setting

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Background: It is common that school-based curriculum cultivated empathy and patient-centredness dwindle while medical students start to face clinical setting. To ensure that the core values of medical humanity education can be well-maintained and applied in the real-world clinical setting, a hospital-based clinical humanity curriculum was initiated.

Summary of Work: Eight medical students in a group were asked to visit selected patients and walk into their “worlds” by listening to their life stories and interviewing relevant people around patients. Using narrative approach, they re-organised their histories and brainstormed with points to ponder for the presentation in “Clinical Medical Humanity Conference”.

Summary of Results: Pre- and post-conference questionnaires with open questions were given to all physician audience. The clinical considerations after narrative presentation and reflective discussion were significantly changed towards more patient-centredness and increase of empathy.

Discussion: Narrative approaches, focusing mainly on “human”, not on “disease”, may help reflection and produce genuine “fusion” of visions from physicians and patients, and thus, re-ignite the passion for empathy and clinical humanities, which may gradually erode in the clinical setting because of burnout clinical environments, which may gradually erode in the clinical setting.

Conclusion: The narrative approach is feasible hospital-based training to re-fuel empathy which has been well cultivated in the school-based curriculum but somehow consumed in the clinical setting.

Take-home Message: Narrative approaches which enhance empathy can be “internalised” as part of medical students’ constitution by appropriate hospital-based curriculum.
#3HH13 (34)
The Effectiveness of auditory hallucination audio media on Mental Illness Clinicians' Attitude scale score in fourth and fifth year medical students: Randomized Controlled Trials

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**Background:** The negative attitude of health care providers toward mental illness patients are the problem which affects the effectiveness of treatment for both mental and physical conditions. In this study, auditory hallucination audio media was created and tested on fourth and fifth-year medical students in order to stimulate the empathy and decrease stigmatization.

**Summary of Work:** The students from two hospitals were randomly divided into the experimental group (n=47) tested by the auditory hallucination audio media and the control group (n=48) tested on Thai music. Mental Illness Clinicians Attitude scale (MICA-2) medical student version was used as a pretest and posttest in both groups. The high mean score represents negative attitude toward mental patients.

**Summary of Results:** The pretest mean scores between groups with mean difference was 0.82 (95% CI: 3.29 to 1.65; p=0.512). After intervention, the experimental group presented higher mean scores than controlled group with mean difference was 1.59 (95% CI: 3.86 to 0.68; p=0.168). The mean score tends to increase within group with mean difference was 0.44 (95% CI: -0.98 to 1.86; p=0.428) for experimental group and 0.44 (95% CI: -0.94 to 1.85; p=0.538) for controlled group.

**Discussion:** All students have never taken any psychiatry subject. There is no difference between group in pretest score but after intervention exposing to auditory hallucination audio media surprisingly increase negative attitude toward mental patients and within both group also tends to increase negative attitude. However, this results also found that there was no statistical significant.

**Conclusion:** The auditory hallucination audio media which was created according to the information about auditory hallucination by the psychotic patients has no effect on the Mental Illness Clinicians Attitude scale score or attitude toward mental patient in fourth and fifth year medical students.

**Take-home Message:** It could also be suggested that in further experiments the auditory hallucination audio media and the experimental environment should be adapted to be more realistic or similar to the conditions in which mental patients experienced.

#3HH14 (1307)
Conversation with patients improves empathy level of the preclinical medical student

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**Background:** Empathy contributes to quality of patient care. Nevertheless, empathy has declined along the course of medical training. To cultivate and maintain empathy level in preclinical medical students, “A Patient as a Human Being”– an experiential learning activity for 2nd year medical students to feel patient’s struggles and suffering, was implemented.

**Summary of Work:** The 2nd year medical students were divided into groups of three. Under supervision, each group was assigned to visit a patient who was previously informed and willing to be interviewed. Medical students’ empathy level was assessed by the Jefferson Scale of Physician Empathy before and after visiting the patient.

**Summary of Results:** Baseline empathy score of 296 students was 114.20±10.20. No factor, such as gender, demonstrated association with baseline score. Conversation with patients improved empathy level from baseline score (delta=1.19, p=0.0089). Students with lower baseline score showed more improvement compared to the group of higher baseline score (delta=2.90, p=0.0036).

**Discussion:** As the first opportunity for medical students to visit the “real” patient, this experience improved students’ empathy level due to various factors. Firstly, students explored patients’ situation with a holistic approach. Secondly, students had to reflect their thoughts and feeling as if they were in their patients’ situation.

**Conclusion:** The activity “A Patient as a Human Being” improved empathy level in the 2nd year medical student. Truly experiential learning through real patient interview with guided questions regarding patient’s suffering was a key success factor of this activity.

**Take-home Message:** Many previous studies showed a decrease in students’ empathy level during medical school. Implementing such activity like “A Patient as a Human Being” would enable medical students to improve and to maintain their empathy level.
Dear patient ... reflections on writing letters, empathy and medical education

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Background: It has already been said that "medicine is a literary art". As a counterpoint to an overly technical medical practice, a more humanistic approach of the medical education is a tendency recently verified worldwide, being the exercise of writing letters to patients one of the tools used for this purpose.

Summary of Work: An innovative pedagogical experience was held where third year medical students in Brazil were asked to write a letter to one of their patients. The activity was evaluated based on criteria of the capacity of reflective thinking and the ability to integrate the contents addressed in the classroom.

Summary of Results: The activity proved to be a powerful tool for reflection and exercise of empathy. When writing to a particular patient, there was a need to think about limitations and potentialities of their medical education and, at the same time, on the way the patient perceived his/her health problems.

Discussion: To a certain extent, the logic of the anamnesis is inverted, since it is the student who figuratively "exposes himself". Despite remarks on patients' illnesses, we observed interesting comments about the difficulties the students faced in "understanding the case" and even their weaknesses coping with suffering and death.

Conclusion: At the end, the students manifested the importance of the exercise, pointing to the adequacy of the activity as part of a space for discussion and reflection on his/her own medical training. More importantly, it was possible to reiterate the "patient" as a human being, the essence of medical practice.

Take-home Message: In times dominated by social networks and instant information, attempts that develop a more in-depth reflection on medical training, especially those that allow a view of the "patient" as a human being proved to be important. The students, usually skeptical about this activity, can be positively affected by the experience.

Evaluation of the correlation between self-perceived empathy and burnout in early years postgraduate trainees

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Background: Empathy is one of key ability for patient care but may change with the learning of the trainee. Burnout is common among clinical trainees and related with medical error, depression, poor empathy and unprofessional behavior. The study aims to evaluate the association of empathy and burnout among postgraduate clinical trainees.

Summary of Work: Under the cross-sectional design, all residents from Taipei Veterans General Hospital were invited to join this study. Empathy perception was evaluated by JSPE and the extent of burnout was evaluated by Maslach Burnout Inventory. The trend of the empathy and burnout change among different grade and the association were analyzed.

Summary of Results: 83 PGY1 and 87 specialty residents completed the evaluation. The mean JSPE scores among different grades have no statistical difference. 63.9% of PGY1 and 82.8% of PGY1 reached the threshold of burnout. Individually, empathy perception has a significant correlation with burnout (r= -0.33 for depersonalization, and 0.36 for personal accomplishment).

Discussion: The empathy perception during the early postgraduate years is stable in this study. It is different from some studies which claimed empathy declines with training experience. The overall burnout rate is quite high and even higher than UGY trainees. Prevention of burnout maybe can enhance the emphatic performance in residents.

Conclusion: Burnout is still with high prevalence among clinical trainees and has negative effect on empathy individually. The medical educators should make more effort to prevent burnout.

Take-home Message: 1. The empathy perception during the early postgraduate years is stable.
2. Burnout is still quite common in residency and even more severe than internship.
3. Burnout negatively correlates with empathy perception and should be prevented.
#3HH17 (1816)
Teaching Bioethics to Preclinical Medical Students: A Four-Year Integrated Curriculum in Taiwan
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Background: Teaching Bioethics is an important component of medical education. Due to the lack of time and resources, most of the teaching of bioethics in Taiwan medical schools is taught during the first two years in a single course or is assimilated at the bedside later in the clinical stage.

Summary of Work: Since 2013 the Medical School of Chang Gung University developed and implemented a longitudinal integrated bioethics curriculum for the Six-Year Medical Program throughout the four preclinical years. The curriculum include (1) philosophy and medicine, (2) theories and issues of bioethics, (3) studies of death and dying, and (4) clinical ethics.

Summary of Results: The courses were evaluated by utilizing various evaluation forms including in-class discussions, questionnaires, written reflective feedback and self-assessment, as well as focus group interviews. From students’ perspectives, the longitudinal integrated curriculum in bioethics in their preclinical years is helpful in the development of competency in moral reasoning and critical thinking.

Discussion: While it is often considered that the teaching in ethics is redundant and should be incorporated into the clinical clerkships, the positive feedback and assessment results of this curriculum reveal that the longitudinal integrated bioethics education is essential to cultivating the medical students' ethical reflection and decision making.

Conclusion: The longitudinal integrated bioethics curriculum is a valuable opportunity for medical students in their preclinical years to think critically about ethical issues in medicine and health care; to reflect on their personal values and beliefs about ethics and medical profession; and to analyze and resolve actual dilemmas in clinical medicine.

Take-home Message: A longitudinal integrated bioethics curriculum can be implemented successfully in preclinical medical education.

#3HH18 (985)
A “four-boxes” framework used as a tool for a small group clinical ethics teaching
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Background: Enhancing clinicians’ knowledge and skill in resolving ethical dilemma improves patient care performance. In our medical school, a clinical ethics lecture was conducted once during pre-clinic. Even though the ethical grounds are usually discussed in our clinical settings, there is none of medical ethics classes performed.

Summary of Work: A case-based conference facilitated by bioethics trained clinical teacher was done in three 6th year medical students using Josen’s “four-boxes” approach. Students were asked to prepare 3 dilemma cases. Pre-, post-class and 1-year follow-up self-assessments were done to enquire the decision making skill.

Summary of Results: Thirty students attended the sessions in 2015-2016 at Phichit hospital. 100% response rate was for pre- and post-test and 50% for a follow-up. Self-evaluated ethical problem solving skills were increased after the class and maintained after 1 year while most students hardly remember the 4-boxes’ contents.

Discussion: A well-controlled study is required to confirm the positive findings. However, the results supported that clinicians learn well when they are actively involved in case discussions. The analytical framework provided structure and reminded the students the ethical analysis, like the “review of system” in history taking.

Conclusion: We have validated that a small group case-based discussion using a four quadrant approach as a guideline is a practical and effective technique for medical ethics teaching in clinical years. The skill rather than the content lasted for 1 year.

Take-home Message: Clinical ethics can be taught by a case discussion method with provided core principles. The demonstrated approach promoted ethical decision making skill which is promisingly maintained after graduation.
Professionally ethical development in medical students: How and What have they learned?

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**Background:** Medical students must be developed professionally required ethical competencies to recognize and rationally deal with difficult situations. But, this concerning has not been reported. This study aimed to explore the confidence of practice, how and what they have learned ethical issues in order to develop their learning plan.

**Summary of Work:** Sixth-year medical students were surveyed with questions related to twenty-eight ethical issues and fifteen commonly ethical-related situations. Some situations needed legal knowledge for proper decision-making. The confidence was rated from one to five according to the Likert rating scale. The questionnaires were distributed to the students in the orientation class.

**Summary of Results:** Thirty-six students completed the survey. The students had high confidence in confidentiality, informed consent, truth telling, and disclosure although they were wrong to solve ethical-related situations related to those issues. They have learned ethics mostly from role models, practice with patients, and medical camp for enhancing experiences of medical students.

**Discussion:** Role models, practice with patients, and extracurricular activities were the way to develop their professionally ethical needs. However, they need continuous learning from specific situations and case scenarios to achieve complete understanding. This is the continuous process from undergraduate to postgraduate and will be helpful for the complex working environment.

**Conclusion:** Continuing professional development of medical students on ethical behaviors depends mainly on role models, practice-based learning, and extracurricular activities. They need to be more prepared in some ethical and legal-related topics before graduation. Medical educators should prepare the appropriate environments according to the survey to promote student's learning.

**Take-home Message:** Tomorrow's doctors developed their professional ethical competencies from role models, practice with patients, and activities. The specific situations and case scenarios are important for achieving complete understanding in medico-legal and ethical learning, especially confidentiality and informed consent.

Enhancing Moral Sensitivity by Debiasing Medical Judgment

Luciana Garbayo, University of Central Florida, Orlando, USA
Denise Kay

**Background:** Moral sensitivity (Rest, 1983) is the ability to identify ethical aspects of situations, and a pre-condition to moral judgment. Yet students are unaware of their implicit biases and its impact in the clinical setting and in the broader moral environment, and are defensive if engaged (Kutz et al, 1985).

**Summary of Work:** A novel longitudinal curriculum building block for systematically introducing debiasing strategies with empirical data (Implicit Association Test, Harvard Project) in a shared decision-making context for both medical students (and their instructors) to enhance their moral sensitivity, and ultimately, their moral judgment in shared decision-making context.

**Summary of Results:** The building block had great impact on faculty, who did not have access to moral sensitivity and debiasing education before. The majority of the students embraced the opportunity to have a self-diagnostic tool. Some students and faculty questioned its validity. Faculty development on implicit bias was generated as a response.

**Discussion:** Often ethics is seen as “soft” - debiasing exercises generated empirical results that elicited self-questioning in contrast with a pure theoretical model; it turned to be an evidence-based model to discuss implicit social knowledge and its impact in shared decision-making, where both faculty and students have a stake in self-developing.

**Conclusion:** The introduction of empirical validated debiasing strategies as learning self-assessment tools have the potential to change the type of discussion and conception of moral debates in medical school, as personal bias can be quantified and revised, and a basic moral sensitivity condition and moral judgment can be reconsidered for self-awareness.

**Take-home Message:** Self-assessment empirical data may provide the learning experience and access to self-awareness necessary for the debiased exercise of moral sensitivity and judgment, that theoretical discussions on moral theory and studies may not be able to move, contributing to change the way medical schools may design effective learning in this area.
#3II Posters: Stress and Student in Difficulty
Location: Hall 3 Foyer

#3II01 (1900)
Thought Spot: Enhancing student mental health through mobile solutions

David Wiljer, University Health Network, Toronto, Canada
Andrew Johnson, Centre for Addiction and Mental Health, Toronto, Canada
Alexxa Abi-Jaoude, Centre for Addiction and Mental Health, Toronto, Canada
Genevieve Ferguson, Centre for Addiction and Mental Health, Toronto, Canada
Elisa Hollenberg, Centre for Addiction and Mental Health, Toronto, Ontario

Background: Post-secondary students (medical (n=16), science (n=19) and arts and humanities (n=20)) in a large Canadian urban area were engaged to optimize Thought Spot, an existing digital platform designed to improve access to mental health services.

Summary of Work: Through qualitative facilitation methods such as journey mapping, world cafes and personas, students provided feedback on the platform’s usability, its potential value in post-secondary settings, and methods of including mental health information within the platform. Data collected from students informed the re-design of Thought Spot.

Summary of Results: Overall, 65 students led and participated in seven engagement activities, where they identified three major opportunities for improvement: increasing engagement between users, developing a responsive discovery plan, and providing better data and organization within the mobile application.

Discussion: Co-creation with students from varied disciplines can facilitate rich discussion and valuable solutions for mobile mental health platforms. By following a co-creative process, the redesigned platform will address system barriers and reflect the needs of the end-user.

Conclusion: Participants from diverse disciplines were motivated by our project’s focus on mental health and end-user involvement. Prominent themes extracted from the activities will be used to inform the optimization of Thought Spot as well as the second phase of this project, a randomized control trial.

Take-home Message: Engagement of students in every phase of a project through co-creation activities is achievable by emphasizing the importance of inclusion, transparency, and flexibility. Through Thought Spot, we have developed a strategy that could be used widely across medical school project planning for better alignment with student needs and experiences.

#3II02 (1485)
Stress and anxiety in second and third year medical students during a period of curriculum change

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Sarah Winfield, School of Medicine, Liverpool, UK
David Taylor, School of Medicine, Liverpool, UK

Background: This study measured the prevalence of stress in groups of second and third year medical students. It also aimed to evaluate if the evolving curriculum from a problem-based learning model (C1996) to a case-based learning curriculum (C2014) had an impact on the psychological well-being of students.

Summary of Work: The General Health Questionnaire (GHQ-12) was distributed to Year 2 and 3 C2014 students. An identical study in 2012 provided data for second year C1996 students. The GHQ scoring system provides a maximum score of 12. Students with scoring 3 or more were identified as probable cases, indicating psychological disturbance.

Summary of Results: Slightly more than half (55%) of C2014 students scored above the GHQ-12 threshold, with 68% of second year students and 43% of third year students identified as probable cases. Of the second year C1996 students, 52% also scored above the threshold.

Discussion: Significantly more second year C2014 students experienced stress compared to third year C2014 students (P=0.016). There is minimal difference in psychological distress between C2014 students and C1996 students; however there is a greater difference when Year 3 data was excluded from the comparison.

Conclusion: This study shows the high prevalence of stress amongst students and the impact of a changed curriculum. Discussions with the Student Support Service at Liverpool Medical School established that the number of students who seek support doesn't represent the true number of students who experience psychological distress.

Take-home Message: Psychological distress affects many students. It is important that students are aware of the support available and encouraged to access it. The introduction of a screening tool could help to identify students who may need support.
Tolerance for Ambiguity: Does it Protect Against Burnout?

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Nian Chih Huang, Duke-NUS Medical School, Singapore
Jabed Iqbal, Duke-NUS Medical School, Singapore
May Mok, Duke-NUS Medical School, Singapore
Attilio Rapisarda, Duke-NUS Medical School, Singapore

Background: From the beginning of medical school, students must cope with ambiguity. For example, students must decide when to move from one topic of study to the next even when mastery of the first has not been attained. Low tolerance for this ambiguity may portend poor psychological outcomes, such as burnout.

Summary of Work: We conducted a longitudinal panel study (4 time points) of 59 first-year Duke-NUS Medical School students to examine the unique role that tolerance for ambiguity plays in the development of burnout over the course of the first year of medical school. Preliminary results (from 2 time points) are presented here.

Summary of Results: Although tolerance for ambiguity increased between the two time-points, the prevalence of burnout doubled (15% to 30%) in the first six months of medical school. After controlling for stress management, grit, social support, and religiosity, a decrease in tolerance for ambiguity was significantly associated with increased symptoms of burnout.

Discussion: The ability to cope with ambiguity and uncertainty is critical in clinical practice and studies show that intolerance of ambiguity or uncertainty may be linked to stress in physicians. Furthermore, it has been hypothesized that intolerance of ambiguity and burnout may be associated.

Conclusion: Our initial data shows that after adjusting for various factors, there is a simultaneous increase in intolerance for ambiguity and burnout in medical students in Singapore. This may indicate that efforts to increase tolerance for ambiguity are appropriate targets for promoting wellbeing in medical school and beyond.

Take-home Message: Burnout is a common problem in medical students. Medical schools should be cognizant of the need to support approaches toward ameliorating the controllable factors that are associated with the development of burnout.

A Motivational Perspective on Medical Student Burnout

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Jona Frohlich, University of Alberta, Edmonton, Canada
Shelley Ross, University of Alberta, Edmonton, Canada
Anna Oswald, University of Alberta, Edmonton, Canada
Jonathan White, University of Alberta, Edmonton, Canada
Oksana Babenko, University of Alberta, Edmonton, Canada

Background: Academic burnout is problematic in preparation for medical practice because it can compromise professionalism, negatively impact care, and lead to dropout. Achievement Goal Theory (AGT) draws links between adaptive (mastery-approach) and maladaptive (performance-avoidance) goals and outcomes. Using AGT, we examined associations of achievement goals and academic burnout in medical students.

Summary of Work: Through an online questionnaire, we collected quantitative data from 257 medical students in years 1-4 of their program. The survey contained existing scales to measure achievement goals and burnout. After examining descriptive statistics (means, correlations), we performed regression analyses to examine predictive relationships between achievement goals and self-reported academic burnout.

Summary of Results: Students endorsed mastery-approach goals more strongly (M=22.63, SD=3.07) than performance-avoidance goals (M=13.97, SD=4.34), with performance-avoidance goals predicting academic burnout (β = .18, p = .02). There was a significant negative correlation between burnout and mastery-approach goals (r = -.21, p < .01), however, these goals did not predict lower burnout.

Discussion: Results provide support for the maladaptive nature of performance-avoidance goals, suggesting that students holding these goals are more susceptible to academic burnout. The fact that the relationship between mastery-approach goals and burnout was not predictive suggests that mastery-approach goals alone may not protect from burnout in high-achieving students.

Conclusion: Future research should consider protective factors that work in conjunction with mastery-approach goals. We hope to inform program committees of findings that could enhance the well-being and training of medical students. A better understanding of the role played by achievement goals is important, and may inform future selection processes.

Take-home Message: This research sheds light on the important role that motivation plays in the burnout experience of medical students. Given the high-stakes, high-stress nature of medical practice, it is crucial that we strive to understand socioemotional experiences of students and the ways in which we can cultivate resilient and successful physicians.
Observations from the course “Stress management methods for students” for first-year medical students in the University of Helsinki

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Maarit Hölttä-Vuori

Background: Stress and burnout are an increasing trend among medical professionals, and recent studies suggest that the development starts already during the studentship period. Owing to the student’s own initiative, we designed a course “Stress management methods for students” that took place at the end of first preclinical year.

Summary of Work: The course curriculum combined interactive teaching sessions on stress physiology and psychology, sleep and exercise medicine and their role in stress management, as well as mindfulness. The students kept sleep and stress diaries prior to the course and prepared group assignments and reflective journals over the course topics.

Summary of Results: The course was fully populated (N=47). Based on feedback forms, reflective journals and teachers’ observations, the students were enthusiastic. Based on feedback forms, reflective journals and teachers’ observations, the students were enthusiastic and found the topics useful for understanding their stress and managing it. Combination of physiological aspects of stress to psychology and mindfulness was valued and helped to engage more students.

Discussion: Students experience stress already during the first year and this may have a negative impact on their studies and professional development. Student feedback revealed that this type of education is necessary and should be offered at the early phase of studies.

Conclusion: Students clearly have a demand for a stress management course already at the early time of studies. Combining physiological/medical aspects to stress psychology and mindfulness was highly appreciated.

Take-home Message: Students want education on stress management and it should be offered already during the first preclinical years.

Dealing with stress and competitiveness in medical schools: Is cognitive doping a reality?

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Background: Exposed to an increasingly competitive environment, students try to surpass themselves, seeking new means to enhance their cognitive performance. In Portugal, every year, new medical graduates undertake the National Exam for Specialty Selection (NESS), a life-defining exam that ranks them for the available postgraduate residency vacancies in Portuguese Health System.

Summary of work: To identify the consumption of prescription drugs (PD) and other substances taken for cognitive enhancement purpose (SFCEP), an online anonymous survey was sent to all undergraduate students from 8 Portuguese Medical Faculties (Group1), as to all post-graduate students applying for the NESS (Group2). A cross-sectional analysis was undertaken, comparing intergroup significant differences.

Summary of Results: From 1156 answers, PD consumption was 5%/Group1 and 14%/Group2, mainly to enhance concentration/attention (83%). Both were most frequently used in exam periods (PD:M=2.90,SD=1.47_NESS:M=3.44,SD=1.28) with SFCEP consumption higher in Group2. Significant positive correlations were found between academic year with coffee (r=0.097_p=0.002) and energetic drinks (r=0.089_p=0.003). No differences were found between faculties.

Discussion: PD and SFCEP consumption was higher in Group2. Furthermore, students resorted more frequently to PDs in exam periods and NESS, which points to an association between consumptions and assessment periods. Further investigation is needed to understand if this link is only stress-driven or influenced by other factors as well.

Conclusion: If only a minority of participants revealed PD consumption, mainly associated with exam periods and NESS, SFCEP utilization if far more common. Concentration and attention seem to be the main target for enhancement for Portuguese medical students with NESS representing a breaking-point in their lives, exacerbating overall consumptions.

Take-home Messages: The consumption of prescription drugs for cognitive enhancement purposes challenges Medical Education to reflect about its implications in the assessment process. Alternative solutions, like ‘Learning environment interventions’ (eg. Mind body skills education, curriculum structure, mentor programs, etc.), might reduce student’s need for seeking substances to boost their focus and productivity.
#3II07 (461)
SyriaScholar - teaching medical students in Syria from the UK and USA
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Kinan Muhammed

Background: The conflict in Syria has placed great strain on medical education. There are insufficient resources for small-group teaching, which makes it difficult for students to clarify problematic subjects. At the same time, there are many doctors around the world willing to help but they have no access to Syrian Students.

Summary of Work: SyriaScholar is an online learning platform that allows British doctors to teach medical students in Syria in real time over the internet. Students can see powerpoint slides, talk directly with their tutors and ask questions. We have also helped the students set up an audit at their local hospital.

Summary of Results: We have been teaching a "Universal Medical Toolkit" made up of emergency management skills as well as X-ray, ECG and arterial blood gas interpretation skills. We have also been developing quality improvement skills by helping the students set up a hand-hygiene audit at a Syrian hospital to improve patient safety.

Discussion: Students consistently provided excellent feedback and the sizes of our classes continue to grow. We have also noticed a qualitative improvement in the ability of our students to apply topics covered. They have also developed the skills needed to carry out future quality improvement work independently later in their careers.

Conclusion: Online education is an extremely valuable tool that we have used to help medical students in Syria. The expertise of British trained medical graduates was successfully shared with Syrian students over the internet. The Syrian students developed a set of skills that will help them care for their future patients.

Take-home Message: International online medical education can help Syrian students. We are developing programs to complement the education Syrian students are currently receiving. We hope that online education can compensate to some extent for the depletion of resources that has arisen from the conflict.

#3II08 (653)
Medical students' syndrome and its related factors: A cross sectional study from Iran
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Background: In the process of studying medicine, some students excessively focused on their own symptoms relating to the diseases that they are studying at the time. This concerns are a source of stress and affect academic performance. We investigated the frequency of this syndrome among medical students in Kerman University(KUMS).

Summary of Work: This cross-sectional study carried out in KUMS using census method, 2016. Data collected using an instrument contained demographic data and Persian version of 14-items Whiteley index. The range was 14 to 56 and scores 32 to 56 considered as hypochondria. Psychometric properties of the questionnaire confirmed. The data was analyzed using SPSS.

Summary of Results: Of 310 medical students, 186 (60%) were in clerkship and 124 (40%) in internship stage with a mean age of 24.11±1.5. The mean score on WI-14 was 34.47±8.6 which accordingly 194 (62.5%) students were in the hypochondriac limit. Single and clerkship students had higher scores.

Discussion: The frequency of medical students' syndrome was high among our student. Given its relationship with general health and academic performance, increasing the awareness of students about this disorder, early diagnosis and intervention should be considered.

Conclusion: Due to the high frequency of medical students' syndrome, it is recommended to consider it in the periodic consultation with medical students.

Take-home Message: The frequency of medical students' syndrome was high among our student in Kerman University(KUMS).
Where do medical students learn how to cope with stress?

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Esther Murray, Barts and The London School of Medicine and Dentistry, London, UK

**Background:** The General Medical Council (GMC) emphasises the importance of mental health in medical students, and expects students to develop adequate coping strategies to stress. Literature also documents the need for medical students to develop coping strategies, but neglects to explore the origins of their preferred coping mechanism.

**Summary of Work:** This project will explore where medical students believe they have acquired their preferred coping strategies to stress in relation to formal (curriculum outcomes) and informal (hidden curriculum outcomes) experiences in medical school. This new understanding of how coping strategies are developed can inform curriculum development.

**Summary of Results:** Preliminary data suggests that medical students use multiple and different coping strategies to stress and challenges during their studies and clinical placements. However, these coping strategies arise from an amalgamation of previous strategies used before entering medical school and strategies observed from other medical students during their studies.

**Discussion:** Medical students reply on both previous coping strategies and new strategies encountered through observation or informal suggestions from peers other students. This suggests that during medical school students primarily develop coping strategies from social interactions and informal experiences.

**Conclusion:** This research project explores the ways in which medical student’s coping practices meet the GMC requirements of maintaining good mental health. It appears that students develop new ways to cope with stress through social interactions and extra-curricular experiences beyond the medical school’s formal curricular outcomes.

**Take-home Message:** Medical students learn how to cope with stress through a combination of existing strategies used before entering medical school and new strategies developed through observation and suggestions from other medical students. Social experiences during medical school therefore influence the strategies used to cope with stress.

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Unexpected factors determine the level of stress, fatigue and well-being in French medical students during their first academic year

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Thierry Fusai, Ecole de santé des armées, Bron, France
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Marion Trousselard, Institut de recherche biomédicale des armées, Brétigny-sur-Orge, France

**Background:** French military medical students have to pass high selective exams during their first academic year. They are submitted to a high amount of stress and chronic sleep restriction, generating anxiety, fatigue, and sleepiness. They are dispatched in two medicine faculties having their own pedagogic programs and time scheduled organization.

**Summary of Work:** The aim of the study was to monthly evaluate the psychological profile of 152 students (73 males and 79 females) during their first academic year, using a psychometric approach including 21 variables. The study took place between 2015 November and 2016 April in Lyon at a latitude of 45.8° North.

**Summary of Results:** Differences related to gender and differences related to academic failure leading to year repetition affected 41% of the variables. Differences related to pedagogic and time scheduled organization affected 85.7% of the variables. Finally, 90.5% of the variables presented a seasonal pattern with a significant impairment in November and December.

**Discussion:** We found quite unexpected results. Seasonal factor and factors related to pedagogic and time scheduled organization seem to have much more massive effects than more classical individual factors studied in psychological settings dealing with academic achievement (i.e. gender and academic failure with year repetition in our study).

**Conclusion:** The degradation of psychological condition in autumn and winter may be linked to seasonal affective disorders due to low light exposure. The time scheduled organization also plays a major role. The faculty scheduling courses in the afternoon is not doing as well as the faculty scheduling courses in the morning.

**Take-home Message:** These results need further confirmation, but may modify current strategies of stress prevention among medical students. Luminotherapy and time scheduling optimization in accordance with human circadian time structure may have indeed a huge interest and perhaps a greater impact than more traditional individual stress coaching programs.
#3II11 (2664)
Impact of an Intervention Program on Diverse Learning Capabilities, based on the determination of an Academic Risk Profile in First Year Students of Medicine

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Marcela Mansilla Azócar, Autonomous University of Chile, Talca, Chile
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**Background:** The massive admission to the university implies a heterogeneous income profiles of students, and this requires new ways to successful transition to higher education. To prevent academic failures, the measurement of a psychopedagogical profile was established in freshmen and to implement an early intervention on descended aspects of learning.

**Summary of Work:** To determine freshmen with risk capabilities for learning, utilizing a psychopedagogical battery; to promote in those capacities for learning; establish a system of feedback to teaching. Specific interventions were designed in semi-annual. Intervened were followed systematically and longitudinally, being comparatively evaluated with their cohort partners based on learning outcomes.

**Summary of Results:** The determination of learning abilities in each cohort, was discriminant to estimate students whit academic risk. About 20% of each cohort was ever intervened; Attention-Concentration capacity resulted in mid- to low-mid range in all cohorts. Students intervened showed similar or superior learning outcomes to their peers without academic risk.

**Discussion:** All the intervened students received action always on the general capacity of Attention-Concentration, and other specific interventions. Intervention in this capacity required supporting planning of associated tasks results and the experience applied in the interventions indicate that the learning capabilities could be more specifically estimated.

**Conclusion:** A systematic intervention applied early, can be a critical success factor for a diverse student population. The performance of students with academic risk to reach and surpass the non-intervened performance, benefiting the approval of cohorts. Attention-Concentration capacity is decreased in all evaluative cohorts.

**Take-home Message:** It is possible to estimate an admission profile and take care of the students with possibilities of academic risk. It is important to follow up the Cohorts. The study of the Executive Functions should be deepened, for an efficient performance in the Learning in Higher Education.

#3II12 (2453)
Can Student Individual Interview Program Predict Learners in Academic Difficulty?

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Hyung-Joo Chang, Korea University College of Medicine, Seoul, Korea
Hong Sik Lee, Korea University College of Medicine, Seoul, Korea

**Background:** In each year, approximately 10 to 15 percent of students experience flunking or leave of absence due to academic difficulties during their basic medicine studies in the authors’medical college(KUCM). The purpose of this study was to examine a new launched individual interview program whether can predict learners in academic difficulty.

**Summary of Work:** At the beginning of year 2016, 128 entire first year students were interviewed by fifteen faculty members. Each interview was a 15-minute duration with one-to-one basis. The students were classified into three categories; A(follow-up counseling needed), B(follow-up counseling probably needed), and C(follow-up counseling is not needed).

**Summary of Results:** Among 14students who failed to promotion in the end of 2016 academic year, 11were classified as A or B. The ratio of group A among students who failed to proceed to the next academic year was 42.9%, which was 2.5times higher than that of students who successfully finished their first year studies(17.5%).

**Discussion:** Only three students actually used additional follow-up counseling services among eleven students who were belongs to group A and B. Further discussion should be needed to how to increase usage of follow-up counseling services by students who identified as potential risk groups in a non-threatening but an effective way.

**Conclusion:** The Student interviews program at the beginning of academic year at the KUCM might have a predictive function to identify possible learners in academic difficulty.

**Take-home Message:** Non-threatening and effective way to facilitate students’ visit to follow-up sessions in voluntary basis should be developed.
#3II13 (1111)
Steering Illusions of Competence in Anatomy: A near-peer tutor intervention for at-risk students

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Paul E Salem
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Nirusha Lachman

**Background:** Transition to medical school presents academic challenges requiring paradigm shifts in student’s approach to learning. Poor study integration skills, lack of confidence and failure to understand personal responsibility attribute to learning challenges. Early recognition and management of student failure is essential in circumventing preventable adverse events in future clinical practice.

**Summary of Work:** This study revisits effectiveness of formative feedback as predictor of academic success and impact of near-peer tutoring on at risk students. All students were informed of opportunities for tutoring. Score of <70% was indicator for at-risk students. At-risk students worked with near-peer TA tutors to formulate individualized learning plans.

**Summary of Results:** Scores were evaluated before and after students received formative feedback. Averages ARS and laboratory scores improved significantly after tutoring (68% vs 61%, p=0.04) and (67% vs 56%, p=0.04). Near-peer tutors have potential to make significant impact on at-risk students. Formative feedback scores are reliable indicator for tracking student performance.

**Discussion:** Studies in healthcare show positive effect of peer intervention in providing support for team members. Peers relate more easily and naturally to current challenges within the existing shared environment. Assimilation of new knowledge occurs more effectively through reflection and exchange of common experience, a sense of belonging and trust.

**Conclusion:** Progress of at-risk students receiving intervention showed steady improvement over course period and were less likely to require remediation than similar students without intervention. At-risk students at early points in the medical curriculum not only benefit from academic support, but when accompanied by strategic intervention, learning skills become sustainable.

**Take-home Message:** Within a tutoring program, oversight, partnership and continuity maximizes near-peer facilitation of learning for at risk students in gross anatomy course. Formative feedback scores are important measures for monitoring student success. In steering illusions of competence, struggling students are left with a sense of direction to meet their objectives.

#3II14 (1133)
Enhancing retention of new nurses by inter-professional counseling and simulation training

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Chien-Chien Tung
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Ching-Shiang Chi
Ken-Ching Jeng

**Background:** Main reasons of nursing attrition from new nurses in any hospital are related with pressure and nursing skill competency. Their retention rate could be improved by effective counseling and training. Therefore the aim of this study was to evaluate the effect of inter-professional counseling and training on nursing retention.

**Summary of Work:** Forty-one new nurses participated in this study. The inter-professional counseling by head nurses and physicians was focused on four levels of individual’s adaptation and needs: learning, adaptation, life, and psychology. They were taking simulation training for 7 clinical skills according to their needs and evaluated by OSCE with constructive feedback.

**Summary of Results:** Forty-one participants had average scores of 97.8 and 96.2, in counseling satisfaction and learning after the counseling and simulation training. Retention rate was increased from last year by 5.58% (from 79.9 to 85.6%). All agreed that the counseling was helpful. Only one attrition occurred due to the personal health problem.

**Discussion:** Retention rate was increased by counseling and simulation training. We found that important areas for counseling individuals and meeting their needs were learning, adaptation, life, and psychology. The clinical competency was enhanced by the simulation training as the OSCE outcome demonstrated. These approaches improved the retention rate of new nurses.

**Conclusion:** A significant result is achieved by inter-professional counseling and the following simulation training for reducing the working pressure and enhancing clinical skills for new nurses. This approach is better than the traditional counseling and training for retention of new nurses.

**Take-home Message:** An inter-professional counseling and following simulation training has a positive result of retention of new nurses.
#3II15 (2856)
Medical Students Need Help: Batch Committees Establishment

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Dalia Sriwi, Alfaisal University, Riyadh, Saudi Arabia
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Mohamed Iesar Abdelaziz Mohamed, Alfaisal University, Riyadh, Saudi Arabia
Mohamed Sharique Ahmad, Alfaisal University, Riyadh, Saudi Arabia

Background: Alfaisal University’s tough curriculum is difficult to cope with. Therefore, students introduced several committees that include transcription, lab, notes, and exam to be able to facilitate on one another and distribute the extensive workload of medical school. Our aim is to identify whether these committees are truly helpful or not.

Summary of Work: A questionnaire was distributed among 160 medical students of Alfaisal University (year 1 to 5). It assessed whether the students use these committees or not. Additionally, it compared the cGPA before they started using the committees and their current cGPA after using them.

Summary of Results: The results show that 16% of students do not use the batch committees. After analyzing the results of their average cGPA before and after the initiation of the committees, there was an observed significant increase by 4% from 3.47 to 3.62.

Discussion: Students achieved a higher cGPA after using the batch committees’ resources. These committees offer summaries, exam questions, and professor notes. They also save students’ time as they allow them to stay more focused. Furthermore, the batch committees provide a unified way of presenting the given information and lectures.

Conclusion: Students achievements have increased since the introduction of the batch committees. They help them share ideas and stay on the right track. In addition, they distribute the workload which decreases the time consuming essential tasks required by the medical student.

Take-home Message: Universities should implement the batch committee idea as it incredibly improves students’ performances and encourages them to cooperate to reach the same goal. After all, medical students are already burdened and need resources to aid them in their learning experience.

#3II16 (3069)
Factors affecting delayed students in CPIRD Hatyai Hospital

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Background: Delayed students are students who cannot complete a medical degree within 6 years. Academic achievement is not the sole factor for selecting CPIRD students. Some students may struggle with poor academic performance during training. To identify them for early intervention, we need to know the risk factors of these students.

Summary of Work: The demographic data and the scores from admission examination, MMI scores and interview scores during institution’s student selection, and first year GPA were used to find the association with delayed students. Univariate linear regression analysis was performed for all independent factors. P value less than 0.05 was considered significant.

Summary of Results: Retrospective 3 years, 13 of 102 (12.7%) students in Hatyai Hospital are delayed by this definition. Univariate analysis showed 6 factors to be affecting delayed students: total admission score (p<.001), Thai language score (p=.038), Social studies score (p=.005), Chemistry score (p=.001), Biology score (p=.001), and the 1st year GPA (p<.001).

Discussion: The previous research showed CPIRD doctors were more likely to stay longer in rural areas and in public service than their counterpart. For the same standard, some of our students need to be delayed. These students need an appropriate academic support otherwise, these delayed students may become drop out.

Conclusion: Early intervention by identifying these risk factors should help us monitor and supervise them correctly.

Take-home Message: The student support system is very crucial for CPIRD students. Some predictors help us to identify the ones who need it.
#3II17 (1040)
A predictive model for early identification of students at risk of failing finals

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Background: Research suggests medical students who are likely to fail final examinations can often be identified in advance by a number of individual performance indicators. However, use of such performance indicators is underutilised and many students fail without warning.

Summary of Work: Recently published work has focused on individual high-level predictors of performance, typically end-of-year marks. However, multiple indicators are available. This project examines the usefulness of a predictive model that employs many educational data points in identifying the performance decline of at-risk students before finals.

Summary of Results: The multi-indicator predictive model, identified by initial exploratory factor analysis, examines the risk of failure based on routinely gathered data, such as completion of engagement activities and administrative tasks. We present the regression analysis results of the predictive model’s usefulness in determining finals performance.

Discussion: A predictive model of risk which is simple to construct may allow for more sensitive detection of performance decline over a number of measures and time. This should allow more targeted focus of limited resources to help struggling students. Further evaluation of the impact on failure rates is now required.

Conclusion: A model to identify risk of failure can be created using routinely gathered and readily available data. Identification of students who are likely to fail finals can be more efficient and cost-effective than accepting failure and subsequent attrition after years of investment by the institution, public and students.

Take-home Message: Students exiting the programme after many years of study indicates a significant waste of resources. Predictive models, like that described here, can identify those at risk of failure at little cost to the institution and could be used to advise students and focus costly additional teaching and support.

#3II18 (1409)
Comprehensive teacher ratings of class participation may anticipate the identification of medical students at risk of dropping out

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Patricio Costa, University of Minho, School of Medicine, Braga, Portugal
Manuel João Costa, University of Minho, School of Medicine, Braga, Portugal

Background: Marking student participation in class is used throughout the world to stimulate student engagement in activities. This retrospective study tested whether teacher ratings of class participation could partially predict medical student dropouts from one medical school. This would prove useful to anticipate the identification of potential dropouts.

Summary of Work: A longitudinal dataset of six cohorts (N = 709) was used to find variables associated with dropouts, using individual attributes, course failure in year 1 and an aggregate score of student participation in class. This was an average of an in class global rating, systematically marked from 1 to 5.

Summary of Results: There were 43 identified dropouts, 34 (79.07%) in the first year. Logistic regressions revealed that lower scores of class participation and lower ratios of courses failed in year 1 added predictive ability to models for the identification of dropouts. The Pseudo-R2 rose from 0.219, respectively to 0.279 and 0.611.

Discussion: Findings revealed associations between dropouts and both year 1 failures and teacher ratings of student participation. Relatively to course failures, the systematic assessment of class participation provide earlier indicators to the advantage of anticipating the identification of dropout students. The findings are understandable through the lens of Astin’s engagement model.

Conclusion: This work showed that a comprehensive system of teacher ratings of class participation with entry classes of 120 students in a non-PBL context might aid to anticipate the identification of potential dropouts. Major strengths were the sampling across multiple cohorts and the used of participation score obtained in real settings.

Take-home Message: Comprehensive scores of class participation can be used to help predict dropouts from medical school. Medical schools could look to operationalize the use of scores of class participation as an important component of systems early detection of potential dropouts.
#3JJ Posters: Postgraduate Training 1 - General

Location: Hall 3 Foyer

#3JJ01 (1079)
A Cross-Sectional Study on Perceived Usefulness of A Specialty Handbook Designed for On-call Residents

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**Background:** Residents rotating through various specialties often find themselves out of depth during calls when support from senior staff members is reduced and difficult to obtain. In response to this, the haematology department in National University Hospital (HDNUH) wrote a mini-handbook on haematology/oncology that is aimed at helping on-call residents.

**Summary of Work:** Residents (N=35) who rotated through HDNUH, from 2014-2016, were surveyed. The questionnaire assessed residents’ awareness of the existence of the handbook; how often they used it; their views on the usefulness, breadth, depth and relevance in helping with calls and whether other specialties should have a similar handbook.

**Summary of Results:** Of the 35 residents, 82.8% were aware of a specialty handbook. Those who were aware of the handbook, 89.6% used it at least once every few calls. An overwhelming majority (96.5%) found the handbook ‘satisfactory’ or ‘very satisfactory’ in terms of breadth of coverage and relevance to their calls.

**Discussion:** The specialty handbook is generally found to be beneficial for handling calls and widely used. However, the existence of the handbook needs to be better publicized to the junior doctors before starting their rotation. A similar approach of handing out handbooks in other specialties should have a similar handbook.

**Conclusion:** An overwhelming majority of the residents who knew about the handbook found the handbook to be useful to a varying degree. All of the residents surveyed were in favor of recommending the use of a similar handbook to other specialties.

**Take-home Message:** Going on calls can be a daunting experience for new or experienced residents alike. Having a handbook as a medical aid or education tool will facilitate residents to provide quality clinical care during on call hours and also on a daily basis at work.
Advancing a global model for postgraduate medical education training and certification: A case study from Singapore

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Kathy Holtzman, American Board of Medical Specialties, USA
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Background: The Singapore Ministry of Health has engaged with ACGME-I and ABMS-I in a collaboration to develop accreditation and certification programs for medical specialists in Singapore. US standards for training programs and certification have been adapted and contextualized to suit the healthcare system, patient demographics, and socio-cultural background in Singapore.

Summary of Work: Since 2010, ACGME-I has accredited 24 specialties in Singapore, of which 12 have certification examinations developed in collaboration with ABMS-I. A formal review of the collaborations was conducted to assess the investment and impact of programs for Singapore.

Summary of Results: The report concluded that structured training was a positive change. The collaboration allowed for transfer of knowledge and skills on training and assessment and strengthened interest in medical education. There is now interest in using similar models for other health professionals.

Discussion: To enhance what is working well, there now needs to be stronger local governance and accreditation capacity and capabilities, increased focus on broad-based training, and better centralized data collection. All of the enhancements should create better education and patient outcomes.

Conclusion: Singapore's approach to using global partners for local training and assessment has allowed Singapore to leverage established training and assessment practices while creating a "fit for purpose" program.

Take-home Message: Partnering to enhance training and assessment while maintaining local nuance creates an environment that allows for global influence with a local focus. It also allows for efficiency with developing robust local systems of training and assessment.

CICARE patient-communication elements in resident doctors' clinical skill training - experience of a medical center in Taiwan

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I Yin Hung, Chi Mei Medical Center, Tainan, Taiwan
Ming Yew, Chi Mei Medical Center, Tainan, Taiwan
Yin Chen Chang, Chi Mei Medical Center, Tainan, Taiwan
Chung Hsi Hsin, Chi Mei Medical Center, Tainan, Taiwan
Jen Yin Chen, Chi Mei Medical Center, Tainan, Taiwan

Background: CICARE is an acronym of Connect, Introduce, Communicate, Ask, Respond and Exit which originated from UCLA Health. Our hospital had promoted this concept for better medical staff-patient interaction since 2013. Here we present our effort to blend it in to clinical skill training.

Summary of Work: Each central venous catheter training session consisted of 1 instructor and 3-5 trainees. Training period was 2 hours. Introduction lecture then practice on simulator with ultrasound assistance were performed. CICARE skill was not emphasized in this session. Clinical skill performance and communication process was evaluated by instructor.

Summary of Results: Eighty R1-R7 trainees were recruited in 20 sessions in 2015. Instructor used checklist to record trainees' skill. Although the main purpose is to evaluate catheter insertion skill, all trainees were able to complete CICARE steps with satisfaction. It revealed our resident doctors had good sense and behavior on patient communication.

Discussion: After 2 years promotion period, CICARE has become a part of culture and contributes a positive influence in our hospital. Most doctors as well as staffs can express themselves clearly and behave appropriately without hinting.

Conclusion: CICARE provides a good template for good communication skill development. It is easy to memorise and practice. It is compatible with our institute's core values: compassion, accountability, effectiveness. We took it as our culture and staffs got it internalised. It will be keep promoted in our institute.

Take-home Message: CICARE is a set of good communication behaviors and easy to memorise. It contributes better understanding and less complaint. Our hospital promoted it and got good results.
Gender matters: an innovative residency curriculum addressing gender disparities in the workplace

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Background: Gender disparities persist in leadership roles, promotion, and pay across academic medicine. Women comprise roughly half of all US medical students and internal medicine trainees. Based on our needs assessment and literature review, we implemented a resident curriculum to address the interactions between gender and communication, leadership, and negotiation.

Summary of Work: Our all-resident curriculum includes interactive seminars involving concrete workplace examples in communication, leadership, and negotiation. Communication sessions focus on how gender-based expectations affect clinical communication. During leadership sessions, residents complete a personality/skills assessment and identify learning goals. Senior residents attend a follow-up workshop to discuss subsequent leadership experiences.

Summary of Results: Women participants more often had negative experiences in communicating with consulting services and ancillary staff. Overall, men felt their gender more positively affected their work experience. These seminars have been well received, and show trends toward increased recognition of biases in the workplace and personal commitment to mitigation.

Discussion: Initial evaluations showed that residents had difficulty discussing abstract concepts and needed these seminars to be grounded in their daily work. Changing our approach to provide more concrete examples of disparities and discussion around issues they have or will face greatly improved learner satisfaction.

Conclusion: Our residents perceive gender disparities at work, and they are open to learning more in a focused curriculum. Our curriculum is innovative: 1) designed specifically for residents, not practicing physicians; 2) delivered to all residents—male and female—for broadening gender discussions, instead of existing programs usually exclusively for women.

Take-home Message: Residents perceive gender disparities at work but through targeted education using concrete, real-world examples they can improve their skills and work towards changing their practice.

A more effective training program through co-design

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Megan Gingell
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Background: Junior doctors, in transitioning into vocational training, have diverse career aspirations and unique learning needs. Co-design with patients is an approach traditionally used for designing care systems. Co-design with junior doctors could be utilized in the development of a training program that meets their learning requirements.

Summary of Work: A user needs analysis and literature review was initially undertaken. Learning needs are thereafter continually mapped by tracking use of online learning resources. The training sessions are developed by educators working in collaboration with junior doctors. Feedback is regularly reviewed with educators. The result: a continuous plan-do-review-act cycle.

Summary of Results: Survey of feedback data after 6 months suggests the education programme created is delivering against stated aims. Learner approval rating: 88% (80.5% survey response rate). Attendance rate: 86%. Mean self-rated confidence in skills teaching rose from 3.3/10 to 7.95/10 (n=12).

Discussion: The programme has the support of educators, learners, services and the Medical Council of New Zealand. It is possible to create a high-quality and relevant education programme through a novel co-design process with house officers.

Conclusion: Co-design is an effective approach in planning post graduate training programmes.

Take-home Message: This co-design approach to developing a training program, tailored to the unique learning needs of junior doctors, is feasible and successful and could be applied to the design of training programs for other health professionals.
Workplace based learning of medical graduates in Central Hospital of Central Finland: enforcing the workplace training by appropriate pedagogical support

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Background: In Finland both under- and postgraduate medical education includes work-based training. The main goals for the training are mentioned in the universities teaching programs, but how they are achieved is left to the workplace. This challenges the guidance know-how of hospital employees who usually are not professional teachers.

Summary of Work: In the Central Hospital of Central Finland (CHCF) the structure of the postgraduate medical students' training has been developed by both pedagogical and medical cooperation. Medical competences form skill levels and each level matches with appropriate guidance and feedback.

Summary of Results: When designing the workplace training ensembles and related tutorials, the pedagogic methods (like OSATS) aid in tailoring the needed guidance for each situation and the corresponding learning aims. Also structured assessment of competencies becomes possible and the training program enforces the graduates' self-assessment skills.

Discussion: The postgraduates' workplace-based training will be more effective if it is supported by practical and pedagogical tutorials which are accepted by the whole working community. This does not arise without effort. The CHCF utilizes pedagogic consultants who design the training programs with clinicians and also organize training the trainer courses.

Conclusion: The Finnish reform of professional education highlights the significance of workplace-based training, as authentic work offers a rich learning environment. In hospitals, the work and learning aims of trainees should form an ensemble, in which all elements enforce each other. This needs proactive pedagogic planning and wording (tutorials).

Take-home Message: The medical graduates' learning in workplace-based training environments requires appropriate support and guidance. An effective way to arrange this is to create a practical and pedagogical tutorial for the whole training ensemble and make it available to the working community.
Will a structured checklist teaching map improve diagnostic confidence of junior doctors to interpret EKG for ST-elevation myocardial infarction?

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Background: Timely recognition of ST elevation myocardial infarction (STEMI) through the 12-lead electrocardiogram (ECG) is key for successful management. However, junior doctor always feel challenging while interpreting those EKG. Delayed or missed diagnosis of STEMI are not infrequent encountered in emergency condition. The problems could be improved through alternative teaching course design.

Summary of Work: A structured checklist teaching map was created where 14 of the EKG subtypes were listed and divided to classical STEMI, STEMI equivalent and subtle STEMI. Firstly, the 14 EKG subtypes were taught to junior doctor. Then they was asked to run through the checklist each time they interpreting an EKG.

Summary of Results: The junior doctors participated the teaching course was then asked to rate their confident in diagnosing STEMI after the course. Among the 18 participants: 1. 56 % (10/18) rated "very useful", 2. 44% (8/18) rated "useful", 3. None rated "not useful".


Conclusion: Teaching junior doctors to practice through a structured checklist in a step-wise approach while reading an EKG suspected of STEMI will 1. help learner to built up an overall disease map of STEMI, 2. mandate them to run through every possibility of STEMI subtypes, 3. reduce under-diagnosed of PCI candidate.

Take-home Message: The use of a structured checklist teaching map may increase diagnostic confident among junior doctor while interpreting EKG to identify patients suspected of STEMI.

Working together to strengthen postgraduate medical programs in the region Utrecht

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Jacqueline Mooij, UMC Utrecht, Utrecht, Netherlands
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Background: Educating residents is a joint effort and responsibility of various hospitals. Each postgraduate medical program has its own structure of academic and non-academic teaching hospitals (called ‘cluster’). This calls for cooperation and coordination. Educationalists from hospitals in the region Utrecht have developed a tool to evaluate the cooperation: ‘ClusterCompass’.

Summary of Work: Based on recent literature, a set of standards which are considered meaningful for cooperation and which promote the continuity of regional training programs, was designed. This set is submitted to a representation of participating hospitals, resulting in a format for semi-structured interviews and a method for discussion in a cluster-meeting.

Summary of Results: ClusterCompass is piloted by two postgraduate medical programs in the region Utrecht. A third program is participating at this time. Participants appreciate the methodology as appropriate, mention the importance of clear instructions and expectations in advance. Both cluster meetings delivered concrete plans to improve coherence and consistency of the program.

Discussion: Participation in the ClusterCompass is voluntary. Stimulating the use of this tool by the board of directors of the region Utrecht and/or regional education committees, contributes to participation of all postgraduate medical programs in the region Utrecht. Cooperation in the region will be fostered by use of this tool.

Conclusion: ClusterCompass provides a structured dialogue on the cohesion and continuity of a postgraduate medical program, between program directors and residents of different hospitals. It contributes to joint outcomes to strengthen and develop the educational program. The tool offers possibilities for customization and can be used by all postgraduate medical programs.

Take-home Message: Quality assurance and formal accreditation of postgraduate medical programs is mostly organised by one hospital. However, most postgraduate medical education programs are situated in different teaching hospitals. The ClusterCompass is a quality tool which focusses on the total training continuum of the medical program stimulating dialogue in the different locations/hospitals.
Junior doctors as a source of organizational innovation at a Danish university hospital

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Lisbeth Rune Schultz, Aarhus University Hospital, Aarhus, Denmark
Anna Aaby, Aarhus University, Aarhus, Denmark

Summary of Work: Junior doctors from six departments at Aarhus University Hospital were paired with a senior student from a three-year enterprising leadership programme. With the leadership student as sparring partner, the doctors worked on an organisational innovation project of their own choosing adjusted to local circumstances and guided by the department administration.

Discussion: Danish health care is very much lead and organized by senior health professionals. Engagement of junior doctors may increase the resources for organizational innovation i.e. the system's ability to adapt to changing conditions. However, success depends on the organizations will and courage to be looked at with fresh eyes.

Conclusion: Allowing junior doctors to work with organisational innovation, supported by their department administration and inspired by change process professionals, may under some circumstances be an effective way of supporting health system adaptability to changing conditions and constraints.

Take-home Message: 1) Junior doctors may be an untapped resource for organisational innovation. 2) With proper support from change process professionals and the department, junior doctors may develop useful and creative organisational changes. 3) Increasing junior doctor's competences for organisational innovation may contribute to a more adaptable future health system.

Delivering Values-based Education through Experiential Learning in a Residency Outdoor Orientation Camp: A Mixed-Method Study

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Background: Post-graduate medical residency programs are traditionally well equipped to inculcate technical skills and clinical capabilities, often delivered through outcomes based education. Values based education is integral in nurturing a well-rounded resident. The process of experiential learning hinges on immersive participation and reflection, and is a promising approach to values-based education.

Summary of Work: The National University Health System (NUHS) Residency 3-day-2-night orientation camp is designed with “Outward Bound Singapore” to inculcate NUHS institutional TRICE values (Teamwork, Respect, Integrity, Compassion, Excellence) through activities and concrete experience. Learning and reflection is facilitated by hospital leaders. It runs biannually before the start of each residency intake.

Discussion: Through reflective journaling, residents demonstrated longevity of values-based education through experiential learning during the camp, with applicability of the learning to real-life hospital setting years after camp participation. Participation of hospital leaders instilled relevance, facilitated shared learning and promoted role-modelling. Several reflected that values-based education could start from medical school.

Conclusion: Camp encounters adequately reflect real-life clinical encounters; the experience and lessons learnt are transferable to the work setting in hospital.

Take-home Message: The desired outcome of values-based education is the residents’ delivery of professional and positive patient-centered care. An aptly-designed camp with a focus on experiential learning, curated and led by hospital leaders can have lasting impact. It should be considered a mode of delivery of values-based education in various medical disciplines.
#3JJ13 (2125)
Crisis Resource Management for Junior Medical Officers – a novel approach to sustainable skill acquisition in a tertiary teaching centre

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Mihir Desai
Nathan Moore
Khanh Nguyen

**Background:** The management of time dependent emergencies may be improved by optimising the 'Crisis Resource Management (CRM) skills' of the healthcare team. Early acquisition of CRM skills by junior doctors may be beneficial for safer patient care and can be supported by simple medium fidelity simulation based training.

**Summary of Work:** A CRM program was implemented for the junior doctor cohort (n=268) at a tertiary centre in Australia between 2014-2016. After an analysis of learning needs, the program design consisted of an educational trifecta of open access online materials, 1/2 day medium fidelity simulation workshop and weekly rostered simulation 'revision' sessions.

**Summary of Results:** The program was evaluated prospectively and with a post-course survey (n=68). Online materials received '939 hits'. 168 enrolled in our 1/2 day course. Over 30 months 82 1-hour 'simulation revision' sessions were delivered. 56/68 (82%) of survey respondents felt more confident and 51/68 (75%) stated safer care was being provided.

**Discussion:** Our experience suggests that CRM learning objectives are achievable with a limited number of simulation resources. The participants found the program relevant to their practice and would like on-going access to similar training. One important caveat would be that self-rated confidence does not always correlate with actual clinical competence.

**Conclusion:** Acquisition and retention of non-technical skills is a current challenge in postgraduate medical education. Our CRM program resulted in a high degree of participant satisfaction and increased confidence in managing commonly faced medical emergencies. The program is available online as a ‘free open access medical education’ (FOAMed) resource.

**Take-home Message:** CRM training in the early stages of postgraduate training is feasible for a large cohort of junior doctors in a busy tertiary centre. By guiding the early development of important CRM and 'non-technical' skills for junior doctors this type of training may improve patient safety by optimising teamwork and communication.

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#3JJ14 (147)
Promotion of Post Graduate Medical Education in Iran: Challenges & Applied solutions

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**Background:** Promotion of Post Graduate Medical Education (PGME) is constantly one of the main concerns of educational policy makers. After Iranian revolution in 1979, PGME had tremendous quantitative growth in offering different specialty, subspecialty and fellowship programs. The number of graduated specialist’s and specialists has grown significantly during this period.

**Summary of Work:** We used qualitative research method to determine challenges and potential solutions to promote Iranian PGME. To explore medical education expert’s implicit knowledge, a panel held in May 2015.

**Summary of Results:** Our study suggest some reforms for Iran's PGME system; Revision in specialty / subspecialty curriculum, reform in national system of resident’s admission, reform in evaluation system &program accreditation, decentralization in quantitative development, admitting international residents, presence in international arena, and constant interaction with clinical research sectors in priority areas.

**Discussion:** Although Iran was successful to be self-sufficient in training physicians in various fields, there have been quality challenges. In the near future, PGME in Iran will need to undergo major changes. This article suggests some applied solutions to promote PGME of the highest quality in response to health system demands.

**Conclusion:** To meet the health care and medical education demands our study suggest some reforms for Iran’s PGME system. Promoting Quality of specialty/subspecialty training system beside Quantity of specialty/subspecialty medical workforce should be considered in developing educational policies for Post Graduate medical education in Iran in next decades.

**Take-home Message:** The balance between quality of medical specialists and subspecialist’s training and service and postgraduate medical education expansion is the main factor to achieve a reliable and dynamic post graduate medical education system.
Tailoring a Novice course in Anaesthesia for Non-anaesthetic trainees

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Melanie Tan, North Central School of Anaesthesia, London, UK
Lila Dinner, North Central School of Anaesthesia, London, UK

Background: Starting training in Anaesthesia can be daunting, with a steep learning curve. National shortages in Emergency Medicine (EM) doctors have led to increased training numbers. As these trainees rotate through Anaesthesia, this has led to a rise in novice ‘anaesthetists’ and the perceived need for a specific introduction to Anaesthesia.

Summary of Work: A specific Novice Anaesthetic course was designed for non-career anaesthetists. It delivered initial competencies required in Anaesthesia, as well as content tailored to aspects of Anaesthesia most relevant to other acute specialties. The London-wide course ran over 2 days (February 2016); with a mixture of lectures and small group sessions.

Summary of Results: Thirteen trainees from a mixture of primary specialties (EM, Intensive Care Medicine, Acute Medicine) attended the course. Small group sessions were well rated; particularly the sessions on equipment, anaesthetic machine and management of anaesthetic emergencies. Feedback suggested the course was a relevant introduction to Anaesthesia in an interactive, hands-on manner.

Discussion: Rotating through Anaesthesia provides these trainees with the chance to develop many transferable skills. Our course balances between the training essential for service provision, whilst maximising the opportunity to improve trainees’ experience during their time in our departments. This furthers their appreciation of the role of Anaesthesia within acute specialties.

Conclusion: Our new edition of the Novice Anaesthesia course was very well received. We have worked to refine our second course by exploring other specialty training requirements from an anaesthetic rotation, thereby making it more relevant. We will be sending previous attendees of the course a feedback questionnaire to address this.

Take-home Message: Trainees from other acute specialties benefit from learning transferable skills during their time in anaesthetic departments. Training of non-anaesthetic trainees, rotating through Anaesthesia, introduces challenges and must be tailored differently. Our course aims to help to highlight these opportunities for these trainees, when they go back to their departments.

Dental - Safer Airway & Sedation for Non-Anaesthetists (D-SASNA); A novel approach to airway and sedation training improves confidence, in Dentists, in managing sedation related complications

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Background: The Intercollegiate Advisory Committee for Sedation in Dentistry (IACSD) [UK] published national standards for the provision of conscious sedation (CS) in dentistry in 2015, which includes recommendations for CPD. The oral surgery department at King’s College Hospital, London alone treats approximately five thousand patients annually with CS.

Summary of Work: The Dental Safer Airway and Sedation for Non-Anaesthetists (D-SASNA) course was developed to include skills workshops and in-situ, high-fidelity simulation scenarios with semi-structured debrief. Course performance was evaluated using confidence and agreement satisfaction scales, mapped to the “Generic Learning Outcomes” from the IACSD. Opinion and beliefs were also collected.

Summary of Results: Response rate was 100% (n=28). In all domains, including CS knowledge & critical understanding, intellectual skills, practical skills and sedation related complication management, mean confidence levels increased from pre- to post-course surveys increased. All results’ statistical significance was proven, with p values all under 0.01.

Discussion: In analysing the qualitative data, from the free text feedback responses, we were able to extract themes and phenomena which subjectively helped build positive learning experience. The selection of educational styles (i.e. "simulation" and "workshops") were referred to in positive regard as well as the selection of a "formative" approach.

Conclusion: Inter-disciplinary, in situ training, utilising high-fidelity simulation & debrief, and specialised skills stations, is able to improve the confidence of all team members in the provision of safe CS and management of sedation related emergencies in dentistry. We are currently analysing data from 4 more course days.

Take-home Message: We at King’s College Hospital aimed to address the continued agenda of CS quality improvement and patient safety in the multi-professional team through the development of a specialised high fidelity training course. Through an inter-disciplinary faculty, we were able to develop and deliver an effective CS training course.
Design and Implementation of a Computer Assisted System for Residents’ Assessment At UNAM’s Faculty of Medicine Division of Postgraduate Studies

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Background: The Division of Postgraduate Studies (DPS) assesses each of its 10,000 residents enrolled in 78 specialties. The exam was printed and computer assisted when images were required. DPS printed 10,000 exams plus score sheets; paid for exam security services and supervised destruction of applied exams as well as other resources.

Summary of Work: SIIE integrates systems development, databases, wireless and local networks and informatics security. It applies existing academic criteria, norms, procedures and exams developed by each academic committee of seasoned faculty members from different clinical institutions responsible for each academic program. Residents map questions by colors facilitating followup of answered questions.

Summary of Results: In 12 days, 11,005 residents were assessed. 26 different exams were applied simultaneously with 450 residents per 3 hour application. SIIE facilitated the elaboration, application, scoring and statistical analysis within each training program; reduced cost and time invested and provided results per individual, academic program, clinical site and health institution.

Discussion: State of the art computer and telecommunications technology guarantees informatic security and confidentiality; video monitoring of each individual examination, optic reader registration and access control, and immediate printed results for each resident on exit. Exam information security is done via intranet, validating IP access linked to resident’s ID account number.

Conclusion: The system meets Evaluation Committee’s criteria for determining the validity and reliability of assessment instruments and its technical reports. SIIE meets the needs for which it was designed and implements all security measures necessary. All versions of results and statistics are rendered promptly for all involved in decision-making.

Take-home Message: The use of information technologies for evaluation purposes at UNAM constitutes a differentiating element with respect to written exams and use of all resources efficiently. A computer assisted integral system was introduced for nationwide UNAM medical residents’ assessment offering data consistency, confidentiality and security in a timely manner.
Identifying the gaps in research skills

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Background: Bezmialem Vakif University promotes research through funding, rewards and regulations, and aims to remove any barriers to publishing high quality medical research. Lack of time is identified as the most important impediment, especially for clinical staff, and may be accompanied by the lack of skills to conduct robust research.

Summary of Work: All scientific papers published in 2014 by the Medical School academicians were reviewed using a set of criteria developed by the researchers. A range of epidemiological study designs, data collection methods and statistical tests—including advanced or complex designs, were expected to be represented in the sample.

Summary of Results: The number of eligible publications were 280, of which 51 were case series or reports, and a further 37 reported results from in-vitro studies. Studies which provide high grade evidence, such as RCTs were uncommon. Data from records were used in 56 studies although use of a questionnaire was rare.

Discussion: Measuring research productivity at institutional and individual levels may be helpful but does not describe underlying issues. Although bibliometric measures, such as journal impact factor and h-index, are employed frequently, they are mainly based on the published paper as the final product and does not focus on the research itself. 

Conclusion: Although further comparative and in-depth studies would be needed for confirmation, focusing on research design could be the first step in assessing skills gap in medical institutions.

Take-home Message: Research methodologies employed - or not employed- at an academic institution may indicate gaps in research skills among the academicians.

What do you want to tell us? “ An analysis of participant Continuing Medication Education (CME) evaluations

David Hak, AO North America, Paola, PA, USA
AO North America Education Advisory Board

Background: CME evaluation is typically performed to assess whether intended educational goals were met, to assess participant’s knowledge and satisfaction, and to identify recommendations for course improvements. The purpose of this study was to critically examine the nature of participant responses to a post-course evaluation of a specific CME course format.

Summary of Work: We invited 708 individuals that participated in one of 6 identically formatted CME events to complete a post-event survey. The survey included 21 questions, 11 had binary or multiple-choice responses, while the remainder were open ended questions permitting narrative responses.

Summary of Results: 305 participants completed the survey (43.4 % response rate). Participants consistently provided more narrative comments for what they liked/ found beneficial, compared to what they would change / improve (975 vs. 671 comments). 49.3 % of narrative comments regarding recommended changes were either program praise or some variation of “nothing”.

Discussion: While participants frequently provided narrative comments to questions (providing comments to 47.5 % - 97.5 % of individual questions), the usefulness of their narrative responses were limited in identifying specific areas for future changes or improvements. Other methods (i.e focus groups) may be more useful to identify these recommendations.

Conclusion: Obtaining solid recommendations for CME course improvement is challenging using written participant surveys. Most comments regarding recommended changes are positive. Participants often recommend divergent changes (i.e. some people want longer lectures while others want shorter lectures).

Take-home Message: Narrative responses to CME post-course surveys are more commonly positive than negative. It may be difficult to identify specific areas for future course changes or improvements based on narrative comments alone, as they are rarely uniform or specific in their recommendations.
 Delivering the curriculum in evidence-based non-drug therapy: introducing HANDI and reviewing the performance of this innovation

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Jan Radford, University of Tasmania, Launceston, Australia
Dan Ewald, University of Sydney, Sydney, Australia

**Background:** The Royal Australian College of General Practitioner’s HANDI (HAndbook of Non-Drug Interventions) is a project designed to make evidence-based, non-drug interventions easier to find and use for primary care-based clinicians and consumers. HANDI delivers this aspect of the health-care curriculum in an accessible and up-to-date manner. HANDI is internationally relevant.

**Summary of Work:** HANDI aims to develop a minimum of 15 entries per year. HANDI committee members review RCT-standard research, and present this for peer review to other committee members. Interventions are also reviewed for ease of deliver in primary care. Once accepted an entry is developed for the HANDI website.

**Summary of Results:** The number of HANDI web-based entries, and stats per entry of web-page views, over time will be presented. Several HANDI entries developed in the last year will be presented to illustrate the type of entry HANDI produces and illustrate its relevance to delivering clinical curriculum, especially in primary care.

**Discussion:** The rise in webpage-views of HANDI is encouraging such as those describing mandibular splints for obstructive sleep apnoea; citrate salts for prevention of recurrence of kidney stones; mobile phones apps for smoking cession; or cognitive behaviour therapy for panic disorder.

**Conclusion:** HANDI’s findings are likely to be relevant to all clinicians and the people they care for, especially those based in primary care. HANDI is a great educational resource for defining and delivering the clinical curriculum in evidence-based, non-drug therapy.

**Take-home Message:** HANDI is a great way to enhance a clinical educator’s delivery of the curriculum of evidence-based non-drug treatments. We commend HANDI to both clinicians and consumers as a site that distills best practice in non-drug care. Check out HANDI at http://www.racgp.org.au/your-practice/guidelines/handi/

Developing Interprofessional Continuing Education and Professional Development Programs (CEPD) in Radiation Medicine – challenges and opportunities

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Rebecca Wong

**Background:** The safe and effective delivery of modern radiotherapy demands close and seamless collaboration among radiation oncologist, therapist and physicist. A robust CEPD program, responsive to the rapidly changing knowledge and skills in our field, rooted in inter-professional and competency based educational principles is expected to have the greatest impact.

**Summary of Work:** The UTDRO CEPD portfolio employs multiple formats including annual conferences (RT13, Target Insight), small group courses on specialized topics (e.g. radiobiology, novel techniques and clinical developments), on site, online and asynchronous offerings. Successful offerings uniformly target unique ahead of the curve content and employs that inter-professional and interactive strategies.

**Summary of Results:** Designing a robust CEPD program that is responsive to both individual as well as inter-professional learning needs for a technology, technique based discipline has unique challenges. Lessons learned are expected to have implications for similar learning communities, including those with different technological infrastructure and practice cultures.

**Discussion:** The unique features of contemporary CPD must be recognized in designing and implementing effective education, training, and assessment models in CPD that will result in positive impact on practices of interdisciplinary faculty within our department. The CEPD IPE committee need to place grater emphasis on ongoing formative assessment and regular feedback.

**Conclusion:** We have developed a CEPD program that is rooted in inter-professional and competency based education principles for a technique and technology based discipline. Future directions will concentrate on self-assessment, motivation to learn and further engagement of inter-professional staff as well as patients and families.

**Take-home Message:** Radiation Medicine CEPD programs provide opportunities for IP collaboration professional development trough distance learning, increasing outreach of CE offerings. High quality content attractive to various groups of participants, decreasing attendance and lack of administrative support are challenges that our CEPD committee needs to address in near future.
#3KK05 (277)
RCGP Forums: 10 Minute Clinical Scenarios

Chantal Simon, Royal College of General Practitioners, London, UK

Background: There are many areas of medical education that do not fit neatly into text books. Traditionally GPs have learned to manage these situations from senior colleagues. With senior clinicians becoming increasingly busy in primary care, this is happening less and less. How can we teach GPs these areas of medicine?

Summary of Work: The Forums: 10 minutes scenarios use ‘tricky scenarios’ simultaneously published on a Doctors.net.uk forum and InnovAiT, the RCGP’s journal for GPs in training. Scenarios can be discussed on the Forum by all those with log-ins to either the RCGP or Doctors.net.uk. Discussion summaries are published monthly on the RCGP website.

Summary of Results: The Forums have proved to be a valuable educational resource. In the first 6 months, usage has steadily increased, from 11 unique users in May to 428 unique visitors in November 2016. Discussion summaries form a valuable repository of tips for GPs to manage difficult situations in their practices.

Discussion: Fitting ongoing professional development into busy working days is difficult for clinicians. eLearning is one solution but lacks social interaction. Educational forums are a new alternative that allow clinicians, in any spare 10 minutes, to think about a problem, reflect, and discuss it with others in a safe environment.

Conclusion: Forums have proved an effective educational tool. They are popular with users and can be accessed anywhere at any time. They are a particularly good way to explore difficult scenarios that do not occur by traditional methods of medical education. Past discussion summaries form an additional reference resource.

Take-home Message: 10 minutes scenarios are designed to enable GPs to discuss difficult situations they may not have encountered before in a safe environment with other doctors (all disciplines). This is a new and exciting way to learn. Summaries of discussions provide GPs with a useful reference if they encounter similar situations.

#3KK06 (350)
The Dorset Locum Hub - supporting GP recruitment and retention in Dorset

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Steve Aylwin, Primary Care Workforce Centre, Bournemouth, UK
Clare Wedderburn, Dorset GP Centre & Primary Care Workforce Centre, Bournemouth, UK

Background: Recruitment and retention of GPs in the UK is becoming a major problem in some parts. The GP Forward View published by the RCGP highlighted the problem we will face in the future and suggested we must address this to try and “turn the tide”, while supporting GPlocum educational development.

Summary of Work: Many newly qualified GPs choose to work as locums, causing a non-stable, unreliable or non-supported workforce.

The Dorset Locum Hub brings locums and Practices together, supporting locums by linking work opportunities & providing resources (invoice templates, clinical courses, etc) and ensuring Practices are able to recruit the locum doctors they need.

Summary of Results: The Dorset Locum Hub took the form of a website with administrative and senior GPeducator support. The website comprises four sections: 1) Interactive calendar of work available at different Practices. 2) Information and facilitation for mandatory training courses. 3) Resources for locums like invoice templates. 4) Education opportunities & events.

Discussion: Practices have a resource for advertising their available work and a dedicated team to assist the administrative burden of arranging document transfer, invoices, etc. Locums have a central location to search for work, find resources, information, invoice templates, details of clinical courses, education opportunities, etc. and have administrative support.

Conclusion: This Hub has facilitated collaborative working between GP Practices and locum GPs to enhance recruitment of GPs into vacant placements and support locum GPs’ particular needs (training courses, education opportunities, specific documents relevant to locums such as invoicing and pension documents).

Take-home Message: The Dorset Locum Hub has been developed as a free tool for Practices and Locum GPs to facilitate them working together, to promote recruitment and to enhance retention of the local GP workforce while supporting their ongoing education and professional development.
Implementing and evaluating a new global educational course on facial trauma for surgeons

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Marcelo Figari, Hospital Italiano de Buenos Aires, Argentina
Damir Matic, University of Western Ontario, London Ontario, Canada
Thiam Chye Lim, National University Hospital, Singapore
Diana Greiner, AOCMF, Davos, Switzerland
Mike Cunningham, AO Foundation - AO Education Institute, Duebendorf, Switzerland

Background: AOCMF has been conducting successful educational courses for many years and aims to improve these offerings to meet the needs of participants. An international planning committee defined a new curriculum using backward planning with focus on patient problems and surgeon competencies and performance gaps.

Summary of Work: The committee redesigned and renamed the course on facial trauma to provide the fundamental knowledge and principles for the treatment of craniomaxillofacial fractures and complications. The course has 6 standard learning objectives to be achieved worldwide, and uses multiple educational methods: lectures (30%), small group discussions (40%), practicals (30%).

Summary of Results: 800 participants on 33 courses will complete 6 precourse self-assessment profiling with 12 multiple choice clinical questions and 7 postcourse evaluation questions in 2017. Data and content and faculty ratings are gathered in a Management Information System (via SurveyMonkey) to generate reports. Results from the first 13 courses are presented.

Discussion: Pre and post course information is important for planning and evaluating each course, since the new program is used in different countries, languages, and settings. Data are reviewed during the year to identify what is going well and what to improve (eg, necessary changes to content, delivery methods).

Conclusion: Using online evaluation and assessment for all 33 events in the first year of implementation worldwide ensures thorough evaluation of the new course in all regions. Online administration is an effective, feasible method of gathering information.

Take-home Message: Implementation of a standard set of pre and post event questions and MCQs based on specific event objectives provides valuable data to prepare each individual event and to monitor and continually improve the course content by identifying trends and needs at global, regional, and national levels.
#3KK09 (1948)
Factors Explaining General Practitioners’ Intention to Use Electronic Continuing Medical Education

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**Background:** Using e-Learning for continuing medical education (eCME) can provide an appropriate and scalable way of developments in knowledge and skills of general practitioners (GPs). Understanding the factors related to eCME users intention might help to develop a more efficient and cost effective program.

**Summary of Work:** Based on theory of planned behavior, we developed and administered a questionnaire to GPs in CME seminars in 2014 (Isfahan, Iran). Three domains of GPs’ intention to use eCME (attitudes, perceived behavioral control, subjective norms) were measured. Linear and logistic regression was used to identify the predictors of intention and behavior.

**Summary of Results:** Using hierarchical multiple regression, intention’s predictive factors included perceived behavioral control (0.63) and attitude (0.29), other factors were not significant. To find the predictors for an actual eCME user, the logistic regression was used. The beta value for each factor was: attitude (1.94), subjective norms (0.57), and seminar credits (0.98), other factors were not significant.

**Discussion:** GPs with high score in perceived behavioral control and a positive attitude toward e-learning had a higher intention to adopt it. In contrast, subjective norms (e.g., social pressures to use eCME) were not a predictor. The main predictor for being an actual user were Attitude and Perceived behavioral control.

**Conclusion:** Perceived behavioral control and attitude were the main predictors of the intention to use eCME. Establishing discussion forums and strengthening organizational support for eCME through an increased awareness among clinical superiors and CME managers would be expected to increase GPs’ intention to use eCME.

**Take-home Message:** The TPB can be used as a framework for understanding physicians’ intention to use eCME. Perceived behavioral control and attitude were the main predictors of intention to use eCME. By understanding important motives and barriers for using eCME, CME managers can develop strategies to improve practitioners’ intention to use eCME.

#3KK10 (2541)
Is It Safe To Leave My Patient At Home? Interprofessional Community-based learning

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Mark Ainsworth-Smith, South Central Ambulance Service NHS Foundation Trust, Otterbourne, UK
Carmel Wills, Mid-Wessex GP Education, Winchester, UK
Samantha Scallan, GP Education Unit, Southampton, UK

**Background:** Joint-training of clinicians working in overlapping care areas can be a powerful way to help develop cross-professional insights and knowledge. This poster describes a novel educational evening, which saw GP trainees and South Central Ambulance Service (SCAS) staff coming together to learn and reflect.

**Summary of Work:** 47 (25 SCAS staff / 22 GPs) attended the evening, and worked in mixed SCAS /GP groups, which were facilitated by educators. All participants completed pre-session information sheets and post-session evaluations.

**Summary of Results:** Participants valued the evening and reported broadened knowledge and insight about the clinical work of the other group, including the nature of work and differences in care management practice. Participants reported that the case-based scenarios were relevant.

**Discussion:** The aim of the educational evening was to enable participants to engage in shared learning activities using facilitated case scenarios based upon common cases. It highlighted in particular different approaches to risk management and uncertainty.

**Conclusion:** The event helped participants to better understand each other’s roles gain and to learn together.

**Take-home Message:** The educational evening demonstrated that shared learning can be powerful and generate insights for trainees and SCAS clinicians. Participants also made suggestions as to how the event might be developed for the future.
#3KK11 (1794)
National CPD Framework for State of Qatar Health
System: One year journey of implementation

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Background: To regulate the practice of Healthcare Practitioners (HCPs) and ensure best quality patient care in Qatar, the CPD was linked to the renewal of licensure. The system had to be outstanding, innovative and an intervention for quality-improvement process in healthcare promoting interprofessional education drawing recognition internationally.

Summary of Work: With creativity in the footing, the CME/CPD framework was implemented on March 7, 2016. Continuous and holistic engagement with HCPs via multiple modes of communication like the print, electronic, and social media, regular orientation programs, open days, etc., were key to successful implementation of the framework that was well received.

Summary of Results: Single CME/CPD framework for HCPs promotes interprofessional education. 27,468 recorded 333,755 CPD activities on their e-portfolio. Percentage compliance of HCPs to QCHP credit requirements averaged 86.3%. 44% of CPD activities are interprofessional. Supporting hybrid accreditation system was recognized by AMA, ACCME, AAFP and RCPSC provides opportunities for diverse CPD activities.

Discussion: The framework has resulted in better understanding of the values, principles and benefits of interprofessional CPD activities that is core of the shared vision. A robust hybrid accreditation system pillars the broadening perspectives of global standards and strong stakeholder engagements that guarantee the sustainability of the system.

Conclusion: Qatar Council for Healthcare Practitioners has implemented a “single framework for all” successfully engaging the HCPs in life-long learning via an appropriate communication plan. Framework supported by a hybrid CPD accreditation system provides opportunities to HCPs with quality CPD activities that are realistic and achievable. Better governance with increased decentralization.

Take-home Message: Engaging healthcare practitioners in implementation of the system is the key factor in innovation governance for better patient outcomes.

#3KK12 (557)
The benefits of flipped learning on periodically continuing professional education

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Ya-Hui Chen, Tungs’ Taichung Metroharbor Hospital, Taichung, Taiwan
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Background: Nurses’ understanding and proficiency at correct injection administration via Port-a-Cath is important in maintaining and prolonging the device function and catheter patency. Therefore, periodically re-education and skill auditing is necessary. This study aimed to explore flipped learning intervention benefits on periodically continuing professional education (CPE), compared to conventional e-learning.

Summary of Work: A quasi-experimental design was adopted. The flipped group (n=26) underwent pretest, at-home e-lecture, posttest, in-class workshop, and final-test. The controls (n=30) underwent pretest, in-class e-lecture (video and handouts), and final-test (including posttest). The e-lecture and workshop intervention effect and the final evaluation on skill proficiency and training satisfaction were analyzed.

Summary of Results: The demographics and pretest scores (range: 0-100) had non-significant between-group difference. The score increment after e-lecture intervention was significant (p<0.0001), especially for young age (p=0.0093), while no between-group difference manifested (p=0.2371). After the workshop, scores increased 3.85 (p=0.068) and 10.65 (p=0.0006) points in whole flipped group and in college-graduate nurses.

Discussion: In addition to the pre/post-test assessment, final evaluation on skill proficiency and overall satisfaction manifested non-significant between-group difference, while the flipped group, could repeatedly browse and discuss on the learning materials, manifested better satisfaction on materials (p=0.0261). This implicated the likelihood that more recognition on the re-education content was excited.

Conclusion: Given the same materials, both the in-class and at-home e-lecture intervention effects on knowledge improvement were equivalent and age-associated. In the flipped learning, workshop intervention effect was education-associated and learners had more satisfaction and maybe were more recognition on the re-education content.

Take-home Message: Due to the heaviness of clinical affairs, many nurses get impatient on periodically CPE and neglect its importance. The interactive learning in flipped classroom provide nurses chances to communicate opinions and experiences and hence could excite their recognition to periodically CPE, especially for may nurses who have better appraisal competence.
Enhancing Training in Urgent Care for Health Attendants and Patient Service Associates in Local Primary Care Clinics

Kailin Teh, National Healthcare Group Polyclinics, Singapore

Background: Health Attendants (HA) and Patient Service Associates (PSA) are the first point of contact for patients at reception in local primary care clinics. They play an integral role in identifying ill patients who require triage. Yet, most are not confident of carrying out this task, which may threaten patient safety.

Summary of Work: Pilot training was conducted by 6 Family Physicians at Ang Mo Kio Polyclinic from September to December 2016, on 6 common symptoms identified through a training needs analysis. Learners were asked to rate their level of confidence in managing patients on a 5-point Likert scale before and after training.

Summary of Results: The results showed an improvement in the level of confidence in managing all 6 symptoms among the learners after the training. The percentage of learners who indicated ratings of “confident” and “very confident” rose from the range of 9.5% to 71.4% pre-training, to the range of 64.3% to 97.5% post-training.

Discussion: Feedback from the learners revealed that their level of confidence in managing patients with the symptoms and identifying ill patients for triage increased after the training. In addition, it was consistently observed that a higher amount of interaction using case-based teaching during the sessions was more effective to promote learning.

Conclusion: Structured training is useful in increasing the confidence of HAs and PSAs to identify patients for triage. It is important to select trainers who can perform case-based teaching effectively. Focus groups with triage nurses can be used to assess the success of the training and possible implementation at other clinics.

Take-home Message: Continuing education for healthcare workers is vital for sharing knowledge, maintaining clinical competency, and enhancing patient care. Structured staff training programs with organisational support will help to complement on-the-job training, and support healthcare workers in carrying out their job roles more confidently, in turn ensuring effective utilisation of healthcare resources.

Development, implementation, and evaluation of an evidence based medicine course for community pharmacy preceptors

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Daniel Rainkie, Qatar University, Doha, Qatar
Kyle Wilby, Qatar University, Doha, Qatar

Background: Journal clubs are incorporated into the pharmacy student’s experiential experience to assess competencies of literature evaluation and application for practice. Community pharmacy preceptors in Qatar have limited knowledge related to critically evaluating literature and therefore require training to improve appraisal skills and the preceptor’s ability to provide student feedback.

Summary of Work: An evidence based medicine course was designed for community pharmacy preceptors based on results of an educational assessment. The course was delivered over 5 sessions and included both didactic and active learning strategies. Course impact on preceptorship skills was measured during student practice experiences using a journal club assessment context.

Summary of Results: Ten completed the course with 50% and 70% passing the drug information and critical appraisal assessments, respectively. During the impact phase, 33% performed at a proficient level while 67% needed further development in providing student feedback. Preceptors’ confidence improved across pre-course, post-course, and follow up intervals (x^2 = 6.091, p=0.048).

Discussion: A course-based approach to increase preceptors’ knowledge of critical appraisal and drug information skills was effective. Majority of preceptors gained critical appraisal knowledge, but lacked skills in providing constructive feedback to students. Suggested course refinements included the addition of practice sessions in providing journal club feedback to students.

Conclusion: The course was beneficial in providing the community preceptors with the knowledge to evaluate literature and conduct journal clubs. Majority of preceptors require further development in their ability to assess the student’s proficiency and provide feedback pertaining to evidence based medicine skills.

Take-home Message: Course development should be tailored to the needs of learners, and the impact should be measured to determine the success of the educational intervention.
Supporting Physician Practice Improvement through a Joint Performance Appraisal Process

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Sheldon Permac, University of Manitoba, Winnipeg, Canada
Jeannette Edwards, Winnipeg Regional Health Authority, Winnipeg, Canada
Christian Becker, Winnipeg Regional Health Authority, Winnipeg, Canada
Rob Diakiw, University of Manitoba, Winnipeg, Canada

**Background:** There is increasing focus on ensuring physicians are able to demonstrate that they are sustaining and enhancing their competence throughout their careers. Every dimension of physicians’ practices should be assessed for their value and effectiveness, and be the focus for improvement.

**Summary of Work:** To reduce duplication and burden on physicians, the Winnipeg Regional Health Authority (WRHA) Primary Care Program and the U of M Department of Family Medicine have developed a joint process of appraisal for medical staff to support physicians in their personal and professional development.

**Summary of Results:** The process involves 3 key components: Reflection on Practice, Performance Conversation and a Personal Learning Plan. It also considers multiple dimensions of practice: Clinical, Administrative, and Teaching Learning & Scholarship.

**Discussion:** Recently the Federation of Medical Regulatory Authorities of Canada (FMRAC) adopted its Physician Practice Improvement framework. The intention is that PPI will cover every dimension of physicians’ practices – clinical, administrative, educational or research-oriented.

**Conclusion:** The Winnipeg Regional Health Authority (WRHA) Primary Care Program and the U of M Department of Family Medicine career development and performance feedback process supports physicians in attaining goals Physician Practice Improvement (PPI).

**Take-home Message:** Considering their common overlapping goals, health care institutions and faculties of medicine can effectively partner to support physician faculty in their personal and professional development.

Identifying Continuing Professional Development practice gaps of Primary Care Physicians in the State of Qatar: A perceived needs assessment

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Deema Al-Shelikhly, Weill Cornell Medicine-Qatar, Qatar
Samar Aboulsoud, Qatar Council for Healthcare Practitioners, Qatar
Jennifer Gordon, Royal College of Physicians and Surgeons of Canada, Canada
Craig Campbell, Royal College of Physicians and Surgeons of Canada, Canada
Thurayya Arayssi, Weill Cornell Medicine-Qatar, Qatar

**Background:** Continuing Professional Development opportunities are paramount to build and maintain a knowledgeable healthcare workforce. With the recognition of Weill Cornell Medicine – Qatar as accredited providers and the launch of Qatar’s National CME/CPD program we identified a need to develop accredited opportunities for healthcare providers based on identified practice gaps.

**Summary of Work:** A needs assessment survey was developed and distributed to Primary Care Physicians in the State of Qatar to support the development of activities that meet the practitioners identified practice gaps in line with the latest evidence-based practice to improve their performance in practice and ultimately lead to better patient outcomes.

**Summary of Results:** The survey data included demographic data of the widely diverse practitioners in Qatar, their preferences in regards to activity delivery format, learning modality and their identified practice gaps. The analyzed data was used for the development of CPD activities that meet the needs of the primary care physicians.

**Discussion:** Development of CPD programs based on well conducted needs assessment are vital for changing practitioners’ behavior. It is important to take into consideration the cultural context of the practitioners and the different demographics of diseases. Therefore we cannot rely on implementing CPD activities based on needs identified in the West.

**Conclusion:** With the diverse backgrounds of the primary care physicians practicing in the State of Qatar combined with the different demographics of the diseases it is of utmost importance to develop CME/CPD activities based on identified practice gaps.

**Take-home Message:** It is critical to develop CPD activities based on well conduct needs assessment that are specific to the target audience and their locality.
#3LL  Meet the Experts: Assessment and Measurement
Location: Room 307

Godfrey Pell, Richard Fuller, Matthew Homer, Assessment Research Group, Leeds, UK

Our philosophy is born of a continuous, quality improvement process that has seen ongoing improvements within assessment in our undergraduate Medicine degree programme, supported other institutions’ assessment innovation and informed a programme of research in key areas of Assessment & Measurement.

Our main areas of expertise relate to the OSCE (including quality improvement), the theory, design and delivery of successful sequential testing, the use of item response theory in relation to written testing, and workplace assessment, including application of assessment for learning theory.

Come and see us to discuss your assessment related issues.

No appointment necessary!
#4A Symposium: Simulation in Healthcare: What is the role of the patient in the education of the healthcare workforce?

**Location:** Hall 1

Rob Lane, Leeds Medical School, UK
Jools Symons, Leeds Medical School, UK
Andrea McGoverin, Leeds Medical School, UK
Nancy McNaughton, INESSRA, Toronto, Canada
Jane Moore, Oxford Medical School, UK
Rosamund Snow, Oxford Medical School, UK
Angela Towl, University of British Columbia, Canada
William Godolphin, University of British Columbia, Canada
Katri Manninen, Karolinska Institute, Sweden

A quarter of a century ago patients were used mostly as audio-visual aids in the education of medical students; usually asked to answer only closed questions and display parts of their anatomy on demand. In many countries the advent of a combination of patient-centred care, patient empowerment and internet access to information has meant that patients have become much more vociferous about and involved with their care. A minority have extended this to programmatic involvement in and influence of the education of the professionals delivering their care. As we move globally towards much more patient-focused healthcare systems what impact (if any) has this had on the education of doctors and other healthcare students and trainees? In this symposium we will examine different models of how patients and carers are currently engaged in medical education and what roles they may want in the future. The models discussed will include examples covering a range of engagement from patients as simple storytellers to patients as partners where they contribute directly to curriculum development and assessment writing and marking. Finally recognizing that healthcare is a service industry, we will consider how much influence patients should have in the future in setting the education and training agenda

**Who should participate in the symposium?** Medical education policy makers; Medical regulators; All staff involved in the training of healthcare workers both undergraduate and postgraduate; Students; Patients.

**What will they gain from participating?** An understanding of the different models of how patients and carers are currently engaged in the education and training of healthcare students and trainees and the aspirations for the future. An engagement in the debate about what this involvement should look like in the future. A time to consider whose voices should be heard in determining what skills graduating doctors and others should have to enter healthcare systems increasingly aspiring to be patient-centred.

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#4B Symposium: The Ideology of no Ideology: Recognizing Hidden Values in Medical Education Research

**Location:** Hall 3a

Cynthia Whitehead, The Wilson Centre & Department of Family & Community Medicine, University of Toronto; VP-Education, Women’s College Hospital; Toronto, Canada
Ayelet Kuper, The Wilson Centre & Department of Medicine, University of Toronto; Department of Medicine, Sunnybrook Health Sciences Centre; Toronto, Canada
Rachel Ellaway, Community Health Sciences & Office of Health and Medical Education Scholarship, University of Calgary; Calgary, Canada
Geoff Norman, McMaster University, Canada
Miranda Schreiber, University of King’s College, Halifax, Canada
Brian Hodges, The Wilson Centre & Department of Psychiatry, University of Toronto; EVP Education University Health Network, Toronto Canada

In medical education research (as in many other research areas) there is an unstated but common assumption that our goals are clear. We describe our questions as emanating from empirically identified gaps, our results filling these holes as gravel and asphalt fix potholes. Smoothing the bumps, research paves a road towards better educational products and outcomes. We accept that to answer important medical education questions we need to use theory, and that a diverse set of theoretical approaches and methodologies are required to advance the field. However, the value systems that might drive specific researchers to pursue particular questions are rarely explicitly discussed. Indeed, there is implicit disapproval about bringing up issues that peers might construe as ideological or political.

In this symposium, we will examine the “ideology of no ideology” that dominates medical education research. Similar to Janelle Taylor’s well-known argument about medicine’s “culture of no culture”, we suggest that the assumption that values aren’t relevant to research is problematic for our field. To be able to make determinations about what types of research are good and worthwhile, we need to attend to the values that underpin them. If we do not, our research and scholarship will unreflectively mirror dominant sociocultural values (e.g. the primacy of efficiency, the standardization of individuals, hegemonic cultural norms) which we, as researchers or as a medical education community, may not actually wish to support.

**Who should participate in the symposium?** This symposium is designed for all AMEE participants who are interested in the values that underpin research in our field. Health professions education researchers may find this symposium of particular relevance to their work. The symposium will also be of interest to educators who draw upon research findings and best practices in designing curricula, clinical teachers who use educational tools and assess learners, and learners who are the recipients of educational practices.
What will they gain from participating? A brief, accessible introduction to what is known from the philosophy and social studies of science about how values influence science. Examples, including from our own lives and work and from our quite different programs of research, to demonstrate how our different values drive our research identities and underpin our scientific questions. Discussion of the implications of ideology in medical education research and scholarship. Exploration of strategies and solutions for incorporating explicit conversations about values into our work.

#4C Symposium: Creativity, innovation and entrepreneurship in medical education - insights from ElsevierHacks!
Location: Hall 3b
Organised by the AMEE Technology Enhanced Learning Committee:
Peter de Jong, Netherlands
John Sandars, UK
Natalie Lafferty, UK
Student Representatives to be confirmed
Elsevier Representative to be confirmed

This symposium will highlight the importance of creativity, innovation and entrepreneurship as an essential aspect of medical education. Effectively responding to global health challenges in a world of rapid change and complexity requires new and transformational approaches in medical education. The "Hackathon" approach offers a unique opportunity for participants from a variety of disciplines to collaboratively share their expertise to develop new approaches in medical education. At the same time, the participants develop essential transferable skills through design based thinking.

#4D Symposium: Health care delivery is changing rapidly - How can medical schools respond to ensure graduates are fit for the future?
Location: Hall 3c
Co-organised by Association of Medical Schools in Europe (AMSE) and AMEE
Trudie Roberts, AMEE
Peter Dieter, AMSE
Wendy Reid, Health Education England, UK
Gary Rogers, Griffith University, Australia
Rille Pihlak, University of Manchester, UK
Harm Peters, Charite - Universitätsmedizin Berlin, Germany

Medical school graduate output is being increasingly scrutinised at four levels. (I) Health care delivery is changing at a pace globally as some traditional medical skills transfer to alternative health care workers e.g. physician assistants and pharmacists. Debate is necessary on how medical schools address the skills future doctors will need to face the cumulative complexities of co-morbidity, aging, global migration, climate change and population alongside individual health. (Presenter 1). (II) Analysis of graduate output in terms of subsequent entry into specialty training and compatibility with future workforce needs is a cause for concern. Work in the UK for example reveals a marked difference in entry into general practice across medical schools (ranging from 10%-30%). Yet it is predicted 50% of graduates need to work in primary care. How is the UK addressing this? (Presenter 2) (III) There is a resistance to change across Europe from traditional secondary care speciality based “silied” teaching to a more integrated structure which embraces a patient’s actual journey through modern health care (Presenter 3). (IV) Failure to tackle inequities of health care and produce graduates to serve deprived urban or rural communities remains unresolved and an ongoing issue for medical schools to tackle. (Presenter 4). This symposium will present these issues, suggest potential solutions but above all focus on interactive discussion with the audience to debate and identify ways forward.

Who should participate in the symposium? The issues embrace educators, both undergraduate and postgraduate concerned with training and curriculum development for our future medical workforce as well as medical students and young doctors in the current system with ideas for change. The aim is also to link AMEE and AMSE to combine resources for the development of collaborative global thoughts on the future medical training.

What will they gain from participating? Many participants will be concerned about disparities, as health care changes rapidly, of learning using the traditional medical school approach to training. Schools arguably do not address the needs of the future workforce or embrace changing technologies which could potentially enhance learning at a more global level. This symposium will be designed to stimulate reflective thought through discussion. At the end of the session participants will be able to describe why there is concern and formulate ideas on actions Faculty and curriculum leads can take to address them in their own institutions and contexts.
Introduction: Widening access (WA) to medicine is a global issue, the focus of which differs across contexts according to a country’s historical, cultural and social issues. In UK medical education, the main focus of WA is on recruiting a representative percentage of students from lower socioeconomic groups. However, very low application rates from these groups persist (1) despite much investment of time, interest and resources in WA. This lack of progress suggests that medical schools’ core messages about WA may be embedding or further reinforcing marginalisation, rather than combating this. Therefore, our objectives were to investigate how the value of WA is communicated by UK medical schools through their websites, and to examine how this may shape expectations regarding who is considered ‘suitable’ for medicine.

Methods: This study employed a critical discourse analysis approach. Our conceptual framework was underpinned by a Foucauldian understanding of discourse. From this perspective, discourses are the ‘rules’ that enable and constrain a group’s way of thinking, their production of knowledge and meaning, and what is considered valuable, legitimate or expected within the group. Our corpus included webpages from the 25 UK medical schools that presented information about WA activities and/or entry routes on their own websites (from 34 UK schools in total). Analysis followed an adapted version of Hyatt’s analytical framework (2). Drivers, levers and warrants for WA were identified. These statements were systematically analysed to understand how each constructed WA linguistically. Similar constructions were grouped together and located within the wider discourses of the area to reveal the discourses present. Finally we considered the function of these discourses and the assumptions they created (e.g. the behaviours they legitimised or silenced).

Results: The discourse of ‘WA for social mobility’ was strongly dominant. This justified WA as an initiative to support individuals with academic ability and commitment to medicine, but who were disadvantaged by their background in the application process. This was shown to be out of ‘fairness’ and a duty of social justice to these individuals. This academically meritocratic discourse communicated the benefits of WA as flowing one-way: with medical schools providing opportunities to applicants.

Conversely, discourses justifying WA as an initiative to benefit patient care through the improved diversification of the workforce were marginalised and largely excluded. Alternative strengths typically attributed to students from lower socioeconomic groups (e.g. an improved understanding of under-served populations or resilience) were not mentioned, implying that these were not valued.

Discussion and Conclusion: A dominant discourse that emphasises WA as a tool for the social mobility of academic individuals is not unexpected given the UK’s current neoliberal approach to higher education. However, the extent to which the counter discourse of WA for the improvement of service provision is marginalised in the text is surprising, especially given the increasing presence of this argument internationally. Current discourses of WA on UK medical school websites do not present non-traditional applicants as bringing additional gains to medicine through their diversity. This may work as a barrier to attracting larger numbers of diverse applicants. Medical schools should reflect upon their discourses, critically evaluate current approaches to encouraging applications from those in lower socioeconomic groups, and consider avenues for positive change.


#4E2 (113)
Can scores and number of re-sits in professional exams predict the likelihood of later fitness to practice issues?

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Lewis Paton, Department of Health Sciences, University of York, York UK

Jan Illing, School of Medical Education, University of Newcastle, Newcastle UK

Lazaro Mwandigha

John C McLachlan, School of Medicine, Pharmacy and Health, Durham University, Stockton-on-Tees UK

Introduction: There is evidence from a number of sources that low exam scores in professional exams may be associated with subsequent poor clinical performance, and possibly of fitness to practice issues. We have previously shown that exam scores in, and numbers of re-sits required to pass, the GMC’s Professional and Linguistic Assessment Board (PLAB) tests for International Medical Graduates wishing to practice in the UK, predicts outcomes in the Annual Review of Competence Progression (1). We now wish to explore whether these test results also predict possible subsequent censure by the GMC in clinical practice.

Methods: This was an observational study using survival analysis. We linked data relating to fitness to practice
events (referral or censure), PLAB performance (including re-sits), demographic variables and English language competence, as evaluated via the International English Language Test System (IELTS) using the GMC databases. The data were obtained for 27,707 international medical graduates registered with the GMC, including 1,183 doctors who had been referred to the UK medical regulator for at least one concern in relation to fitness to practise (FtP).

The main outcome was risk of referral or eventual censure (including a warning) in relation to fitness to practice.

Results: Statistically significant predictors of eventual censure or referral were:
- Lower PLAB part 1 and part 2 scores at first sitting.
- Multiple attempts at both PLAB part 1 and part 2.
- Lower IELTS reading and comprehension scores.
- Higher IELTS speaking scores.
- Male sex.

Discussion and Conclusion: Our findings suggest that making PLAB, or any replacement, more stringent and restricting the number of resits to 3 for PLAB part 1 and 2 for PLAB part 2 may result in fewer FtP concerns in IMGs. Raising the standards for English language reading and comprehension may further reduce the risk of FtP events. However, there is considerable unexplained variance, and the tests are sensitive (those who are censured are more likely to have had low scores) but not specific (those with low scores may be fine subsequently). There are also work force planning implications. In shortage situations, a less well qualified doctor may be better than none at all. In addition, low scores may be a useful marker for targeted training rather than exclusion.


#4E3 (226)
A Systematic Review of Stakeholder Views of Selection Methods for Medical School Admissions

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Fiona Patterson, F3, Work Psychology Group, Derby, UK
Siun O'Flynn, The Medical School, University College Cork, Ireland
Jane Mulligan, James Hardiman Library, National University of Ireland, Galway, Ireland
Andrew W Murphy, The Medical School National University of Ireland, Galway, Ireland

Introduction: The composition of the future medical workforce is significantly dependent on the methods used to select medical students. Accordingly medical student selection is a topic of considerable public interest with numerous stakeholder groups. Best practice in the design, development and continued use of selection methods should be an iterative process informed by regular feedback from stakeholders (Patterson and Ferguson 2010). Despite their significance, to our knowledge, there has been no review that draws together the views of stakeholders when considering the appropriateness of various selection methodologies. Therefore this review aims to (i) systematically review the literature with respect to stakeholder views of selection methods for medical school admissions; (ii) relate the findings to organisational justice theories and (iii) identify priority areas for future research.

Methods: Nine electronic databases were searched: PubMed, EMBASE, SCOPUS, OVID Medline, PsycINFO, Web of Science, ERIC, British Education Index and Australian Education Index. Two reviewers independently assessed all titles for relevance (n=1017) and independently screened abstracts of all retained records (n=233) to identify those to be assessed on full text, with 95.71% agreement. This left a total of 108 records which were read in full by three reviewers (MK, AWM, SOF). Disagreement was managed by consensus in consultation with another author (FP). Subsequently 70 records were included for full review. Methodological quality of quantitative papers was assessed using the MERSQI instrument. Evidence was synthesised in a narrative review and discussed through the lens of organisational justice theories. These theories have been developed to describe perceptions of fairness in organisational processes, including selection (Colquitt et al. 2005). They can be categorised as distributive, procedural and interactional.

Results: Applicants overwhelmingly support interviews, and multiple mini interviews (MMIs). There is strong emerging evidence that situational judgement tests (SJT) and selection centres (SCs) are equally well regarded, but not aptitude tests. Selectors endorse the use of interviews in general and in particular MMIs judging them to be fair, relevant and appropriate, with emerging evidence of similarly positive reactions to SCs. There is less support for aptitude tests, academic records and letters of reference. Medical students prefer interviews based selection to cognitive aptitude tests. They are unconvinced about the transparency and veracity of written applications. Perceptions of organisational justice, in particular procedural and distributive justice, appear to be highly influential on stakeholders' views of the acceptability of selection methods.

Discussion and Conclusion: This review and synthesis of the evidence identifies a growing appreciation of the importance of understanding the views of stakeholders. The emerging evidence demonstrates that there is high concordance of views between stakeholder groups. The findings of this review resonate with the constructs of organisational justice theories in particular with both procedural and distributive justice. Stakeholders are clearly supportive of interviews (in particular MMIs), SCs and SJTs in selection. Procedural justice is one of the most influential determinants of perceived fairness of selection tools and it can be argued that these methods are acceptable to stakeholders because they are viewed as procedurally just. This review highlights the need for better standards, more appropriate methodologies and for broadening the scope of stakeholder research.


#4E4 (264)
Exploring Admissions Deans’ views of the use of contextual data in UK medical school selection processes

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Liz Thomas, Liz Thomas Associates, York, UK
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Introduction: The UK medical student body has become increasingly diverse when it comes to gender, ethnicity and age, but not in terms of socio-economic background. This variance may be linked to individual medical schools interpreting and putting widening participation policy into selection practice very differently. However, attempts to theorise what happens when policy enters practice is neglected in medical education. Work was commissioned by the Selecting for Excellence Group (UK) to examine how medical schools use contextual data (CA) within medical selection to recognize the link between potential and prior achievement and examine the association between systemic and social factors, and attainment. Numerous questions about the use of CA remain unanswered and there is a desire from medical schools for more guidance concerning best practice.

Methods: Following research ethics approval, we approached the Admissions Deans of 36 UK medical schools by email explaining the purpose of the study. Individual and sometimes small group telephone interviews elicited participants’ views, experiences and concerns relating to the use of CA in medicine using a semi-structured interview schedule. The aims of these interviews were to gain more understanding of how medical schools access, verify and use different CA measures, appreciate their contexts, and to identify and explore innovative approaches to the use of CA. We wished to encourage a future-focus in the latter part of the interviews by encouraging interviewees to consider how CA could be used differently and hence gather new knowledge [Berg & deShazer, 1993]. Key members of central admissions teams where interesting differences between institutional approaches and those of the medical school were highlighted were also interviewed. Interviews were audio-taped, transcribed and thematically analysed.

Results: 26 interviews (seven with central admissions) represented the spread of UK medical schools geographically, all sizes of medical school, and those with undergraduate and graduate entry programmes. Medical schools want more clarity on what is widening participation (WP) and how they can identify those from lower socio-economic groups accurately. They want to retain their individuality in relation to admissions and the use of CA, commonly to take their local context into account. CA is typically seen as an initiative to address social justice for individuals, whilst the potential value of applicants selected via CA is unacknowledged, but the potential negative impact on school performance in league tables highlighted. Despite lacking evidence medical schools strongly prefer to use a “basket” of CA markers in selection.

Discussion and Conclusion: Unlike in other countries, there is little acknowledgement that widening the pool of applicants may help identify individuals who can bring something to medical schools and to the practice of medicine. The “discourse of diversity” argues that very high academic achievement may not be the most desirable factor in determining the overall success of the medical workforce. Our data suggests that adjusting traditional selection processes and lowering entry grades may be very challenging for UK medical schools and indicate the reluctance to fully embrace WP and CA. Triangulating a number of CA markers is the preferred approach and represents identified inherent tensions between available evidence, what is happening in practice and policy. A number of recommendations, for research, policy and practice are made.

Contrast, formal education was negatively associated with explanation of treatment ($\beta=0.22$, 95% CI 0.09-0.19). Higher scores on learning climate domain associated with communication with doctors ($\beta=0.10$, 95% CI 0.00-0.16) and information at discharge ($\beta=0.04$, 95% CI -0.00-0.07).

Discussion and Conclusion: Our findings point to a positive association between overall residency learning climate and patient experience of doctors’ communication. This is in line with previous research showing that patient experiences are positively affected by strong interpersonal skills of health professionals, which a positive learning climate can facilitate. Herein coaching and assessment is particularly important, which underscores earlier results demonstrating the pivotal role of clinical supervision in competency development and care quality. In contrast, domains most removed from direct patient care (formal education, role of specialty tutor), were negatively associated with inpatient care experience. This finding could point to inherent tensions between residents’ learning and patient care leading to challenges in balancing educational value of patient care with patient needs. Future research should explore potential mechanisms involved.


#4F2 (165)
Easing the transition from medical school to clinical practice: A systematic review

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Introduction: The transition from medical school to clinical practice remains a stressful time for junior doctors. Qualitative studies and narrative reviews of the literature on this topic have found that medical students feel inadequately prepared for starting work and burnout levels can be high(1). With burnout associated with decreased quality of patient care, and increasing numbers of doctors taking early career breaks, efforts to ease this transition are clearly required. Our aim was to synthesise available evidence to determine to what degree interventions designed to ease the transition from medical school to life as a junior doctor prepare students for practice.

Methods: A systematic search strategy was undertaken to obtain relevant articles. Two reviewers screened titles and abstracts and those meeting pre-specified inclusion criteria were retained for full text review. Retained articles were subjected to full text review by four independent
reviewers, with 20% of articles verified by another reviewer. In the case of uncertainty, articles were discussed and the opinion of a third reviewer was obtained. Each independent full-text reviewer populated a data extraction table for their retained paper. Data regarding study design, intervention components, assessment methods, outcomes assessed, level of evaluation and the study findings was extracted. Included papers were heterogenous in terms of paradigm, design, methodology, data collection methods and outcomes. As a result, meta-analysis was not possible and a narrative review approach was appropriate. The quality of study design and the strength of findings was assessed for each paper utilizing the MERSQI tool(2).

Results: Of 2529 articles, 41 met inclusion criteria. All described interventions to prepare medical students for junior doctor work. Most were non-randomised two or single group pre-post design. Samples ranged from 8-626. Evaluation tools were largely surveys with twenty-seven focusing on outcomes at Kirkpatrick’s level 1, nine at level 2 and five at level 3. Interventions were grouped into curriculum design (n=14) and discrete interventions (n=27).

Graduates from problem-based curricula know better their limitations, but perceived knowledge base is better in graduates from traditional curricula.

Discrete interventions included shadowing, simulation, medical emergencies, surgical ‘boot camps’, clinical and communication skills. Participants felt more prepared for work, with increased confidence in taught practical skills. They had a better understanding of their role, but still reported feeling anxious.

Discussion and Conclusion: Individual interventions reported improvements in students’ perceived preparedness for starting work and confidence in specific skills.

Many studies had small samples. Few reported demographic data or discussed self-selection bias, and few were able to demonstrate benefits of interventions using objective knowledge or performance measures. These limit the generalizability of the findings and, as a consequence, we cannot delineate precisely what works, and why.

Future research would benefit from more rigorous methodological approaches and studies utilizing objective outcome measures to extend knowledge as to how best to support the transition from medical school to clinical practice. Furthermore, attempts should be made to determine which students require additional support around the transition, and in which areas this support is needed, so that targeted interventions can be developed.


**Patients appreciate active student participation in clinical education wards**

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**Introduction:** Active student participation (ASP) in a clinical setting is considered to be essential for medical education, not only for acquiring practical skills, but also to develop different qualities of professionalism (1). Clinical Education Wards (CEW) are one opportunity to integrate students actively in interprofessional health care teams combining the needs of student centered clinical education with those of patient care. There is little evidence about the impact of ASP to the quality of patient care. In a first pilot study (2) we found that the majority of patients accepted and valued ASP. However, due to limited numbers of participants (one CEW, 64 patients, nine students, and two supervising physicians), the reproducibility of these preliminary results remained unclear.

**Methods:** After a successful pilot phase, the medical CEW was implemented permanently in 2009. Two additional CEW were implemented in 2011, one in neurology and one in pediatrics. In all three CEW final year medical students actively participate in patient care as “physicians under supervision”, closely supervised by clinical teachers, taking care of 2-4 patients. Over a six year period, we surveyed all patients treated on all CEW. Control groups were formed by matching patients treated on regular wards of the same specialty and hospital (CG1) and of other hospitals in Germany (CG2). General quality of health care and patient-physician relationship were studied with the mixed-methods Picker Inpatient Questionnaire complemented with questions focusing on the impact of ASP to patient care.

**Results:** Out of 136 patients being treated by 74 medical students and 13 supervising physicians in 2009-15, 528 patients returned the questionnaire (46.2%). The majority of patients (66%) rated the impact of ASP on quality of care on a CEW as positive. Comparisons with the CG revealed that patient-physician-interaction (problem frequency CEW 15% vs. 23 % in CG1 (p<0.001) and 31% in CG2 (p<0.001)) and general quality of care (problem frequency CEW 6% vs. 10 % in CG1 (p<0.05) and 13% in CG2 (p<0.001)) obtained better rates in CEW while medical treatment success showed itself equal (problem frequency CEW 16% vs. 16% in CG1 and 15% in CG2). 96% of the patients would return to the CEW the next time they would need hospital care.
Discussion and Conclusion: To our knowledge, this is the first controlled study with matched-pairs analysis in different clinical settings about the impact of ASP to patient care. Our study confirms the results of the CEW-pilot study in three CEW on a substantial larger scale. As seen by the patients, integration of closely supervised students in the clinical health care team can be realized without loss of medical treatment success, while physician-patient-interaction as well as general quality of care show themselves positively influenced. This study indicates that not only learners but also the “community of practice” including treated patients may benefit from ASP. Further studies are needed to determine whether this is due to organizational advantages, students’ empathic activity, the impact of teaching, or learner-teacher interaction.


Longitudinal rural clinical training in challenging contexts: the outcome of a five-year mixed methods study

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Julia Blitz, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa
Marietjie de Villiers, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

Introduction: Creating opportunities for medical students to be trained in rural settings has become part of core curriculum in many countries. While there is a growing body of literature describing the potential benefits of such exposure, little of this research has been conducted in countries where health systems are over-stretched and human resources for health are constrained. In 2011, a medical school in South Africa became the first in the country to send students to complete their final year of clinical training at a rural clinical school (RCS). A five-year study was initiated with a view to evaluating both the process of implementation and the nature of the student experience, particularly in light of the challenging context within which this training would occur.

Methods: A mixed methods study, situated in an interpretive paradigm, was designed. Across the five years we conducted successive cohort analyses tracking students, post-graduation, into their internship and community service. Approximately 200 interviews; 17 focus groups (n=113); and 5 surveys (n=341) were conducted with different groups of students, graduates, clinician educators, community role-players, and patients. The qualitative data were coded and synthesized to identify emergent themes and patterns, which were later revisited and refined based on successive cohorts’ data (Van Schalkwyk et al 2015a). In addition, a quasi-action research approach was used in that findings from each year’s analyses informed decision-making for the following year’s programme. The survey data was subjected to basic statistical analyses while a cross-sectional study of each successive cohort’s examination results was conducted (Van Schalkwyk et al 2015b).

Results: Students consistently spoke of enhanced clinical skills and confidence in their clinical reasoning. They described a deeper awareness of the community’s health care needs, recognising the challenges of practicing medicine in resource constrained environments while seeking to deal with the quadruple burden of disease that characterises much of sub-Saharan Africa. Over-burdened clinician educators highlighted the influence that students had on their own practice, while patients, many of whom came from poor communities, valued the care they receive from the students who ‘don’t rush’. In looking back over their RCS experience, graduates reaffirmed their appreciation for it, while supervisors emphasised the value of junior doctors entering the system with hands-on experience of the public health system.

Discussion and Conclusion: These findings have been synthesized to identify the different elements that inform the successful implementation of an extended rural experience. The study argues for offering an authentic learning experience; ensuring an engaged community; and providing dedicated resources and support. Central to these elements is the notion that the academic endeavour can enhance the quality of health care within a rural community in spite of prevailing weaknesses within the system. Medical education innovations, particularly those in LMICs, seldom have the luxury of being subjected to long-term scrutiny and review and this study is, therefore, relatively unique. It is also important in providing an alternative perspective to current positions that are influenced largely by work conducted in well-resourced contexts.

#4G1 (354)
'I'm so pleased I can be myself here'

Matthew Northwood, St George's University of London, London, UK
Margot Turner, St George's University of London, London, UK

Summary: This presentation will describe visually how staff and students have worked together at St Georges to insure that LGBTQ issues are taken seriously and LGBTQ students feel more valued. Literature has shown that LGBTQ issues are low priority in medical schools and this is despite reports in different countries that LGBTQ medical students still report experiencing homophobia and that a lack of knowledge on LGBTQ issues leads to poorer health outcomes for LGBTQ patients. It will describe how LGBTQ issues are embedded into the curriculum and assessment on our medicine degree. We will celebrate other initiatives such as the Stonewall Diversity index, St Georges at Pride and LGBTQ history month. The GMC and GLADD organised an event to hear from LGBTQ students about their experiences as LGBTQ medical students and one of our students was chosen to share his experiences and he asked for the GMC to insure they evaluated how medical schools were addressing LGBTQ issues which they agreed to do. It is important to emphasise that this is an ongoing process so we will be identifying gaps and recommendations to further develop our practice.

#4G2 (406)
You're a medical student you can't do art

Margot Turner, St George's University of London, London, UK

Summary: This presentation will show how visual art has been explored in part of our medical undergraduate curriculum through the artwork and reflection of our students. We have been running a 5-week SSC in our final year for three years. The students are asked to explore a visual art and medicine theme of their own choice and then create a sketchbook and write a 3,000 word reflective essay. At the end of each year, two exhibitions are held to celebrate this work one in the university and one at the graduation ceremony. Certain themes have emerged similar to those that have been identified in the literature but other themes were unexpected. In relation to personal and professional identity students said they thought their manual dexterity skills were improved through embroidery, lino cutting and clay work. A number of students identified how their visual diagnostic skills had improved by critically evaluating visual artwork in more depth. Some described being free to create which was a relief from the constrictions of medicine. It helped others identify they were constrained by perfectionism that they had struggled with and now needed help. One of the unexpected themes was that more than half the students used their work to either powerfully express their own cultural identities or to explore their own health issues. The exhibitions have shown how bland corridors can become colourful creative spaces, which have inspired both staff and students to use visual imagery in a more transformative way across the university. These exhibitions have also encouraged the university to expand the visual art curriculum.
Overcoming Gender Bias in Medical Education: Leading and Learning in a Gender Intelligent Way

Geeta Singhal, Baylor College of Medicine, Houston, USA
Teri Turner, Baylor College of Medicine, Houston, USA
Satid Thammasitboon, Baylor College of Medicine, Houston, USA
Barrett Fromme, University of Chicago, USA

Summary: Gender issues are recognized in the media and in society. As educators, do we bring gender bias when working with trainees and colleagues? During this fast-paced and engaging presentation, we will explore what students, residents and faculty have identified as gender biases in medical education. These biases form a false foundation on which educational approaches, team management strategies, and academic success are determined, and it is important to recognize and address them. Yet, there are differences in men and women at the neurobiological level. Understanding and honoring these unique differences can contribute to the success of learners, teams and programs. In this fast-paced presentation, the audience will be challenged and asked to reflect in an exploration of their own and commonly held biases regarding men and women in medical education. They will identify biases, such as how educators engage learners of different gender in class, how advisers counsel trainees on career choices, and how leadership engages team members. They will then learn about the science that makes each gender unique and valuable in collaborative teams and settings. After reflecting on gender-influenced behaviors, Gender Intelligence concepts will be introduced that can be applied to their own educational settings at the learner level. Finally, strategies to address these differences will be offered. The session will conclude with the development of a framework to overcome the gender bias encountered in medical education. The overall intended outcomes are to 1) Identify current gender bias in medical education, at UME, GME and faculty levels; 2) Describe evidence-based differences between genders that influence medical education; and, 3) strategize how individuals from various genders and cultures can maximize success in their learners and teams.

Shouldn’t we be taking care of our future doctors?

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Camille Bac, Faculté de Médecine Lyon Est, Lyon, France
Jean-Pierre Fauvel, Faculté de Médecine Lyon Est, Lyon, France
Gilles Rode, Faculté de Médecine Lyon Est, Lyon, France
Jerome Etienne, Faculté de Médecine Lyon Est, Lyon, France

Summary: At Lyon Est Faculty of Medicine, following a student-organised conference, student representatives conducted a survey which revealed a sense of unease, stress and low self-esteem amongst medical students. Student representatives, with the support from faculty, created a structure to enable students to better obtain help regarding their malaise. Medical students face two main difficulties in accessing help: lack of information on who to contact and reticence in seeking help because of the stigma associated with doing so. The student representatives first step was to build a solid support system to offer the best help to their fellow students. Student representatives were enthusiastically backed in their approach and created a network including doctors, psychologists, social workers, counsellors, teachers, and local health infrastructures and institutions. They organised a meeting with these actors to improve collaboration, and presented the structure to their fellow students in September 2016. This structure’s recent existence makes it hard to measure its impact, but several students have already benefited from its services. The structure has helped student awareness and brought up new ideas to help not only those who have problems but also to improve the general well-being of all students. Students’ well-being should be a priority. As future doctors, medical students must understand that to look after patients they need to take care of themselves, and of each other. French medical studies are extremely competitive and this structure is a way to reintroduce some humanity in this stressful context. Moreover, students helping each other out is a first step towards them becoming more caring doctors. Take care of your students, they will probably become happier, and more compassionate doctors!
Introducing CAPSULE, a case-based mobile app which is an important aspect of our undergraduate medical curriculum

Thomas Kurka, Brighton and Sussex University Hospitals NHS Trust/Brighton and Sussex Medical School, Brighton, UK
Sean Mitchell, Brighton and Sussex University Hospitals NHS Trust, Brighton, UK
Tim R Vincent, Brighton and Sussex Medical School, Brighton, UK
Jil Fairclough, Brighton and Sussex Medical School, Brighton, UK
David C Howlett, East Sussex Healthcare NHS Trust/Brighton and Sussex Medical School, Brighton, UK

Summary: Face-to-face teaching, combined with technology enhanced learning (so called blended learning), has been shown to improve knowledge and exam preparation in healthcare students. Current students place high importance on e-learning, using mobile apps and the Internet as a primary source of information. It is prudent to capitalise upon new technologies in teaching to best support students and ensure the resource quality and relevance to the medical curriculum.

We would like to present our new medical learning mobile app which was created by the medical school faculty and the cases were written by our clinicians. CAPSULE is a new bespoke platform for an existing learning resource that existed on the virtual learning environment (Blackboard) since 2007. This app is available to our final year medical students to help them consolidate their knowledge from the didactic learning sessions and clinical placements. It comprises over 660 cases, working through over 3,500 questions in all medical, surgical and therapeutics specialties, and includes medical imaging, investigations and a high-quality feedback.

92.8% of our final year students reported e-learning to be essential for their studies, 71.8% reported preference for using mobile apps over websites (19.2%). 98.7% improved their clinical knowledge using CAPSULE, and 92.8% felt better prepared for their future work as doctors.

Medical students place a high importance on e-learning to complete their studies. With an increasing number of e-learning medical resources available, it is important to ensure correctness of the material and its relevance to the medical curriculum. Our new mobile learning app has received an excellent feedback from both the students and the faculty - over 90% of our students preferred our app over the other commercially available resources. This mobile app has a wider multidisciplinary potential and could be used by other undergraduate healthcare-related courses, as well as by postgraduate medical trainees.
Career development of residents working part-time: wishful thinking or reality?

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Jean-Blaise Wasserfallen, University Hospital of Lausanne (CHUV), Lausanne, Switzerland
Céline Favrod, University Hospital of Lausanne (CHUV), Lausanne, Switzerland

Summary: Switzerland has a strong tradition of part-time work in all economic sectors, especially for women. Implementing part-time work in an acute hospital care setting for residents is difficult: The hospital doctor is stereotypically seen as a male working long hours, while 60% of junior doctors are now women. Not providing opportunities for part-time work during residency may result in their leaving medical practice, whereas working part-time for several years results in difficulties to get promoted to senior positions.

At our University hospital in Lausanne, we promote part-time work at several levels: communication by the board of directors, publication of statistics and concrete actions to favour career development of doctors wishing to achieve work-life balance. Among other actions, we provide a financial incentive to encourage residents to cooperatively share a residency position.

The presentation will provide examples of our pilot experiences with jobsharing: residents (mostly women with young children) appreciate the opportunity to do work part-time without feeling guilty of not seeing patients every day. Heads of Departments take advantage of having a residency position occupied by two persons organizing work themselves in order to assure continuity of medical care. They sometimes change their mindset about part-time work after successful jobsharing experiences. In addition, the experiences highlight important issues for the workforce in complex hospital care settings: jobsharing promotes sharing of responsibilities and discussions of treatment plans by doctors with different clinical competences and values. However, finding the right jobsharing partner is challenging, since trust and common values are essential to tackle organizational challenges.

Among other measures, jobsharing is an interesting model to enable residents to do part of their residency working part-time. It has to be combined with other innovative measures to help residents to adapt their workload to their needs without hampering their career perspectives.

A quantitative study of empathy in Pakistani Medical Students: a multi-centered approach

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Tariq Rasheed
Mohsen Tavakol

Summary: To examine the empathy level of undergraduate medical students in Pakistan. Three hypotheses are developed based on the literature review.

1) Female medical students have a higher level of empathy than male students.
2) Empathy scores vary during the medical school years in Pakistani students.
3) Medical students interested in people-oriented specialties would score higher than the students interested in technology-oriented specialties.

This is a quantitative inquiry approach using a cross-sectional design of 1453 students from eight Pakistani medical schools, both private and state. The sample consists of 41.1% (n=597) male students and 58.9% (n=856) female students. Empirical data is collected using the Jefferson Scale of Physician Empathy (JSPE), a well validated self-administered questionnaire.

The mean empathy score among students is 4.77 with a standard deviation of 0.72. There is no statistically significant association between the empathy scores and gender (t (1342.36) = -0.053, p=0.95). There is a statistically significant difference between the empathy scores and the years of medical school (F (14, 1448) = 4.95, p=0.01). Concerning the specialty interests, there is no statistically significant difference between the empathy score and specialty interests.

The findings of this study showed Western medical students countries outscored Pakistani medical students on the empathy scale. This finding has important implications for Pakistani medical educators to improve the interpersonal skills of medical students in the context of patient care. Inconsistent with our expectations and experiences, our findings do not support that female medical students scored better than their male counterparts on the empathy scale. Due to the nature of a cross-sectional study, it is impossible to argue the decline of empathy during medical school training.
#4G9 (1450)
**How do we teach hope to providers of end-of-life care?**
The challenges of an informal curriculum in a formal landscape

Wen Phei Lim, Psychological Medicine, Tan Tock Seng Hospital, Singapore

**Summary:** Hope is recognised as a protective factor in the psychological health of terminal care patients. It helps patients derive meaning in life in the face of declining physical health, loss of personhood, and imminent mortality. Hope instillation thus becomes an important therapeutic skill for clinicians; it strengthens the therapeutic relationship, aids the understanding of patients’ hope-seeking behaviours, and promotes adaptive coping in psycho-emotional distress. However, psychological care in palliative services is not without its challenges. In a recent national educational needs assessment of palliative care professionals, it was highlighted that clinicians lacked confidence in the psychosocial domains in palliative care. Aggravating the lack of psychological care training is the conspicuous absence of emphasis in hope instillation and supportive counselling skills to better equip clinicians in managing patients and families experiencing psychological distress. In our rapidly-ageing society, the need for palliative care services is not without its challenges. In a recent national educational needs assessment of palliative care professionals, it was highlighted that clinicians lacked confidence in the psychosocial domains in palliative care. Aggravating the lack of psychological care training is the conspicuous absence of emphasis in hope instillation and supportive counselling skills to better equip clinicians in managing patients and families experiencing psychological distress. In our rapidly-ageing society, the need for palliative care services is increasingly apparent. With 7 in 10 Singaporeans opting for home as their preferred place of death, but more than 60% of them dying in hospital, the number of patients requiring palliative care, especially home-based services, is expected to double by 2020. This drives the need for expansion of services, and correspondingly, the need to train more clinicians who are adept in managing bio-psycho-social aspects of palliative care. In this PechaKucha presentation, excerpts of real-life clinician reflections and patient encounters will be presented to highlight the importance of hope instillation and psychiatric training in palliative care. We also highlight the challenges in teaching clinicians on how to instil hope in the absence of a formal curriculum, incorporating elements of various psychotherapies in our training in spite of finite educational resources, and our strategies in pushing for change in the way we think about the understated importance of hope in palliative care.

#4G10 (1524)
**Active Learning Classrooms to Support “Translational Teaching” in Medical Education**

Jeff Seegmiller, University of Idaho, Moscow, USA

**Summary:** Medical educational content has historically been delivered in a didactic lecture format with students listening while taking notes. With limited question-answer interactions between professor and students, students memorize content material for periodic examinations. This learning paradigm with the professor as dispenser of knowledge and the student as passive consumer is an often overused instructional approach that when used exclusively, doesn’t fully address learner needs in this technology-driven information age where not only the way information is presented and understood, but the environment in which learning occurs can have a large impact on depth and retention of knowledge. Active learning is an educational approach wherein the student is an active participant in the learning process that enables not only retention of knowledge, but context in which to understand and apply that knowledge in a meaningful way. Evidence has shown that active learning classrooms enhance student engagement in learning, increase attendance, and improve content retention. “Translational teaching” is a concept that borrows from translational research wherein scientific and clinical knowledge are brought together to create a dynamic learning environment wherein scientists and clinicians collaboratively guide learning exercises to help students understand didactic content within the context of clinical application and skills acquisition by applying research studies and translational research principles to clinical practice. This presentation provides a visual tour of the design elements and pedagogical utilization of the active learning environment within a translational teaching context for our first and second year medical students.
#4H Patil Teaching Innovation Awards:
Patil 2
Location: Hall 3g

#4H1 (3185)
Using peer videos and discussion to enhance undergraduate medical students’ reflective metacognitive skills

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Nick Lown, University of Liverpool, UK

Background: Most students continue to struggle with reflective writing, often producing superficial and descriptive texts, despite its beneficial effects for learning and professional development. This may represent a deficiency in metacognitive skills: the ability to take an external, and critical perspective and question one’s own thought processes, feelings, and behaviours.

**Summary of work:** A tutor-led, classroom-based session aimed to develop second-year students’ critical reflective skills through reflection upon external stimuli. These stimuli included a videoed interview with a senior medical student and, in pairs, each other’s reflective writing. These activities highlighted the ‘question forming’ skills necessary for subsequent individual reflective metacognition.

**Summary of results:** 215 from 256 participating students offered feedback. 95% agreed that the session helped them understand the value of reflection, 89% agreed that the session improved their reflection skills, and 92% wanted to see more videoed peer reflections. Students engaged with the facilitated group discussions and demonstrated higher-order question formulation.

**Discussion:** Student and staff feedback indicated that peer videos and pairwise discussion offers an effective means of assisting students to develop their reflection skills. Students are capable of demonstrating the rich questions necessary for reflective metacognition in a classroom context. Pairwise reflective discussions may enhance current reflective writing practices.

**Conclusion:** The metacognitive processes required for self-questioning and reflection can be developed in the classroom with external stimuli (peer videos and pairwise discussion). However, it is unclear at this time whether this will translate into deeper and more meaningful reflective writing pieces or increased engagement with the task of reflection.

**Take-home message:** Peer videos and pairwise discussion can be used to enhance the metacognitive self-questioning skills needed for reflection. Analysing videos and questioning peers on their thoughts, feelings and behaviours can be a useful starting point for individual reflective practice, reiterating the idea that reflection is a ‘conversation with yourself’.

#4H2 (1761)
Helping hands to jump the last hoop: Integrating peer mentorship, personalised learning, progress test, and faculty development into a nation-wide program to help students who struggle to pass the national competency exam in Indonesia

Daniel Richard Kambey, Indonesian Young Health Professionals’ Society, Jakarta, Indonesia
Rita Mustika, Department of Medical Education, Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia
Beta Ahlam Gizela, Gajah Mada University, Yogyakarta, Indonesia
Ratna Sitompul, Indonesian Medical Education Association, Jakarta, Indonesia
Aprilia Eka Wati Utami, Ministry of Research, Technology, and Higher Education, Jakarta, Indonesia

**Background:** Indonesia currently has 83 faculty of medicine producing around 15,000 graduates each year. To ensure quality of graduates, national competency exam as exit exam was implemented in 2013. Per August 2016 there are 2434 students (27%) who are yet to pass, 544 already took the test 4 times or more.

**Summary of work:** To solve the problem MoRTHE-IMEA collaboration resulted in an integrated program with 2 aims: to help the students and strengthening the faculty with a new approach. The program use personalised learning and peer-mentorship approach for the students. While tiered monitoring and development system implemented in local, regional, and national level.

**Summary of results:** This paper will present the mid-term results of the program, which covers the percentage of students passing the exam after the first out of three cycles; feedback from students, peer-mentor, institutional mentor, and national mentor regarding program implementation; and unique cases why the program succeed or failed in certain condition.

**Discussion:** Students who already pass all learning activities but still struggling to pass the national exam often have limited help. Graduating classmates, restricted faculty schedule, restricted learning space, decreasing confidence after repeated failures undermine their effort to pass. This paper will discuss how the approaches help these students and the faculties.

**Conclusion:** Peer mentorship approach help both ways. For students, personal mentor and smaller class makes the learning feels personal. For faculties it decrease the schedule burden while focusing more on assessment. For peer-mentors, involvement in teaching process gave them general transferable skills to help them becoming a better practitioner or faculty.

**Take-home message:** Personalised learning help students who struggling to pass the national exam. Peer-mentorship decrease the faculty burden. Peer-mentorship also increasing students/junior doctors involvement in the teaching process. Involving students/junior doctors in the curriculum may help to identify learning needs as well as quality improvement strategy that only visible from peer-level point-of-view.
#4H3 (1374)
Who’s Who in the Medical School? Implementation of a social media based project to develop a vibrant staff-student community

Debbie Aitken, University of Edinburgh, Edinburgh, UK
Jenny Durkin, University of Edinburgh, Edinburgh, UK
Alan Gilchrist, University of Edinburgh, Edinburgh, UK
David Kluth, University of Edinburgh, Edinburgh, UK
Helen Cameron, University of Edinburgh, Edinburgh, UK

Background: An important part of good student experience is being (and feeling) part of a community, but in medical schools with large cohorts of students and 1000+ staff spread across multiple sites, addressing this and creating an open and connected culture is not always an easy task.

Summary of work: We implemented a low cost project using the social media application Instagram to encourage students to approach staff and get to know them by creating photo profiles. The profiles were then used to create an enormous digital organisational chart on a large touchscreen in the medical school foyer.

Summary of results: Over the course of 8 weeks, over 100 students across all year groups participated in the project, gathering a total of 80 staff profiles from a wide range of departments and specialities in the university, and 14 hospital sites and GP practices across 4 NHS boards. Participants were subsequently interviewed about their experiences.

Discussion: Students and staff members reported that they enjoyed having the chance to speak to each other informally; students reported that they valued having a reason to approach staff; and both the staff and students reported having a better understanding of how they fit into the organisational structure of the school.

Conclusion: The project was successful in encouraging students and staff to talk to one another, but it became clear that an additional benefit was the creation of the digital organisational chart which allowed both groups to see clearly who does what in the medical school in a very interactive way.

Take-home message: In this age of busy clinical teachers, huge hospital sites, medical schools of 1000+ students and prolific electronic communication, it can be very easy for a negative culture to develop, leading to a disconnected community. Small steps can be taken to address this and enrich the student and staff experience.

#4H4 (1671)
Feeling drives learning

Satang Supapon, Khon Kaen Medical Education Center, Khon Kaen, Thailand

Background: Identifying learner’s own feeling about the recent experience is a new approach to promote positive attitude and understanding in advanced communication skill. Traditional teaching methods emphasis only on technical steps of communication, but this innovative method enhances communication with empathic practice.

Summary of work: Three-hour communication skill classes, teacher proceeded activities by asking question to reflect learner’s own feeling after varied communication skill role play. Teacher facilitated conceptualization about effective communication skill and assessment of their specific skills for practicing. Content analysis of 219 learners after and 1-year follow up reflective writing, was done.

Summary of results: Learners reflected attitude and understanding of advanced communication skill, including self awareness, empathy, deep listening, non-verbal communication, and patient-centered care. They showed willing to practice advanced skills including mindfulness, emotional control, deep listening, and empathy. After 1-year, learners still have regarded the same attitude, concept, and practiced mentioned skill continuously.

Discussion: Exploring of learners’ own feelings and sharing feeling with others, activated contemplating of their own attitude and understanding of humanistic components of communication. It also promoted their empathic practice because of deep understanding of human emotional response to different type of communication.

Conclusion: Teaching by guiding the learners to explore and reflect their own feelings can promote advance knowledge and skill that not only focus on the content but also on humanistic components. This effect sustained at least one year after learning experience.

Take-home message: “Feeling drives learning” can be used when teacher would like to incorporate humanistic aspect and empathic skill for learner.
#4H5 (1955)
Wikimedicine Editathon: Can editing Wikipedia provide a novel way of learning collaboratively?

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Caroline Morton, Imperial College London, London, UK
Sue Smith, Imperial College London, London, UK
Alison McGregor, Imperial College London, London, UK

**Background:** Wikipedia is the 5th most visited website worldwide. Wikipedia Zero enables free mobile access to Wikipedia content in developing countries. Therefore it is essential that its medical material is current, evidence-based, and of high quality. Editing relevant material may potentially provide a novel educational opportunity for medical students.

**Summary of work:** We organised a two-day ‘editathon’ event, which involved medical students working in small groups with academics, librarians and technologists to edit Wikipedia pages to provide up-to-date evidence-based content for selected topics. We explored students’ ideas about collaborative learning and the role for Wikipedia editing in facilitating group learning.

**Summary of results:** A focus group of student participants described gaining social and professional skills including team working and peer learning from the ‘editathon’. The ‘editathon’ was viewed as more engaging, collaborative and providing more opportunities for critical appraisal than problem based learning. However students felt it should be optional.

**Discussion:** Wikipedia has the potential to democratise healthcare and the way patients, healthcare providers and researchers gather information about medical topics. Through the ‘editathon’, it can also provide a novel and collaborative way of learning through active engagement with the material and working with peers.

**Conclusion:** The ‘editathon’ provided a learning opportunity for medical students to gain team-working skills and critically appraise scientific and clinical material, skills which are relevant to their future career as doctors, whilst contributing to the dissemination of more accurate, up-to-date medical information to Wikipedia readers worldwide.

**Take-home message:** Editing Wikipedia articles provides a novel collaborative educational opportunity for medical students.

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#4H6 (2080)
The student as the protagonist of the class: constructing problems in Physiology

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Erica Delorenzi, Instituto Universitario del Hospital Italiano, Buenos Aires, Argentina

**Background:** For the students of Pharmacy and Biochemistry, the learning of the Physiology is a complex challenge. This increases in the traditional models of teaching, in which they do not usually have direct access to the patients, ignoring the environment in which to situate the laboratory values with which they work.

**Summary of work:** We present a proposal for teaching innovation, in which students construct their own clinical cases. The objective is to learn to consult and interpret sources, to understand clinical and laboratory data in context. For that, discussions are promoted inside and outside of class, even using Whatsapp and Google Docs.

**Summary of results:** Throughout the year, students are able to construct plausible clinical cases which are then study material for evaluation of their learning. In his own references, this task requires them greater cognitive demand and improved motivation and understanding of the complex pathophysiological and physiological processes.

**Discussion:** This teaching strategy is an innovation against the traditional models, which offer armed cases with didactic intentionality and adapted data for that purpose. Here, how a "case" is constructed, what the sources of information are, how they consult and interpret their data are contents of the subject.

**Conclusion:** We believe that this teaching strategy allows a deeper and more comprehensive learning of the physiology and pathophysiology in students of the Pharmacy and Biochemistry courses, who also achieve a greater prominence in their learning process, improve their group work skills and contribute to the good class climate.

**Take-home message:** A methodological innovation in teaching strategies, which proposes to students a greater prominence in their learning, with tasks that challenge them to new activities, which will serve as an experience to solve complex problems, can contribute to the achievement of deeper learning and comprehensive in Health Science students.
The Glasgow Portfolio Case Portfolio: A bespoke educational scaffold to develop clinical reasoning skills in undergraduate medicine

Kevin Garrity, University of Glasgow, Glasgow, UK
James G Boyle, University of Glasgow, Glasgow, UK

Background: The ability to undertake and record a comprehensive clinical assessment by engaging in the clinical reasoning process is fundamental to clinical practice. We used the concept of the zone of proximal development to design an educational scaffold to aid teaching this skill to medical undergraduates entering their clinical phase.

Summary of work: Dual process theory was used as a conceptual framework to develop the educational scaffold. A variety of clinical reasoning tools were integrated into a case portfolio proforma. These included hypothetico-deduction reasoning grids, problem lists, summary statements and SNAPPS. Prescribing and reflection tools also encouraged deliberate self-practice.

Summary of results: Students were satisfied with the layout of the proforma and felt it enabled them to think more deeply about the patient presentation and generate a management plan. Students also valued the opportunity to receive tailored feedback. Assessors valued insights into student ‘thought processes’ and proposed management plans, allowing constructive feedback.

Discussion: The Glasgow Portfolio Case proved to be a useful educational scaffold for teaching students to assimilate a wide range of clinical data, test and refute working hypotheses, formulate action plans and reflect on their practice. It allowed assessors insight into student’s thinking and encouraged the generation of individualized, constructive feedback.

Conclusion: Integration of clinical reasoning, prescribing and reflection tools into a case portfolio proforma encouraged the development of skills in clinical reasoning and reflective practice. It also offered a safe, workplace-based method of teaching practical skills such as prescribing whilst offering assessors the opportunity to review practice and offer feedback.

Take-home message: The Glasgow Case Portfolio is an effective educational scaffold for teaching clinical reasoning and encourages safe prescribing and deliberate self-practice.

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Shu-Hung Huang, Kaohsiung Medical University, Kaohsiung, Taiwan
Ching-Ju Shen, Kaohsiung Medical University, Kaohsiung, Taiwan
Chen-Nien Wang, Kaohsiung Medical University, Kaohsiung, Taiwan
Jer-Chia Tsai, Kaohsiung Medical University, Kaohsiung, Taiwan
Jeng-Hsien Yen, Kaohsiung Medical University, Kaohsiung, Taiwan
Chen-Nien Wang, Kaohsiung Medical University, Kaohsiung, Taiwan
Ching-Ju Shen, Kaohsiung Medical University, Kaohsiung, Taiwan
Shu-Hung Huang, Kaohsiung Medical University, Kaohsiung, Taiwan

Background: Intraoperative (intraop) training is the most important part of surgical education, however, it is highly variable and individualized, and there are only a few data to discuss it. The aim of this study is to assess the intraop teaching and learning effectivity by using the anatomy-based clinical reasoning teaching method.

Summary of work: Anatomy-based clinical reasoning teaching with LSRWD (Listening: preop briefing/postop feedback, Speaking: anatomy structure, Reading: learning readiness, Writing: recording procedures, Doing: surgical skills) in the OR were applied in 36 clerks. Scoring of clinical core competencies, satisfaction rate, and questionnaire were analyzed and compared with the control group.

Summary of results: All students of the study group have higher competencies scores and satisfaction rate than the control group. They strongly felt being educated and welcomed as a teamwork member in the OR. Both trainers and trainees clearly know learning objectives and task allocation. Verbalized surgical procedures during op increased mutual interaction.

Discussion: Recently the shortage of surgeon is a worldwide serious problem, due to the workload, weekly working hours, and patient safety. Various efforts have been undertaken to attract the surgical new blood through effective surgical education. Our study showed intraop anatomy-based clinical reasoning education by LSRWD is highly reliable and satisfied.

Conclusion: Clerkship rotation in the surgical sub-specialist division is quite short, how to effectively enhance their learning performance is an important issue. Hands-on learning by doing through the LSRWD clinical reasoning teaching model significantly improved learners’ core competencies scores and learns expressed high interest in surgery in the future career choice.

Take-home message: Anatomy-based clinical reasoning teaching in the OR through "listening, speaking, reading, writing, doing" is an effective method for surgical education, this structured teaching and learning process is easy to remember, also easy to perform for both trainers and trainees. The learners significantly improved their clinical core competencies and self-directed learning ability.
#413 (2443) Instructional approaches for the teaching of clinical reasoning: a randomised experiment

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Laura Zwaan
Alex Linsen
Mustafa Domez
Walter van den Broek
Henk G. Schmidt

Background: Several instructional approaches have been proposed for the teaching of clinical reasoning, but little empirical evidence of their effectiveness exists. This two-phase experimental study investigated the effects on students’ diagnostic accuracy of three different approaches employed during practice with clinical cases: self-explanation, deliberate reflection, and simulation of practice.

Summary of work: 324 2nd-year Dutch medical students were randomly allocated to diagnose 8 clinical cases under one of 4 conditions: self-explanation (providing pathophysiological explanations), deliberate-reflection (contrasting alternative diagnoses), practice-simulation (hypothesising about gradually unfolded findings), and control (providing diagnosis). One week later, all students diagnosed 8 different cases of the same diseases.

Summary of results: Initial diagnostic accuracy significantly differed between conditions [range=0-6; mean (standard deviation): control=2.18(0.93); deliberate-reflection=1.77(0.91); self-explanation=1.93(0.94); practice-simulation=2.03(0.88)], F(3,320)=2.91, p=.03, with the control condition performing significantly better than the deliberate-reflection condition. One week later, this pattern reversed [control=1.90(1.15); deliberate-reflection=2.11(1.16); self-explanation=1.98(1.12); practice-simulation=1.65(1.11)], with the deliberate-reflection outperforming the control condition, F(3,320)=2.91, p=.03.

Discussion: Deliberate reflection during practice with cases fostered diagnostic accuracy relative to providing diagnosis. The learning gain was such that led to better performance despite initial disadvantage. This finding is consistent with previous research but contradicts theoretically sound expectations of greater benefits of self-explanation for students at early phases of training. We have shown differences in how students develop clinical reasoning at our school.

Conclusion: We believe we have identified some modifiable differences in clinical reasoning between junior and senior students and have modified our teaching accordingly. Further research is needed to show if incorporating these differences into teaching enhances the learning of clinical reasoning.

Take-home message: Developing and using criteria for assessment of clinical reasoning.

#414 (416) Can students’ stages of development of clinical reasoning inform curriculum development?

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Megan Anakin, Otago Medical School, Dunedin School of Medicine, Great King Street, Dunedin, New Zealand

Julie Lawrence, Otago Medical School, Dunedin School of Medicine, Great King Street, Dunedin, New Zealand

Tim Wilkinson, Otago Medical School, Christchurch School of Medicine, Christchurch, Dunedin, New Zealand

Marcus Henning, School of Medicine, University of Auckland, Auckland, New Zealand

Background: The support students need to develop clinical reasoning skills varies with their level of training. We are reviewing our teaching of clinical reasoning and wished to establish the timing of the different stages of development of clinical reasoning at our school.

Summary of work: Twenty-three students from year 2, 3, and 6 in our undergraduate programme interviewed a simulated patient who modelled a straightforward and a complex presentation. Forty-six transcripts of the audio recordings were analysed for differences in information gathering and how students used the information to diagnose.

Summary of results: Junior students asked almost as many questions as senior students. The senior students had more accurate initial diagnoses, more focussed questioning and more correct diagnoses. They considered a broader differential diagnosis, actively excluded other possibilities, showed greater flexibility in thinking, compared and contrasted more and ignored inconsistent features less often.

Discussion: The different stages in the development of clinical reasoning are considered to be due to differences in knowledge. We have shown differences in how students gather and use information at different levels of training. These differences can inform teaching and provide criteria for assessment of clinical reasoning.

Conclusion: We believe we have identified some modifiable differences in clinical reasoning between junior and senior students and have modified our teaching accordingly. Further research is needed to show if incorporating these differences into teaching enhances the learning of clinical reasoning.

Take-home message: Reviewing clinical reasoning at different levels of training informs teaching and can help guide the development of criteria for assessment.
Scientific Reasoning in Medical Education: A Novel Approach for the Analysis of Epistemic Activities in Clinical Case Discussions

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Background: Scientific reasoning and argumentation (SRA) has been described as a compound of scientific discovery, scientific argumentation and the understanding of the nature of science (Engelmann 2016; Ouellette 2016). Since clinical reasoning incorporates the ability to reason scientifically, it can be seen as a specific kind of SRA (Barz 2016).

Summary of work: We used a novel SRA framework to investigate epistemic activities (EAs) of medical students by adapting a coding scheme from social work to the context of Clinical Case Discussions (CCDs), a peer teaching format designed to foster epistemic activities such as evidence evaluation or hypothesis generation (Fischer 2014; Ghanem 2016).

Summary of results: In three analysed CCDs the students engaged themselves predominantly in Evidence Generation (EG, 34%), Communicating/Scrutinising (CS, 26.2%), Questioning (Q, 22.4%) and Evidence Evaluation (EE, 12.4%).

The peer-teachers were drivers of EG, CS and Q, whereas students engaged mostly in EE, Hypothesis Generation (HG), Drawing Conclusions (DC) and Problem Identification (PI).

Discussion: The distribution of EAs seems to reflects a realistic reasoning process of clinicians.

It is notable that peer-teachers pursue mainly EAs like EG or CS, while participants predominantly carry out EE and HG, which were identified by Kind as crucial for clinical reasoning (Kind 2013).

Conclusion: The coding scheme, based on the SRA framework by Fischer et al. provided a useful analytical tool to investigate clinical reasoning in medical education (Fischer 2014, Ghanem 2016). CCDs can be seen as a far-reaching teaching format in respect to the rich use of various indispensable SRA activities.

Take-home message: An in-depth analysis of SRA, respectively clinical reasoning activities is feasible. Valuable clinical reasoning activities such as EE or HG can be triggered through CCDs. This underlines that CCDs are an appropriate format to teach clinical reasoning skills to medical students.
How do students learn to collaborate interprofessionally?

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**Wilma Scholte Op Reimer,** ACHIEVE - Centre of Applied Research, Faculty of Health, Amsterdam University of Applied Sciences, Amsterdam, Netherlands

**Background:** Interprofessional Collaboration (IPC) is seen as crucial in providing complex care. Although learning to collaborate is an important theme in curricula, usually it is learned within the own professional silo. It is unclear to which extent IPC competencies can be reached in an Interprofessional Education (IPE) program.

**Summary of work:** An interinstitutional pilot project was conducted early 2016. 36 students from five different health studies, including medicine participated in an interprofessional training program during four months, using simulation. The competency development was assessed three times during the training with an adapted version of the ‘Interprofessional Collaborator Assessment Rubric’ (ICAR).

**Summary of results:** Mean improvement score on interprofessional competency development between the first and last assessment was 7.3 points (maximum score 56). The scores indicate improvement in all five competency categories of the ICAR: patient centred care, role clarification, communication, collaborative leadership and team functioning.

**Discussion:** Realistic cases and adequate assessment methods focussing on interprofessional competencies are conditional for successful IPE. The scores obtained show that IPE is useful for developing interprofessional competencies. Students learned to integrate different perspectives in providing patient centred care and to communicate effectively in interprofessional teams.

**Conclusion:** Bringing together students from different backgrounds in an interprofessional training program, seems to contribute to development of competencies needed for IPC.

**Take-home message:** Learning to collaborate within the own silo no longer fits the demands of health care today. Having an interprofessional training program for students with different backgrounds is required to prepare them for providing complex care in settings where other professionals are involved.

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**Eva Toth-Pal,** Karolinska Institutet, Stockholm, Sweden  
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**Solvig Ekblad,** Karolinska Institutet, Stockholm, Sweden  
**Uno Fors,** Stokholms University, Stockholm, Sweden  
**Helena Salminen,** Karolinska Institutet, Stockholm, Sweden

**Background:** We have created an interprofessional Virtual Patient (VP) model for primary healthcare (PHC) where different professions are visualized around a patient case. The VP model has been presented previously. The aim of the present study was to investigate how the students perceived interprofessional learning in PHC using the VP model.

**Summary of work:** A total of 33 students participated in qualitative interviews immediately after having used the VP model. There were 2-4 students in each group from four different study programmes. They were 20 to 46 years old, studying in their fourth to ninth semester. The VP model has been presented previously.

**Summary of results:** Preliminary findings indicated that the VP model clarified for the students roles of the different professions in the patient care. The VP model encouraged the students to ask for help in complex patient care situations. They learned about each other through discussions around the VP patient case.

**Discussion:** The VP model provided feedback for the students in different ways such as immediate feedback from other students, comments from teachers and short videos. The VP model allowed students to observe, discuss, ask and get feedback and this kind of learning activities may be a complement to real patient encounters.

**Conclusion:** Healthcare students need to be reminded repeatedly during their education about the need for teamwork and an interprofessional VP could be a tool for that. Working with the interprofessional VP model allowed the students to experience interactions between different professions and understand team work. Reflection and collaboration facilitated learning.

**Take-home message:** An interprofessional VP model may enhance future collaboration between different professions. Students contributed with their competences on what they saw in the short embedded videos. They learned about each other through discussions around the VP patient case. It facilitated their learning by reflection and collaboration with students from other professions.
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Miriam Janssen, Maastricht University, Maastricht, Netherlands
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Jerôme van Dongen, Zuyd University of Applied Sciences, Heerlen, Netherlands

**Background:** Collaborative practice is considered to be a prerequisite to strengthen healthcare systems, to provide patient centered care and to improve healthcare outcomes. Interprofessional education (IPE) is promoted as a method to enhance future collaborative practice. During IPE, students from different health professions can learn with, from and about one another.

**Summary of work:** An IPE course was designed, in which medical, paramedical and nursing students participate in simulated ‘interprofessional team meetings’, guided by teachers. Together, students review care plans for frail elderly patients. Students and teachers were invited to participate in focus groups to evaluate the IPE course. Transcripts were thematically analyzed.

**Summary of results:** Students (n=16) and teachers (n=15) reported mainly positive experiences, including the opportunity to learn about and from each other while elaborating on authentic cases, and the possibility to a better understanding of contextual factors. The variety of cases, diversity of participating health professions, course material and logistics could be improved.

**Discussion:** Students often attend interprofessional meetings during workplace based learning, albeit in a rather passive role. Participants in this study agreed that the IPE course enables students to learn about interprofessional collaboration in an active role. The use of authentic cases contributed to the positive outcome of this IPE course.

**Conclusion:** The IPE course ‘Simulated interprofessional team meeting’ is an innovative form of interprofessional education. Students are offered an opportunity to learn about and from one another in an active way. Participants in this study advocate to integrate similar interprofessional educational activities more often in the curriculum.

**Take-home message:** Based on the results of our study, we perceive interprofessional education to be an essential part of healthcare curricula in order to enhance interprofessional collaboration between future health professionals. This requires a close collaboration between Higher Education Institutes.

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**Background:** Mandatory in-flight crew resource management simulation training is established in aviation but introduced in pre-hospital medicine only in the last decade. We analyzed the Swiss Air-Rescue Services’ comprehensive simulation program, which started in 2015, with the aim to improve non-technical and technical emergency medicine competencies of inter-professional crews.

**Summary of work:** Three simulation centers provided the training. Two Swiss centers arranged a 1-day critical resource management simulation on high-fidelity manikins. One German center offered a 1-day simulation of critical incidents in ECMO/IABP use during helicopter transport. Crew members participated once per year in teams of 8-10 participants.

**Summary of results:** In 23 training sessions, 193 evaluation forms (rating scales from 1-5) were collected during 2 years. Overall course satisfaction and agreement to recommend these simulations to colleagues was very high (median of 5). The practicability and applicability of the simulations was also rated very high (median 5 and 4-5, respectively).

**Discussion:** The investigated simulation-training program focused on the interface between preclinical and hospital/transfer setting and approached all professions that are involved during the scenarios. Additional scenarios taking place within the helicopter, the jet airplane or the ambulance vehicle are planned for future simulations.

**Conclusion:** This simulation program aims to improve patient care in extreme rescue situations. Open question is whether these simulations are capable to transfer technical competencies and non-technical skills into clinical practice. Simulation-based training of HEMS crews resulting in better team performance and improved task management will eventually improve patient care.
Take-home message: The described high-fidelity simulation program focusing on emergency medical situations has the potential to improve patient care by reflecting human factors under extreme rescue situations. In the future, translational studies need to investigate whether these trainings are capable to transfer trained skills into clinical practice.

#4J5 (757)
Increasing role-awareness online: virtual patients for nursing and medical students in IPL

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S Edelbring

Background: Interprofessional learning (IPL) is often hampered by logistical difficulties. Digital technologies may overcome these difficulties. Web-based virtual patients (VP) could bring student groups together around common scenarios in IPL, an approach which has not been extensively used before in the education of health students.

Summary of work: Four VPs were designed. Twelve medical and twelve nursing students worked individually submitting a written statement describing their own role. Thereafter they were assigned into interprofessional pairs to discuss and write a mutual report how they approach the patients and how they perceive their own and the colleague’s roles.

Summary of results: The medical students investigated the patient with a diagnostic focus, whereas the nursing students identified aspects of well-being during the first uni-professional task. In the second part, the students emphasized the importance of investigation, diagnosis and interprofessional communication in order to improve patient care. They collaborated using e-mail, Facebook, GoogleDocs.

Discussion: Shared VP learning online disclosed different professional perspectives among the students. This role-awareness provides a base for future collaboration. This study shows how VP cases can generate discussions and reflections on professional roles, through meetings online.

Conclusion: VPs can overcome logistical challenges in conducting IPL. A pair wise shared discussion trigger professional role-awareness and thereby contributes to increased future collaboration.

Take-home message: Interprofessional scenarios online with VPs can be a tool to help health professions students to visualize different professional perspectives.
#4K Short Communications: Junior Doctor as Teacher

Location: Room 101 d

#4K1 (1385)

A Medical Education Track for Graduate Medical Trainees

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Robyn Bockrath, Lurie Children's/Northwestern University, Chicago, USA
Zarina Dohadwala, Lurie Children's/Northwestern University, Chicago, USA

Background: Many graduates of residency and fellowship training programs ultimately enter academic faculty positions on a “clinician-educator” track; however, many of these training programs do not offer formal instruction in education. Interested trainees are likely to benefit from additional training in teaching skills, learning theory, educational scholarship and career guidance.

Summary of work: The authors developed a longitudinal elective for pediatric residents that was later adapted and offered to all graduate trainees at a large academic medical center. Using Kerns’ six-step approach to curriculum development, we performed a needs assessment, developed objectives and educational strategies and implemented a 2-year curriculum.

Summary of results: Trainees participating in the program attend workshops, asynchronous education, quarterly meetings and create both an educational portfolio and a scholarly project. Graduate medical trainees applied and were accepted in summer of 2016. There are currently 26 participants in the first year of the program.

Discussion: A recent publication by Blanchard, et al. called for a need to provide better mentorship to clinical educators to improve the quality of educational research. Starting this mentorship during graduate medical education offers trainees a head-start on their academic careers and may lead to higher quality teaching and research.

Conclusion: This program provides the foundation for a valuable career guidance and skills to residents interested in developing an academic career in medical education.

Take-home message: Through a medical education “track” program, interested trainees can benefit from additional training and mentorship towards an academic career in medical education.

#4K2 (2696)

Preparing medical students for real life practice: a junior resident led OSCE workshop

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Nigel Fong, Singapore General Hospital, Singapore
David Ng, Singapore General Hospital, Singapore
Kennedy Ng, Singapore General Hospital, Singapore
Thun How Ong, Singapore General Hospital, Singapore

Background: Newly-minted House Officers are expected to competently manage a wide range of clinical scenarios. Many lack first-hand exposure to these problems, or have been exposed only as passive observers rather than active participants. Our first-year residents designed a workshop providing final-year students with first-hand experience managing frequently-encountered practical problems.

Summary of work: The residents wrote scenarios encompassing management of acutely deteriorating patients, practical tasks (e.g. hyperkalaemia correction), and communication skills (e.g. breaking bad news). Scenarios were vetted by faculty. Residents then conducted an Objective Structured Clinical Examination (OSCE) workshop using these scenarios, marking students according to a checklist and giving immediate feedback.

Summary of results: 94 final-year students attended the workshop. 73% reported that it exposed them to scenarios they had not encountered before. >50% had not previously encountered hyperkalemia, anaphylaxis, and acute transfusion reactions in the wards. They felt more confident in dealing with patient communications (100%) and emergency situations (94%) after the workshop.

Discussion: First-year residents were able to identify common and important situations that they found challenging in their own transition from student life. The OSCE allowed students to gain first-hand practice in a low-stakes environment, where common (often critical) mistakes were identified and addressed. Teaching by recently-graduated seniors resonated well with students.

Conclusion: The workshop was successful in allowing more uniform and comprehensive exposure to real-life practical situations, and equipping students to manage clinical scenarios with more confidence. Resident-led planning with the faculty’s support allowed teaching pointers to be accurate and also focused on practical tips relevant to a first year doctor.

Take-home message: Junior doctors are a powerful resource in identifying issues pertinent to their immediate juniors, and can be deployed to teach. OSCE workshops may supplement ward postings by exposing students to more clinical scenarios as active participants. This prepares final-year medical students for the demands of being a first-year House Officer.
What motivates junior doctors to teach medical students?

Renata Chapman
Annette Burgess
Susan McKenzie, Sydney Medical School, Sydney, Australia
Craig Mellis

Background: There is a growing demand for "near peer" teaching in the delivery of medical curriculum. Experienced senior physicians are increasingly more occupied with competing demands on their time and expertise. As a result, junior medical staff (1-4 years after graduation) are taking on more teaching responsibilities.

Summary of work: The main motivation for junior doctors to teach improve their own knowledge (80% strongly agreed) and enjoyment (72% strongly agreed). Other motivating factors were: teaching would assist with their academic career; it was a duty to profession; result of inspiration by their own teachers; feelings of responsibility towards students.

Summary of results: 161 junior clinicians teaching at our clinical school completed questionnaires (response rate 90%). Most tutors (41%) were interns (first year after graduation) and over half of them (55%) had completed a formal Teachers Training program.

Discussion: Our findings support the Self-Determination Theory (STD) of motivation and confirm the findings of others that, in the absence of external rewards, intellectual satisfaction and improving personal knowledge and skills are the main reasons why clinicians teach students.

Conclusion: By developing an understanding of junior clinicians' motivation to teach, we may be able to promote a continued interest in teaching amongst both current and new junior medical staff.

Take-home message: Gaining a better understanding of young clinicians’ motivations to teach may assist in improving the recruitment and retention of our clinical teachers for the benefit of all involved in medical education.

Teaching Residents to Teach: Developing Distributed Curricula for Residency Training Programs

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Evelyn Constantin, McGill University, Montreal, Canada
Carlos Gomez-Garibello, McGill University, Montreal, Canada
Armand Aalamian, McGill University, Montreal, Canada

Background: Residents have an important role in both role modeling and teaching medical students, resident peers, and other healthcare professionals. Although residents are expected to teach, very few might have had any formal training on how to teach effectively. Residents often voice the need for some instructional approaches regarding clinical teaching.

Summary of work: An online course was launched in 2016 by McGill University to emphasize for residents some of the key concepts in their roles as teachers such as interactive lecturing, clinical teaching, giving effective feedback, and role modeling. The course was disseminated to over 1200 residents across 70 residency training programs.

Summary of results: Residents evaluated the usefulness and relevance of the content positively. However, there were concerns expressed regarding the effectiveness of online delivery, namely the technology platform used. Residents also provided suggestions for improvement such as dedicating teaching time with peers, medical students, and clinical teachers to practice skills and receive feedback.

Discussion: Developing instructional strategies for resident teaching skills using technology-enhanced learning has both drawbacks and possibilities. This presentation will highlight how distributed educational approaches can bring new ideas to an old topic. Feedback from the residents will be shared to provide insights into their learning needs.

Conclusion: Residency programs should approach teaching residents how to teach by focusing on the context of the specialty. There is no ‘one size fits all’ approach. The use of instructional strategies such as online modules, didactic lectures, small group discussions, and simulation should reflect the intended learning outcomes and objectives.

Take-home message: Educational leaders must ensure that there is a curriculum to teach residents how to teach and to provide them with opportunities to develop their teaching skills. Residents should also receive formal assessment of their clinical teaching to facilitate their achievement of the relevant competencies.
#4K5 (2886)
Pediatrics residents as teachers in Khartoum, Sudan

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Wadie M Elmadhoun
Reem Alsayed Mohammed Khalil
Manal Mohamed Khalid Elhussien

**Background:** Residents are usually involved in teaching junior residents, interns, medical students. Although residents were trained in caring for patients they may lack the confidence in teaching, this can be attributed to the little or no training courses. This study aimed to assess the potential of pediatrics resident as teachers.

**Summary of work:** A cross sectional study conducted in Khartoum, Sudan. The study population was registered pediatrics residents in Sudan Medical Specialization Board. Data were collected using a coded, piloted self-administered questionnaire developed by the researchers. The data were analyzed using statistical package for the social sciences (SPSS) version 20.0.

**Summary of results:** The majority of enrolled residences (82.5 %) participate in teaching activities, while only 2.6% received training courses. 49.1% were involved in teaching medical students. Nearly one third of the participants (36.8%) enjoyed teaching; 13.2% teach lectures, 73.7% clinical rounds and 11.1% seminars and tutorials. 68.4% of residents teach in wards.

**Discussion:** Teaching is an essential part of residents training program. Pediatrics residents spent many hours’ teaching fellow residents and interns, but few of them teach students as they were not confident and disinterested. This disinterest could be due to lack of training programs, and their role of teaching students was neglected.

**Conclusion:** Pediatrics residents were unprepared for teaching medical students as only 2.6% of them received training courses, while 49.1% were involved in teaching. They were involved mainly in clinical rounds teaching.

**Take-home message:** Residents are important teachers for medical students and they should be given more roles in teaching. Training programs are essential to insure their effective participation in the different teaching activities.
Enhancements in accessibility and usability of SBL environments: results from the WAVES project

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Background: Usability is an important aspect of scenario-based e-learning (SBL) in healthcare professions education. Improving usability can contribute to lower cognitive load and thus better learning outcomes. Despite long development history, the complexity of e-learning tools may still limit the access to SBL to some learner and teacher groups.

Summary of work: The WAVES project conducted a needs analysis comprising of an Internet survey (n=161), structured interviews (n=12), focus groups (n=2) and a prioritisation activity. The outcome was summarised from the perspectives of feasible accessibility and usability enhancements in two exemplar virtual patient systems: CASUS and Open Labyrinth.

Summary of results: The resulting improvements in accessibility include support for internationalisation and localisation of the user interface, and screen layout adjustments for mobile devices. Usability is further enhanced by wireframe models of streamlined navigation, visualisation of the decision-making learning process and the possibility for just-in-time help in using the authoring environments.

Discussion: The WAVES project builds up a network of supporting institutions which endorse its activities beyond the project’s lifetime and assigned resources. The accessibility and usability enhancements are developed to be open for community engagement to adjust the existing SBL tools to the needs of diverse audiences.

Conclusion: The presented work aims to widen access to SBL for international and mobile learners & teachers in healthcare professions education. The usability of the exemplar virtual patient systems are enhanced by proposed changes in common workflows and better support in learning decision-making in virtual scenarios.

Take-home message: Scenario-based e-learning environments require enhancements in accessibility and usability. The WAVES project analysed user needs to contribute to improvements in human-computer interface of virtual scenario systems. Community engagement is welcomed via the project website: http://wavesnetwork.eu.
The concept of internationalisation in higher education and its reference frameworks in medical education

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Background: The internationalization of medical education is a matter of significant interest whose importance is growing over the years in an increasingly globalized world. However, there is much confusion about what this term means and surprisingly is applied differently in higher education. This is especially detected in the quality assessment processes.

Summary of work: The aim of this work is to provide useful benchmarks for the internationalization of university higher education. In particular, for medical education diplomas. In this context, the ASPIRE initiative will be described as a reference model for the international recognition of excellence in medical, veterinary and dental education (http://www.aspire-to-excellence.org).

Summary of results: A framework of strategies and benchmarks to implement the internationalization of medical education will be presented, as well as examples of good practices and also misinterpretations enabling the global mobility of their medical graduates as «international doctors», a concept introduced by the Educational Commission for Foreign Medical Graduates (ECFMG).

Discussion: Due to the growing interest in international accreditation, a special emphasis on the global standards of the World Federation of Medical Education will be discussed. As they are being implemented by quality assurance agencies of many countries for the accreditation of their degrees in medicine.

Conclusion: Greater collaboration is needed among local, national and global authorities, institutions and quality assurance agencies to make effective changes that allow us to face the new challenges for health in the times we live and to share resources and experiences by including indicators that allow the evaluation of internationalization levels.

Take-home message: Do we all mean the same when talking about internationalization?

Global health teaching in medical undergraduate curricula: are we any closer to a consensus of agreed learning outcomes? An international survey of medical educators

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Robin Ray

Background: Following international Global Health (GH) workshops at the 2016 Ottawa conference (Perth, Australia), a group of medical educators raised concerns that the prevalence and interest of GH in curricula has increased but with apparent diverse interpretations. The diversity was both between and within countries, with limited consensus about learning outcomes.

Summary of work: We created a survey tool to explore how GH was being implemented in medical education internationally. This were in 5 sections as follows: About the institution; the type of core curriculum and global health within that; design and implementation of GH curriculum and challenges; GH and assessment; GH and electives.

Summary of results: Early findings suggest: GH is not yet established in core curricula; it is more likely optional or linked directly to elective placements in resource poor settings; learning outcomes are variable; and the academic faculties taking responsibility for GH in curricula vary, although Public Health related disciplines were more frequently cited.

Discussion: The UK General Medical Council’s graduate outcomes, which has international influential, states that students must be able to “…discuss global perspectives of the determinants of health and disease and variations in health care practice”. Our findings suggest minimal progress towards nationally or internationally agreed GH learning outcomes in core curricula.

Conclusion: Interest in the discipline of GH has yet to be matched with implementation of agreed core learning outcomes. It may remain so given the diversity of faculty that have GH responsibilities; the priority given to elective preparation; crowded curricula; resources for GH teaching; an assumption that it is already integrated.

Take-home message: Graduating medical students have highly variable learning regarding GH, with some having little in the way of formal teaching and assessment. Students may link GH to resource poor elective placements and their preparations for these placements. Arguably medical educators need to consider GH and associated learning outcomes with some urgency.
Developing and Implementing an Innovative Bioethics Pre-Departure Training for the Largest Medical Exchange Program in the World

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Alexander Lachapelle, IFMSA, Montreal, Canada
Tommaso Ivan Pomerani, IFMSA, Florence, Italy

**Background:** The International Federation of Medical Students’ Associations (IFMSA) organizes the largest international medical exchange program in the world. Every year, over 15,000 students from 122 countries participate in an IFMSA exchange, focusing on clinical medicine or research. These exchanges aim to contribute to student medical education in a global context.

**Summary of work:** Based on a literature review of existing trainings and a survey of national officers, IFMSA in partnership with UNESCO has developed a case-based Pre Departure Training to sensitize students towards ethical issues that may arise on their exchange. The goal is to increase learning outcomes and protect patient safety.

**Summary of results:** The training includes theory portions regarding basic medical and research ethics, cultural safety, professionalism, and exceeding level of skill. The training features 16 clinical scenarios that could be encountered by a medical student on an exchange and encourages the student to reflect upon their solutions, thus developing cultural safety competencies.

**Discussion:** IFMSA will be implementing the Pre Departure Training on a global scale such that 80% of outgoing students will have undergone this training by 2018. The relevance of this training in individual medical education systems as well as its impact will be evaluated through an Evaluation Form.

**Conclusion:** In a world where health is increasingly transnational, it is important that medical students be exposed to other health perspectives to develop a global understanding of health issues and to better serve culturally diverse populations. The current training aims to increase cultural competence in future medical practitioners and protect patients.

**Take-home message:** Clinical and research exchanges represent an important complement to medical education curricula but must be offered within a pedagogical frame which includes a pre-departure ethics training. This framework allows IFMSA to increase learning outcomes for its 15,000 annual exchange participants, and ensures social accountability and sustainability of the learning process.

Exploring the experiences and management strategies of medical students during international clinical electives – A qualitative study in Japan

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Takuya Saiki
Kaho Hayakawa
Yasuyuki Suzuki

**Background:** International clinical electives provide medical students with unique experiences to develop communication, clinical skills and professionalism. However, few studies have addressed their actual experiences during the international programmes. This process-oriented study explores what challenges Japanese medical students encounter and how they cope with them ‘during’ the 4(or 8)-week international electives.

**Summary of work:** Drawing on Neustupny’s language management theory, this study aims at describing 21 students’ cultural adaptation processes in the international contexts (e.g., Australia and U.S.). We collected their reflective reports submitted after returning to Japan and conducted follow-up interviews with five students. A thematic synthesis method was used for data analysis.

**Summary of results:** Their major challenges in the early stage of electives included: ‘English communication with local patients and health professions’, ‘negotiating social norms, including appropriate behaviour and roles expected in the hospital ward’, and ‘accepting different educational culture emphasising learner-centredness/autonomy’. Despite the challenges, they reported that they successfully progressed through the programme.

**Discussion:** For the successful experiences in the electives, they attempted (and struggled) to overcome the challenges by employing the following strategies: ‘reconsidering their approaches to learning’, ‘establishing better social relationships’, and ‘seizing/managing learning opportunities’. Their learning experiences overseas would lead to cultivating cultural competence besides communication and clinical skills.

**Conclusion:** Looking closely at their on-going participation in such intercultural contact situations, this study found that Japanese medical students have taken various management strategies in relation to linguistic, sociolinguistic and sociocultural problems. The findings in this study can be useful for designing preparatory educational programmes for the international electives.

**Take-home message:** A better understanding of difficulties that students faced and their management strategies taken during the international clinical electives is essential to the development of preparatory programme that facilitates the future students’ successful learning experiences in the intercultural context.
#4M  Short Communications: Empathy

Location: Room 103a

#4M1 (588)

Healtheatre and the Suspension of Disbelief: Interdisciplinary Education in Action

Ian Walsh, Queen's University, Belfast, UK
Paul Murphy, Belfast UK

**Background:** Healthcare includes expressing empathy and understanding key features of humanity, such as mortality and illness. The Stanislavski ‘system’ of actor training is part of a comprehensive ‘psycho-physical’ approach to representing the complexity of human experience in aesthetic form. We explored these areas during collaborative learning amongst medical and drama students.

**Summary of work:** Each of two interactive sessions involved 20 final year medical students, with teams of 4 rotating through challenging simulated clinical scenarios, enacted by 20 rotating undergraduate drama students, deploying the Stanislavski system of actor training. Team assessment of performance was via a ratified global scoring system and dynamic debriefing techniques.

**Summary of results:** Medical students reported ‘suspension of disbelief’ and an enhanced immersive experience within simulated clinical scenarios. Drama students reported increased challenge and immersion within their roles. Medical faculty and standardised patients reported positive utility and value for the approach.

**Discussion:** Qualitative and quantitative data demonstrated the merit and utility of such interdisciplinary learning. Both student groups and faculty appreciated the value of the activity and described enhanced learning. Collaborative dynamic debriefing allowed for a continuation of the immersive experience and allowed for exploration of experiential phenomena such as empathic engagement.

**Conclusion:** The deployment of drama students trained in the Stanislavski system significantly enriched medical and drama student experience and performance. Team assessment scores further demonstrated the effectiveness of this approach. Feedback from students, faculty and standardised patients was uniformly positive. The approach facilitated exploration of empathy.

**Take-home message:** 1. Interdisciplinary learning involving medical and drama students is effective and provides for rich experiential learning. 2. Clinical team performance is enhanced by this approach. 3. Deployment of such extant resources within dynamic debriefing allows for exploration of key issues such as empathy.

#4M2 (1136)

Empathy in Medical Students: A Five Year Prospective Cohort Study at Universidad Andrés Bello, Viña del Mar, Chile

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Camila Perez de Arce, Escuela de Medicina Universidad Andrés Bello, Viña del Mar, Facultad de Medicina, Viña del Mar, Chile

**Background:** Medical empathy plays a role in patient's healing process beyond any agreed treatment protocol. Empathy, although understood a soft ability, is a core skill every physician should develop. Reports show decline in empathy in students over the course of study years, questioning how it is integrated into the medical curriculum.

**Summary of work:** A five-year cohort study was applied to 33 medical students with the Jefferson's empathy scale comparing empathy scores at beginning and end of third, fourth, fifth, sixth, and seventh medical studies years. A questionnaire measured students' perception of results. Statistical analysis: Cronbach Alpha and Friedman test. Informed consent was obtained.

**Summary of results:** Cronbach Alpha 0.8. High empathy scores were observed. No significant differences were observed along years for global empathy, perspective taking, standing in patient shoes and compassionate care. No difference by gender. Explanations mentioned: clinical practice 32%; concept in curriculum 36%; intrinsic values. 25%; health team and tutors as models 7%.

**Discussion:** Empathy scores remained high and steady throughout years, contending previous studies. Students agreed with several possible explanations for the results observed: impact of clinical practice and closeness with patients; relevance of the concept in the curriculum; intrinsic values, and health team and tutors as positive and negative models.

**Conclusion:** Keeping-up student’s empathy scores evidence curricular effort to imbied the concept at the beginning of undergraduate medical education. Starting clinical experience timely increases learning opportunities to observe and practice empathy with real patients. Students specifically highlighted the relevance given to empathy in the medical curriculum, validating current teaching practices.

**Take-home message:** Research should continue to identify factors that improve empathy skills in medical students. Curricular innovations should incorporate early learning opportunities for students to develop empathy, whether conceptual or practical. Empathy is a unique “medicine” needed at the medical encounter as it could contribute to improve patient’s emotional response to illness.
#4M3 (2440)
The trajectories of empathy development may be gender specific: insights from a longitudinal study at Minho’s school of medicine

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Background: Self-reported empathy scores during undergraduate medical training may decline or be stable, depending on the study. Empathy is higher in female students and is associated with personality traits. The trajectories of empathy development are under researched. This study tested gender and personality-related specificities of empathy development.

Summary of work: Data collected with the Portuguese Jefferson Scale of Empathy (student version) and the Portuguese NEOFFI were obtained from three cohorts of students attending one Portuguese medical school. Complete data sets were available for 112 students (78% women). Data were analyzed with latent growth modelling, conditioned by gender, openness and agreeableness.

Summary of results: Empathy development was sensitive to gender. Male students reported lower empathy at admission, greater rate of change in pre-clinical years than female students, and had a decline during clinical years. Openness and agreeableness were positively associated with empathy at admission, but not with empathy rate of change and acceleration.

Discussion: A quadratic growth model showed better fit than the linear growth model, suggesting that empathy development was not linear. The stability found in JSE scores is consistent with previous findings in Portuguese medical students, but contradicts previous findings of decline.

Conclusion: Our principal finding was a differential growth of empathy for male and female students. Our findings further defy the prevailing view of empathy decline during medical school.

Take-home message: This study calls attention to the possibility that empathy growth has different trajectories in male and female students. Decline trajectories on empathy JSE scores at the transition to clerkships may be gender specific. Personality affects baseline empathy scores, but not its growth.

#4M4 (2063)
Is artificial empathy enough? A qualitative study of Chinese medical student perspectives on the role of empathy in medicine

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Rapheal Nahr Rivière, University of Ottawa, Ottawa Canada
Anna Byzewski, University of Ottawa, Ottawa Canada

Background: In predominantly Western literature, empathy has been linked with higher-quality patient care, increased physician satisfaction, and superior health outcomes. The perspectives of Chinese medical students in regard to empathy are unknown. In the setting of a Canada-Shanghai partnered curriculum an exploration of the views of Chinese medical students was conducted.

Summary of work: Two focus group sessions, consisting of 16 medical students from the Ottawa-Shanghai Joint School of Medicine (OSJSM) were conducted in Shanghai using a semi-structured interview protocol. Thematic data analysis was applied and visual thematic data maps were constructed with Leximancer software. Of note the OSJSM program is delivered in English.

Summary of results: Key themes include: defining empathy, the role of empathy, and empathy erosion. The novel concept of ‘artificial empathy’, the display of empathy without genuine emotion, was proposed as more desirable than genuine empathy. Factors associated with empathy erosion included emotional burden, and physician-patient distrust.

Discussion: With recent data indicating high rates of burnout in medical students, the concept of artificial empathy as a protective mechanism warrants further exploration. Empathy, though valued, is associated with “taking a toll”. Student concerns that empathy contributes to burnout support further research into the subtleties of empathy verses compassion.

Conclusion: Participants expressed a sophisticated understanding of the importance and possible negative impact of feeling empathy in what can be difficult circumstances. The students also noted the challenge of time constraints in properly conveying empathy towards patients. Further research into the impact of enhanced empathy that we encourage verses artificial empathy.

Take-home message: As the physician-patient relationship becomes increasingly complex, an exploration of empathy in medicine, through a variety of sociocultural perspectives, is of utmost importance. This study expands the current literature examining the role of empathy in medicine, with novel insight into ‘artificial empathy’ and risks of being empathetic.
#4M5 (19)

**A mile in their non-slip socks: Fostering a development of empathy in 3rd Year medical students**

Craig Pascoe, New Cross Hospital, Wolverhampton, UK  
Stuart Hamilton, New Cross Hospital, Wolverhampton, UK  
Philip Dainty, New Cross Hospital, Wolverhampton, UK  
Michael Helme, New Cross Hospital, Wolverhampton, UK  
Iona Clark, New Cross Hospital, Wolverhampton, UK  
Mehvish Khatoon, New Cross Hospital, Wolverhampton, UK

**Background:** Empathy is a difficult skill to teach within the ‘classical classroom based’ medical curriculum. The rise of simulation based teaching has opened a new dimension to medical education. By using simulation we may be better able to teach some of the historically overlooked aspects of a good clinician.

**Summary of work:** A Pilot group of 3rd Year Students underwent admission as a simulated patient to gain first-hand experience of a patient’s journey through hospital. Carefully selected controlled circumstances were engineered to highlight how admission may affect patients’ behaviours and attitudes.

**Summary of results:** Qualitative data were collected in the form of debrief discussion highlights and comments from feedback. 100% of students indicated that they had a better appreciation of the patient’s experience during admission. Each student successfully described feeling similar emotions to those that are commonly described by patients.

**Discussion:** Despite a much reduced time-span we were able to specifically engineer circumstances to highlight key issues affecting patients in hospital. Without being expressively told what the outcomes were students unanimously developed their own learning outcomes with key themes recurring in each student’s feedback.

**Conclusion:** All students described the benefit of the experience. In addition to attaining explicit learning outcomes, students independently reached the ‘hidden outcome’ of the simulation to help develop empathy towards patients. Development regarding up-scaling is needed to identify the best method of delivering this session to a large cohort of students.

**Take-home message:** Although difficult to ‘teach’ empathy, using carefully controlled high-fidelity simulation it is possible to enable students to independently create the development of empathy as their own learning outcome. Simulation and experiential learning can enable us to better address ‘hidden curriculum’ components such as empathy.
#4N Short Communications: Assessment:
Feedback - Postgraduate
Location: Room 103b

#4N1 (1186)
Safety first: the way feedback is verbally and non-verbally transferred and received during upward feedback dialogues
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T Klaassen
M van den Hurk
G Bouwmans
L Fluit

Background: Two factors important for effective feedback are feedback’s quality and a safe environment. In medical education literature these factors are predominantly studied in feedback from supervisors to residents. Little research exists how these factors come forward in upward feedback dialogues (UFD) between residents and supervisors about supervision quality.

Summary of work: A mixed-method study was conducted to study the verbal feedback-process and non-verbal behaviors during 12 UFD in which two residents gave feedback to their supervisor. UFD were observed for non-verbal behaviors with a structured observation scheme. Dialogues’ transcripts were analyzed by template-analyses, which contained i.a. feedback-level (self, task, process, self-regulation).

Summary of results: Results showed key themes about the verbal feedback-process like feedback-level, concretize, self-reflection, mitigating feedback, emotional reactions, formulation of action points and protection. The average occurrences over time of the following non-verbal behaviors were described for both residents and supervisors: appropriate touch, facial-expressions, body position, gestures, eye-contact and forward lean.

Discussion: The verbal feedback-process and the non-verbal behaviors both show that during UFD residents and supervisors strongly focus on maintaining a safe environment but less on the transfer of good quality feedback. It can therefore be questioned if feedback in this way is most effectively transferred and received.

Conclusion: Based on our results we conclude that there is a tension between creating a safe sphere and transferring and receiving good quality feedback during UFD between residents and supervisors. Future steps include more research about these two elements in UFD and suggestions how to reduce or handle with this tension.

Take-home message: Transferring good quality feedback and maintaining a safe environment doesn’t seem easy in UFD. However, the use of these dialogues seems promising because it’s a way to contribute to a medical work culture where providing and receiving feedback, both between as within hierarchical relations, is a common used professional activity.

#4N2 (716)
Exploring the Influence of Feedback about Implicit Bias on Health Professionals
Javeed Sukhera, Schulich School of Medicine and Dentistry, London, Canada
Alexandra Milne
Pim Tennissen
Lorelei Lingard
Christopher Watling

Background: Implicit bias can adversely impact clinical outcomes. The implicit association test (IAT) is an online metric of response time that informs an individual about their implicit bias. IAT results may stimulate reflection; however, feedback about implicit bias may also trigger emotions that reduce the effectiveness of feedback interventions.

Summary of work: We explored how health professionals perceive the influence of taking the IAT and receiving their results. We utilized a constructivist grounded theory approach and conducted semi-structured interviews with paediatric physicians and nurses (n=21) after they completed the mental illness IAT and received their result.

Summary of results: We identified 3 tensions that emerged when participants were confronted with feedback about their implicit bias. These tensions were: 1) acceptance vs justification, 2) actual vs ideal identity, and 3) desire for change vs acknowledgment of change as difficult.

Discussion: Our findings inform an improved understanding of the interplay between emotions and feedback, and may offer potential mediators to reconcile feedback that is inconsistent with self-perceptions. Consistent with previous research, guided reflection may mitigate the resistance to feedback about implicit bias that is inconsistent with self-perception.

Conclusion: Our study suggests that guided reflection informed by tensions related to personal and professional identity may hold unique potential for implicit bias recognition and management curricula. Navigating such tensions through facilitators who model vulnerability regarding their own biases may facilitate acceptance of bias related feedback.

Take-home message: To better understand how individuals process feedback inconsistent with self-perceptions we must explore how feedback and guided reflection influence personal and professional identities.
#4N3 (754)
Why do clinical teachers want to provide feedback in a busy emergency department?

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Yu-Che Chang, Chang Gung Medical Education Research Centre (CG-MERC), Taoyuan, Taiwan
Lynn Monrouxe, Chang Gung Medical Education Research Centre (CG-MERC), Taoyuan, Taiwan
Shuan-Ruey Yu, Chang Gung Medical Education Research Centre (CG-MERC), Taoyuan, Taiwan
Li-Chun Chang, Chang Gung University, Taoyuan, Taiwan
Chip-Jin Ng, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Background: Feedback is an effective pedagogical tool in clinical teaching and learning, but the actual perception of clinical feedback is often described as unsatisfactory. Little is known about what drives clinical teachers to provide feedback in busy clinical settings. We aimed to investigate motivation for feedback provision in an emergency department.

Summary of work: A qualitative secondary analysis of semi-structured interview data (conducted 2015-2016) with 18 attending physicians purposively sampled from a large teaching hospital ED in Taiwan. Data were analyzed inductively thematically. Intrinsic and extrinsic motivations for providing feedback were identified. Findings were categorized into autonomy, relatedness or competence according to Self-Determination Theory.

Summary of results: Both intrinsic and extrinsic motivations were found. Intrinsic motivations: (1) commitment to pass-down experiences as their teachers did; (2) seniors taking care of juniors (customary in Eastern working cultures). Extrinsic motivations: (1) teaching hospital faculty responsibility; (2) patient safety and quality of care; (3) developing competencies for future partners.

Discussion: Unlike assessment feedback, which often happens within protected time and space and is anticipated by both the teacher and learner, clinical feedback is often influenced by numerous clinical factors. Despite motivations provide driving forces for clinical feedback provision, feedback occurs only after considering clinical loading, learner-physician relationship, anticipated outcome and time.

Conclusion: Understanding motivations for providing feedback enables us to improve clinical learning environments, design courses, and reinforce drives in order to engage the clinical teachers with feedback provision.

Take-home message: Various intrinsic and extrinsic motivations drive clinical teachers to provide feedback in a busy clinical environment. Understanding these can facilitate a greater level of clinical feedback between educators and students/trainees for the betterment of patient care.

#4N4 (200)
About Politeness, Face and Feedback: Exploring perceptions of residents and faculty regarding institutional culture factors affecting feedback

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Cees van der Vleuten
Karen V Mann
Emily E Pisarski
Karen Könings

Background: Feedback is a complex social interaction situated within an institutional culture, perceived lack of credibility or a shared mental model could result in rejection of the information. In this study, we explored resident and faculty perceptions of the influence of institutional cultural factors on the quality and impact of feedback.

Summary of work: Using constructivist grounded theory approach, we explored residents’ and faculty perspectives on the institutional feedback culture, impact of politeness on feedback quality and bidirectional feedback. We conducted 8 focus group discussions and 8 interviews. Discussions were audiotaped and transcribed. Thematic analysis was performed through the lens of institutional culture.

Summary of results: Institutional culture was described as: the culture of politeness with avoidance of language potentially damaging to self-esteem, and culture of excellence where the ‘pedigree’ of the institution and trainees inhibited constructive feedback. The hierarchical environment and lack of faculty feedback seeking were reported to be major obstacles to bidirectional feedback.

Discussion: Within the institutional context, we identified three key themes related to participant perceptions of feedback conversations: (1) Facilitating constructive feedback exchanges, (2) Encouraging feedback seeking and receptivity, and (3) Enhancing bidirectional feedback. Participants described barriers and facilitators under each of these themes, and provided suggestions for culture change.

Conclusion: The institutional culture of excellence and politeness was perceived to be a significant barrier to honest, meaningful feedback and may impact feedback seeking, receptivity and bidirectional feedback.

Take-home message: Understanding assumptions and values that constitute an institutional culture, recognizing the barriers to change, aligning proposed new behaviours with the existing mission and showcasing their benefits, are essential to guide successful culture change.
Multi Source feedback for educational leaders in clinical departments – a bridge to change of practice and consolidation of managerial support

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Gitte Eriksen, Department of Quality, Aarhus University Hospital, Denmark

Background: Educational obligations, responsibilities and plans for development are not necessarily discussed between educational leaders (EL) and Heads of Departments (HOD). A Multi source feedback process designed for ELs might provide the documentation on educational practice and challenges in the clinical department needed to incorporate educational issues in appraisal meetings.

Summary of work: The MSF process involved personal feedback to the EL from a consultant combined with a mandatory appraisal meeting based on MSF data with the HOD, who had been prepared for the meeting by a coach. Semi-structured interviews with 33 ELs and HODs on the outcome from the process were performed.

Summary of results: The MSF process enabled HODs to provide ELs with tailored support on educational matters based on the feedback from both trainees and trainers. The majority of ELs welcomed the opportunity to discuss important educational matters and the support incorporated in designing a common future plan for education with the HOD.

Discussion: MSF displays HODs’, trainees’ and trainers’ perception of the department’s education. Positive appraisal, recognition, clarification of roles and dialogue with HOD based on documentation might positively influence the performance of EL. Furthermore, the MSF process might enable the ELs and HODs to lay down plans for future cooperation and support.

Conclusion: A MSF process creates an important opportunity for ELs and HODs to discuss common educational obligations and ambitions. In addition plans for future cooperation were created and agreement on managerial support from the HOD reinforced.

Take-home message: A MSF process might be a kick off for ELs and HODs to agree on common goals for educational matters, future cooperation and support. However, follow-up and anchoring is crucial and might be ensured by an ongoing process.
#4O Short Communications: Standard Setting & Psychometrics

Location: Room 201

#4O1 (1932) Rubrics for summative evaluation: how to deal with standard setting?

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Nicole Sampers, Radboud University Medical Center, Nijmegen, Netherlands
Thom Oostendorp, Radboud University Medical Center, Nijmegen, Netherlands
Giel Bosman, Radboud University Medical Center, Nijmegen, Netherlands
Marc Vorstenbosch, Radboud University Medical Center, Nijmegen, Netherlands

Background: In 2015 we introduced rubrics for evaluation of all written assignments in our new (bio)medical bachelor’s curricula. We launched these rubrics as an efficient tool to provide students with meaningful feedback, to promote learning. For summative use of the rubrics, we chose a new method to convert rubric-scores into grades.

Summary of work: Our rubrics comprise a four-point performance-level scale, with qualitative labels ranging from insufficient to exemplary. Passing scores were calculated according to Cohen’s method and rubric-scores converted into grades 1-10 by linear transformation. We compared resulting passing scores and grades with the rubrics-content and performance levels to evaluate correspondence.

Summary of results: The minimum required performance level described in the rubrics matched students’ mean competence levels well for all rubrics. The total rubric scores resulting in grades 1 to 5 and 9 corresponded well with the performance-level scale, but this relation was less than optimal for the grades 6 to 8.

Discussion: The labels of the four-point scale in our rubrics inherently express qualifications. Therefore, we will adapt the performance descriptions in our rubrics to improve correspondence with students’ ability as reflected in the passing scores and in the calculated grades.

Conclusion: Our first year of using rubrics to evaluate written assignments provided a valuable experience. We find rubrics to be a useful tool in our educational setting: helpful for scoring in summative assessment and, moreover, a valuable feedback instrument. We advise Cohen’s method for standard setting when first using a rubric.


#4O2 (1256) Revisiting borderline performance: implications for assessment practices

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Godfrey Pell
Richard Fuller
Jennifer Hallam

Background: Central to high stakes assessment is robust decision-making at the minimally competent level, and standard setting models often rely on the concept of the ‘borderline’ student. How such students actually perform at case/item/station and whole test level isn’t well explored – nor are the assumptions made when using borderline methods.

Summary of work: Previous analysis revealed a high degree of case-specificity (station specific variability) for ‘borderline’ students, and showed that the ‘borderline’ group does not exist as a single group across the assessment. The current work develops this research by considering its implications for assessment design and methods of standard-setting.

Summary of results: The high degree of case-specificity for weaker students means it is difficult to generalise about their performance from assessed areas to those non-assessed. There is also a risk of excessive levels of compensation for such students. The lack of a consistent ‘borderline’ group challenges assumptions behind some standard setting methods.

Discussion: A sequential model of assessment samples more widely from the pool of tasks, thereby improving diagnostic accuracy for the minimally competent group. Compensation should be limited via additional hurdles such as minimum stations passed. Standard-setting methods that focus solely on the borderline group are conceptually challenging for assessors.

Conclusion: This work shows that overly simplistic notions of ‘borderline’ performance are problematic – this is a complex and varying group across different tasks. Institutions must therefore take account of this when designing appropriate assessment systems/passing rubrics. Developing understanding of assessor decision-making at the minimally competent level, and across the entire assessment. • A sequential testing design is likely to provide greater ‘diagnostic accuracy’ since it samples more widely from the curriculum. • Standard setting methods that make strong assumptions about the ‘borderline’ might be problematic.

Take-home message: • There are high levels of case-specificity for weaker students when comparing across task, and across the entire assessment. • A sequential testing design is likely to provide greater ‘diagnostic accuracy’ since it samples more widely from the curriculum. • Standard setting methods that make strong assumptions about the ‘borderline’ might be problematic.
#4O3 (2137)
Standard Setting Practices for Exit Clinical Examinations of the Specialist Medical Colleges of Australia

Jennifer Williams, Bond University, Robina, Australia
Janie Smith

Background: The specialist medical colleges of Australia are educational institutions whose remit is to administer specialist training programs to trainee medical specialists and to certify successful completion of these training and education programs.

Summary of work: A review of the literature and publicly available information regarding standard setting for the exit clinical examinations of the specialist medical colleges of Australia was undertaken. This information was collated and referenced against information from the undergraduate sphere.

Summary of results: The specialist medical colleges of Australia use a variety of standard setting methodologies, with a recent trend towards criterion-referenced approaches.

Discussion: There is a paucity in the literature regarding standard setting practices of the specialist medical colleges of Australia. Some further information can be garnered from college websites. There exist a wide variety of standard setting methods applicable to use for determination of cut scores in exit clinical examinations.

Conclusion: Robust standard setting processes are an asset in the quest to appropriately determine clinical competence for specialists, and also add to the defensibility of assessment processes where a candidate has failed.

Take-home message: Robust standard setting processes are an essential component of good quality assessment. Further research is needed to determine the best methods of standard setting for the exit clinical examinations of the specialist medical colleges of Australia.

#4O4 (1321)
How absolutes vary: understanding the origins of variability in criterion-based standard setting

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Natalie Cope
Efun Coker
Andrew Hassell
Lisa Dikomitis

Background: Standard setting is vital to assessment validity. Comparison of criterion-method standards on shared items between UK medical schools shows up to 20% variation between schools. The origins of such variation are unclear. We aimed to understand how both individual and group level processes interact to influence the chosen standard.

Summary of work: Using a social constructivist paradigm we used field observations of standard setting for schools who set low, medium and high standards. “Think Aloud” interviews compared judges thoughts whilst standard setting common items; semi-structured interviews probed conceptions of “just competent” candidates and group process. Data were analysed using grounded theory methods.

Summary of results: Perceptions of “just competent” candidates’ performance varied considerably, related to personal perceptions of item difficulty. Group process was influenced by judges’ speciality, seniority, group familiarity, and normative tendencies. Whilst defining just competent candidates, judges variously prioritized: safety on the ward; scope of knowledge; engagement and attendance; and exam technique.

Discussion: Groups debated evidence from teaching experience, curricular knowledge, and relevance to practice to construct anecdotes of just competent students’ thinking. Despite initial certainty, anecdotes often contradicted each other, revealing the vagueness of these conceptions. Well described group processes (polarization, social loafing, group-think) played less of a role than anticipated.

Conclusion: Standard setting is cognitively and socially complex. Even experienced judges may find considerable uncertainty estimating “just competent” students’ performance on specific items. Variations in the set standard appear to arise due to the interaction of several individual and group level processes. Such variation has some potential to limit criterion-standard’s validity.

Take-home message: Future research is needed to understand the relative contributions of the described processes, and whether specific interventions can scaffold or support judgement processes at individual and group levels. Further enquiry might explore whether social and institutional benefits of group decisions make them preferable to normative or empirical standard setting methods.
Comparison of Four Linking Methods for the Medical Council of Canada's Qualifying Examination (MCCQE) Part II

Andrea Gotzmann, Medical Council of Canada, Ottawa, Canada
Alix Clarke, University of Alberta, Edmonton, Canada
Fang Tian, Medical Council of Canada, Ottawa, Canada
André De Champlain, Medical Council of Canada, Ottawa, Canada
Sirius Qin, Medical Council of Canada, Ottawa, Canada

Background: Statistical linking is used to account for differences in test difficulty and ensures accuracy of decision-making and score comparability over time. Different linking methods are available, with different theoretical assumptions. When assumptions are met, the results are similar, but when assumptions are not fully met, certain methods are better suited.

Summary of work: The MCCQE Part II has been using the Levine Observed method of linking, which should be evaluated periodically. In order to determine the effect of linking on operational outcomes, four different methods were compared on (1) pass rates, (2) percentage change in pass/fail rates, and (3) decision consistency and accuracy.

Summary of results: The three linear methods showed small differences in pass/fail rates, with the Tucker method yielding slightly lower pass rates than the other methods. Decision consistency and accuracy was essentially equivalent between the linear methods. The equipercentile method appeared to be unstable after multiple links due to score rounding effects.

Discussion: Due to rounding station scores when applying the equipercentile method, it is not recommended to use with OSCE linking. Any of the linear linking methods may be suitable for linking the MCCQE Part II, as operational outcomes produce only small changes, implying the underlying assumptions are largely met.

Conclusion: The Tucker method seems to meet the statistical assumptions more closely for the MCCQE Part II, as capacity constraints will limit the reference group candidates used for linking and there will be 10 vs. 12 OSCE stations in 2018.

Take-home message: Linking methods should be periodically evaluated on how well the examination structure and outcomes meet the statistical assumptions of each linking method. Research on evaluating linking methods may suggest a change in method, if warranted, and provides documentation and supporting evidence to substantiate such a change.

How students perceive the validity of assessment

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Jing Xiao, McGill University, Montreal, Canada
Christina St-Onge, Universite de Sherbrooke, Sherbrooke, Canada
Meredith Young, McGill University, Montreal, Canada

Background: Stakeholder, i.e., student, perceptions of the value of an assessment can contribute to their uptake of assessment as a source of feedback. However, little focus has been placed on students as stakeholders in assessment, and even less regarding how students perceive validity as the receivers and interpreters of assessment scores.

Summary of work: Messick's validity framework was adapted for a student-relevant perspective, and resulted in a 28-item 6-point Likert based web tool. First and second year medical students at one institution were invited to complete the survey regarding a novel assessment. ANOVAs were conducted to see differences in perceived validity between evidences.

Summary of results: 77 students participated. Students' overall perception of the assessment was favorable, with significantly different ratings across evidences of validity: response process was highest (4.8/6), relationship to other variables lowest (4.0/6). Students in upper quartiles of performers rated the assessment more favorably (4.4/6) than those in the lowest quartile (4.0/6).

Discussion: Findings suggest that students' perception of an assessment varies according to evidences of validity. While students had a positive perception of the assessment's validity, they questioned its capacity to reflect later clinical performance. Of interest, more favorable perceptions of validity appear to be related to higher performance on the exam.

Conclusion: Although an assessment can be well received by examinees, its educational value may be limited if students perceive that assessment results do not reflect future performance in clinical environments. This may limit the benefits of assessments as feedback sources, and limit the integration of feedback to improve performance.

Take-home message: For assessment to provide feedback that favors improvement, we must consider the all stakeholders' perceived validity of the scores, including receivers of feedback, namely the students.
#4P Short Communications: 
Postgraduate Education - Wellbeing & the Trainee in Difficulty
Location: Room 208

#4P1 (2704)
An Interpretative Phenomenological Analysis of how doctors experience wellbeing during workplace transitions

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Vikram Jha, University of Liverpool, Liverpool, UK
Gundi Kiemle, University of Liverpool, Liverpool, UK

Background: In the UK, high levels of absenteeism and poor mental health amongst health professionals are a major drive toward the promotion of wellbeing. There is limited knowledge on the impact that transitions have on wellbeing. This research explores individual doctors’ experiences of workplace transitions and the impact on their wellbeing.

Summary of work: A qualitative design was used to explore the challenges that doctors face and the strategies they adopt to maintain their wellbeing. In-depth, semi-structured interviews were conducted with twelve doctors at different transition points (F1, ST1, ST3 and consultant/GP). The transcribed interviews were analysed using Interpretive Phenomenological Analysis (IPA).

Summary of results: Analysis is ongoing. Preliminary findings show that areas of struggle include managing workplace conflict, feelings of insufficient knowledge and forming personal connections with deteriorating patients. Factors that appear to facilitate wellbeing include peer support, good levels of supervision and being part of a team.

Discussion: At the beginning of each workplace transition, there is a disconnection between expectations of doctors' new role and the reality of the working environment. Peer support plays a vital role in managing emotional reactions to workplace challenges. Recommendations for best practice will be presented.

Conclusion: During workplace transitions, doctors require additional support to maintain their wellbeing.

Take-home message: A deeper insight into the impact that workplace transitions have on doctors' wellbeing would be a valuable opportunity for the creation of interventions that would assist medical students and doctors to have a smoother transition to their new roles.

#4P2 (1077)
Residents' experiences of mistreatment - Time out to stop a silenced practice

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Clara Facioni
Marcelo García Diéguez
Alfredo Eymann
Marcelo Figari

Background: Medical Residency is a full-time, in-service training program, that implies high psycho-physical requirements for its participants. It is characterized by a hierarchical organization with a high interdependence among its members. Several international studies alert the problem of mistreatment during residency training, although they are scarce in Latin America.

Summary of work: A self administered-questionnaire with four domains was designed: educational mistreatment; psycho-emotional abuse; sexual harassment and discrimination. They were asked by demographic variables and main responsibles. Participation was personal, voluntary and anonymous. 98/184 responses were obtained from general surgery, tocho-gynecology, IM and pediatrics residents in 2 Argentine hospitals. 68% were women.

Summary of results: The prevalence and consequences of mistreatment was identified. 98% had experienced educational mistreatment, 86% psycho-emotional abuse, 28% sexual harassment and 45% discrimination. 43% reported educational, psychological, physical or social consequences. Mistreatment was associated with being a woman or a foreigner. The Chief Resident was identified as one of the main responsible.

Discussion: Mistreatment could be explained by a paradox: there is a "good or beneficial mistreatment" in order to train "hard" doctors. The hierarchical structure, similar to military training, would contribute to the persistence of this phenomenon. Phrases such as "Spare the rod and spoil the child" are usually heard during the residency.

Conclusion: The prevalence of mistreatment in residences was high. The most common sources of mistreatment were: assignment of inappropriate tasks for their year of training, lack of personal effort recognition, receiving offensive comments and shouting in front of colleagues and patients. There is a low level of reporting of mistreatment.

Take-home message: The mistreatment practices are legitimised and naturalised in the residences studied. It is necessary to promote the debate of this problem in educational forums and among those in charge of training and the elaboration of institutional policies of prevention and reporting, which protect residents and ensure non-abusive educational practices.
#4P3 (2648)
Problems faced by female doctors during fellowship training hindering their professional progress in a conservative cultural context

Komel Zulfiqar, Islamic International Medical College, Rawalpindi, Pakistan

**Background:** Healthcare delivery system of Pakistan is weakening due to deficient healthcare workforce, reason being more female occupy seats in medical schools on merit but very few take up medical profession as career because of problems from myriad cradles. This leads to lack of retention of female doctors in their profession.

**Summary of work:** It was a qualitative study, ten female doctors were interviewed in depth using semi structure questionnaire having questions related to domestic and institutional problems faced to them. Interviews were audio taped, transcribed and shifted to excel sheet for analysis by Nvivo software. Thematic analysis was carried out to emerge themes.

**Summary of results:** In-depth interviews of ten female doctors undergoing fellowship training revealed themes related to challenges faced by them. All of them strongly believed that training is very tough and hectic and they came across many, departmental, institutional and personal problems thus enforcing them to compromise or quit their career.

**Discussion:** Discussion around major themes like work-life imbalance, burn out, institutional stress factors, lack of family support, male dominance, sexual harassment at workplace have concluded that female face challenges to pursue their carrier therefore give up at times resulting in depletion of healthcare workforce thus depriving the country from healthcare workers.

**Conclusion:** Female encounter countless barriers when they start their fellowship training as a step forward towards their career development. They come across institutional as well as personal issues which affect their career, resulting in sluggish career advancement or sometimes end up quitting their career.

**Take-home message:** There is dire need to strengthen healthcare system for that state must clearly focus on quality, gender equality and improvement in working environment for females. Institutions should provide administrative and monetary support to all female doctors during fellowship training as most of trainees are undergoing unpaid training.

#4P4 (1783)
Relationship between the learning environment and burnout in Dutch residents

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Kees CPM Verheyen, Department of Orthopedic Surgery and Traumatology, Isala Hospital, Zwolle, Netherlands
Jelle T Prins, Medical Center Leeuwarden, Leeuwarden, Netherlands
Frank MMA van der Heijden, Vincent van Gogh Institute for Psychiatry, Venray, Netherlands
Paul LP Brand, Department of Pediatrics, Isala Hospital, Zwolle, Netherlands

**Background:** Concerns exist about the negative impact of burnout on the professional and personal lives of residents. It is suggested that the origins of burnout among residents are rooted in the learning environment. We assessed the relationship between the learning environment and burnout in a national sample of Dutch residents.

**Summary of work:** We conducted a cross-sectional online survey among all Dutch residents in September 2015. We measured burnout using the Dutch version of the Maslach Burnout Inventory (UBOS-C) and the learning environment using 3 domain scores (range 0-10) on content, organization, and atmosphere from the Scan of Postgraduate Educational Environment Domains (SPEED).

**Summary of results:** Of 1231 residents (33 specialties), 185 (15.0%) met criteria for burnout. After adjusting for possible confounders we found an significant inverse relationship between SPEED scores and the risk of burnout (aOR 0.67 for 1-point increase in SPEED score, 95% CI 0.57 to 0.79, p < 0.001).

**Discussion:** Our study is the first to describe a consistent association between the learning environment and burnout across specialties. We could adjust for working hours, type of specialty, work-life balance satisfaction, year of training and other confounders. Nevertheless the cross-sectional design precludes causal inference.

**Conclusion:** Our study suggests that a poor quality of the learning environment is a major determinant of the risk of resident burnout. Residents, supervisors, educators and policymakers have a shared responsibility to promote a rich learning environment in which residents flourish with minimum risk of burnout.

**Take-home message:** Our study suggests that among residents there is a consistent and highly significant inverse association between burnout and the perceived quality of the learning environment. Improving the learning environment might help reducing burnout among residents.
"My world is broken and it will never be the same".
Sexual abuse of doctors, by doctors: professionalism, trauma and the potential for healing

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Kirsty Douglas, Australian National University, Canberra, Australia
Christine Phillips, Australian National University, Canberra, Australia

Background: Internationally, 59% of medical trainees have experienced harassment with 33% experiencing sexual harassment. (Fnais et al 2014). In Australia, disclosures around sexual abuse of registrars by senior colleagues have triggered enquiries into bullying and harassment in medicine. However, little is known about the lived experience of doctors experiencing sexual abuse.

Summary of work: This narrative study involved interviews with doctors who were victims of sexual abuse. Analysis included transcripts and other texts, e.g. legal documents, media reports and policy frameworks. We examined the impact of trauma. Our aims were to challenge the cultural frameworks that enable abuse, challenge silence, and improve therapeutic interventions.

Summary of results: This presentation focuses on the experiences of three registrars who were assaulted by their supervisors. All three won their cases in court. Each obtained their College Fellowship, but their careers were profoundly affected. All experienced deep professional and personal betrayal. None were able to access appropriate medical care.

Discussion: The trajectory of abuse involves prolonged periods of enforced silence, often required by law or hospital policy. Concepts of “professionalism” can prevent victims from seeking care, as they attempt to function “professionally” in teams that include the (senior) perpetrator. Collegiate support for victims can also evaporate, leaving them profoundly isolated.

Conclusion: Sexual abuse is occurring in our profession: rape culture is alive and well. Harm is compounded by silence, and help-seeking is fractured when trust in the medical profession is broken. Victim whistleblowers challenge the profound power differential evident in medical training, and in doing so, jeopardise their future careers.

Take-home message: As a medical community, we need to understand and address toxic culture. We also need to take responsibility for the care and recovery of our colleagues. This study highlighted missed opportunities to provide validation, support, and care for these doctors, outside of the institutions that failed to protect them.
#4Q Short Communications: Student Stress

Location: Room 207

### #4Q1 (3319)

Mental Health Promotion Strategies in Medical Students: What do students think we should be doing better? A qualitative study

Amy Manley, Avon and Wiltshire Partnership NHS Trust, Bristol, UK

**Background:** Doctors and medical students experience higher degrees of anxiety and depression than the general population (Dyrbye 2006). Mental health problems negatively impact on patient care, burnout and academic performance (McManus 2004). Multiple strategies are utilised to reduce mental health problems however psychiatric morbidity remains high and help-seeking low (Gold 2015).

**Summary of work:** Following ethical approval, 12 fourth year medical students were recruited. Semi-structured interviews were conducted discussing how university strategies to improve student mental health could be improved. The interviews were recorded, transcribed and coded, with a proportion being double coded. Transcripts were analysed using a general inductive approach (Thomas 2006).

**Summary of results:** Uncertainty about the bounds of confidentiality, negative consequences of self-disclosure (being viewed as weak, impact on career) and time constraints, negatively impacted on help seeking. University extra-curricular groups, were perceived as having less influence on career, and were seen as a source of support and self-care strategies.

**Discussion:** The consequences of others (peers, university, governing bodies) discovering that a student has mental health problems was a major concern. Those in difficulty were reluctant to help-seek, talk to peers or participate fully in cohort-wide support initiatives due to concerns this would expose them as struggling with their mental health.

**Conclusion:** Peers from extra-curricular groups and junior doctors involved in teaching were identified as sources of support. Training for such people to advise struggling students may be valuable. Wellbeing activities which can be done privately may be useful, but will not change the culture of secret around mental health problems.

**Take-home message:** Confidentiality has boundaries to protect the students’ patients, but these boundaries may be harming students themselves. Transparency in these boundaries facilitates student choice. Supporting students to build social networks through university groups may be helpful, however the peripatetic nature of life at many medical schools is disruptive to these networks.

### #4Q2 (1286)

Do medical students use lifestyle choices to cope with stress and burnout?

Anita Laidlaw, University of St Andrews, St Andrews, UK
Jo Cecil, University of St Andrews, St Andrews, UK
Evelyn Watson, University of St Andrews, St Andrews, UK
Ashley Dennis, University of Dundee, Dundee, UK
Jennifer Cleland, University of Aberdeen, Aberdeen, UK

**Background:** Pressures such as workload and educational debt contribute to poor mental wellbeing in medical students (1-4). Suboptimal care has been associated with doctors’ burnout (5, 6). Health behaviours predict levels of burnout in medical students (7, 8), however, it is unclear whether they are used actively to cope with burnout.

**Summary of work:** 46 medical students (20 x 1st year, 18 x 3rd year, 8 x 5th year) from Scottish Universities of St Andrews, Dundee and Aberdeen participated in semi-structured interviews examining perceptions of burnout, stress and health behaviour choices. Transcripts of the interviews were analysed using framework analysis.

**Summary of results:** Participants estimated high prevalence rates of burnout and stress. Descriptions of burnout experience varied by year of study. Sources of burnout and stress included maintaining high academic standards and professional behaviour expectations. Coping strategies included; avoidance, leisure time, controlling diet or sleep, exercise, withdrawal from activities and drug use.

**Discussion:** Medical students perceived burnout as a problem. Sources of stress and burnout were similar to previous work (1-3). Physical activity has previously been associated with differences in burnout (8), however, a novel finding of the current study is that it actively used by students to cope with stress and burnout.

**Conclusion:** Clear messaging early on in training could assist students in recognising burnout in themselves and others and likely sources of such challenges to wellbeing. Students make choices in coping strategies, and an environment which assists students to avoid maladaptive coping strategies may improve their choices.

**Take-home message:** Institutions can assist medical students in recognising signs of burnout in themselves and others. Students may require education or assistance in making useful choices of coping strategies to manage challenges to their wellbeing.
I never felt stupid until I came to medical school”. The imposter phenomenon in medical students - it begins in medical school

Vedantashankar Sean Sarma, Newcastle University, Newcastle Upon Tyne, UK
Michael Atkinson, Newcastle University, Newcastle Upon Tyne, UK

Background: Few studies have documented the imposter phenomenon, underpinned by a feeling of intellectual phoniness, from the perspective of medical students, and even fewer provide insight into how this affects students who have faced academic difficulty. This is pertinent as these students are at higher risk of dropout from their degree.

Summary of work: This study aimed to develop insight into how feelings of imposture affect the learning of medical students experiencing academic difficulty. Interpretive Phenomenological Analysis was applied through semi-structured interviews with three UK medical students, located using purposive sampling. Inductive analysis allowed themes and superordinate themes to emerge, forming a narrative account.

Summary of results: Three superordinate themes emerged, which were “evolving as an imposter”, “negotiating the world as an imposter” and “the imposturous self”. Whilst these superordinate themes and many of the underlying themes were common to each participant, their experiences surrounding each theme were unique, varied and intricate.

Discussion: In contrast with the extant literature, each participant described development of their feelings after starting their degree. Their feelings were attributed to lack of ability, and many of their behaviours could be understood when viewed through attributional models of motivation, thereby allowing consideration of ways to support them more effectively.

Conclusion: Implicit is the suggestion that appropriate support structures may be able to prevent such feelings manifesting in the first place. There may therefore be merit in larger studies surrounding this phenomenon, and how support structures may be adapted to influence it.

Take-home message: 1. These medical students identified with the imposter phenomenon. 2. This began during medical school, whereas the literature posits development during childhood; appropriate support structures may therefore have prevented such feelings developing. 3. This idiographic study is small but rigorous, and identifies important findings which may benefit from further study

The effects of Interpersonal Mindfulness compared to Mindfulness-Based-Stress-Reduction for medical students: a randomised experimental education evaluation

Amy Spatz, St George’s, University of London, London, UK
James Walsh
Amal Thomas

Background: Medical students are at a high risk of burnout, perhaps through often placing the needs of others first. Mindfulness is thought to decrease stress by improving self-compassion, empathy, clinical efficacy, communication, working memory and the ability to focus attention. However little is known about the effects of interpersonal meditation (IM)

Summary of work: Students elective to participate in an introductory mindfulness course were randomly assigned to one of two different methods of teaching spanning 5-weeks. Method A included practicing an adaption of Mindfulness-Based-Stress-Reduction (MBSR) while Method B included IM exercises such as mindful listening & speaking in addition to the same MBSR-based course.

Summary of results: Setting up the action-research comparison sessions to control for extraneous variables was a challenge. Both courses were well evaluated, however the IM exercises were listed as the most useful aspects for some students and the least useful for at least one student. Interviews and survey data will provide more information.

Discussion: Students were asked to skip any exercises that they felt uncomfortable about. Very few did. The existence of opposite opinions regarding optional IM exercises despite being run by the same tutor, suggests that personal individual differences may require attention. Pressure to conform over meeting personal needs may be strong.

Conclusion: We may underestimate how much courage and self-awareness is required when opting out of group exercises. Offering this option is a standard approach in accordance with Mezirow’s (2000) transformational group learning principles. Further research is required to determine which individual psychosocial characteristics explain affinity levels for IM exercises.

Take-home message: Relaxation benefits of IM practices are theoretically linked to developing present-centred awareness within a structure designed to allow safety and vulnerability to co-exist. One crucial step to encouraging confidence may be to more actively encourage students to explore placing their own needs first by opting out of exercises on occasion.
The Implementation of a Peer to Peer Support Group System at Alfaisal University: Beyond the Stigma

Mohammad Sharique Ahmad, Alfaisal University, Riyadh, Saudi Arabia
Zeina Kayali, Alfaisal University, Riyadh, Saudi Arabia
Mazen Almasri, Alfaisal University, Riyadh, Saudi Arabia
Ahmed Abuzaid, Alfaisal University, Riyadh, Saudi Arabia
Ayman Awad, Alfaisal University, Riyadh, Saudi Arabia
Akef Obeidat, Alfaisal University, Riyadh, Saudi Arabia

Background: Studies conducted at Alfaisal University in Riyadh, Saudi Arabia, show that 61% of its medical students are depressed, 45% are experiencing extreme burn-out, and 25% have undiagnosed ADHD. This prompted the creation of a peer to peer support system for its students. We explore the program and its positive impact.

Summary of work: The program equips medical students of all years to support their peers emotionally and with confidence. Currently, 13 students, mainly from the clinical phase and internship, receive training to communicate effectively, respect anonymity, and recognize when students should be recommended to seek professional help.

Summary of results: Students are extremely happy having their own colleagues offer a helping hand or an empathetic ear. Accessibility and the promise of confidentiality is a key factor in many students feeling comfortable. Early data shows that students that sought help have had a positive impact on their social and academic lives.

Discussion: Peer helpers follow a code of conduct prepared by experts in the field of psychology. The voluntary services provided are group therapies, individual one-to-one sessions, anonymous phone calls, and facilitation of involvement in community service, all of which give students a range of routes to seek help, comfort, and advice.

Conclusion: The implementation of a peer to peer support group has had a positive impact on the psychological well-being of many students. The most valuable resource students have are one another, and we have used this to create the foundations of a program that are positively helping participants.

Take-home message: Extensive research and planning has gone into creating a trust-worthy peer to peer support system. Based on early feedback and results, we can confidently advocate for the establishment of similar programs in other universities, helping students of all backgrounds and cultures.

Noxious substances, technology and Internet as factors associated with mental symptomatology in medical students

J. Eduardo Meléndez-Márquez, UACH, Chihuahua, Mexico
Zyanya Baylón-Omaña, UACH, Chihuahua, Mexico
Andrei Ramos-Sosa, UACH, Chihuahua, Mexico
Haydeé Parra-Acosta, UACH, Chihuahua, Mexico

Background: Studies show a higher prevalence of mental disorders in Latin America, mostly in young adults. It has been observed that medical students have higher stress levels and psychological affections. Also, the new technologies (ICTs) and the consumption of noxious substances leads to a negative effect over mental health.

Summary of work: Prevalence of mental symptomatology and its relation with the use of noxious substances and ICTs in medical students from Mexico was determined through a questionnaire. There, the use and frequency of these factors was evaluated, as well as symptoms from different mental disorders, such as depression, anxiety, obsessive-compulsive, among others.

Summary of results: A total of 401 students answered the questionnaire. Symptomatology from general and separation anxieties, and major depression were the most prevalent. Consumption of noxious substances was mainly on the lower side, but use of social networks and ITCs were on the higher side.

Discussion: The fact that women had more symptomatology in most of the disorders evaluated, compared to men, and that the most prevalent symptomatologies found in our study, had been also, similarly, described by others authors with similar populations, although in different parts of the world.

Conclusion: Women had higher risk of having a mental symptom. Consumption of nicotine, energetic beverages, use of social networks, and omission of duties by using ICTs were the most associated factors with most of the evaluated symptomatology. Although videogames had a negative correlation with depression.

Take-home message: This study showed an important issue that medical schools in Mexico are facing, so that taking action about it will be a big step to implement, with perhaps all-around supporting programs and early detections of symptomatology in their students.
AMEE 2017 Abstract Book
Monday 28th August

#4R Round Table: Team Based Learning
Location: Room 210

#4R1 (1572)
Running PBL and TBL Together: Students and Faculty Perspective

Mohammed Alazmah, Alfaisal University, Riyadh, Saudi Arabia
M. Marwan Dabbagh, Alfaisal University, Riyadh, Saudi Arabia
Luluwah Alaitah, Alfaisal University, Riyadh, Saudi Arabia
Abdulrah Binobaid, Alfaisal University, Riyadh, Saudi Arabia
Ahmed Yaqinuddin, Alfaisal University, Riyadh, Saudi Arabia
Akef Obeidat, Alfaisal University, Riyadh, Saudi Arabia

Background: TBL adoption in different health professions has been reported positively, PBL similarly has a definite and well documented affirmative impact. We aim to study the effects of running both modalities in one course in addition to coming up with a single system that combines them together.

Summary of work: A cross sectional study will be conducted on second and third year students who had taken TBL & PBL together focusing on their perspective toward that as a learning tool. Additionally, a separate questionnaire will be distributed to faculty who facilitated both modalities aiming to evaluate their teaching perspective.

Summary of results: Data collection and analysis are still under process. Nevertheless, according to preliminary data analysis, Students and faculty seem to be significantly inclined towards running both systems simultaneously.

Discussion: Instead of choosing between TBL and PBL and to find a solution for this controversy, we could run both together and work on combining them with each other. We plan to consider points of weakness and strength of each as a basis to attain a perfect harmony between the two.

Conclusion: PBL and TBL can run together in the same blocks/courses if demonstrated prospectively by students and faculty members. This could be accordingly achieved by combining the best of both worlds while developing the deficiency of each and complementing each other.

Take-home message: We highly recommend the coupling of TBL and PBL. Furthermore, we insist on enhancing the quality of each, minimize the differences between each other and to devise a finalized system that couples them with each other.

#4R2 (2367)
Team-based learning method is suitable to train the implementation of infection control measures

Juha Rannikko, Faculty of Medicine and Life Sciences, University of Tampere and Tampere University Hospital, Tampere, Finland
Miia Koskinen, Tampere University Hospital, Tampere, Finland
Heli Piirtola, Tampere University Hospital, Tampere, Finland
Minna Vuorihuhta, Tampere University Hospital, Tampere, Finland
Kati Hakkarainen, Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland

Background: Tampere undergraduate medical curriculum is combining PBL and Team-based learning (TBL). We describe the application of TBL in training the implementation of infection control measures.

Summary of work: The TBL application tasks were hand hygiene, putting on gloves and a simulated scenario on physical examinations of a MRSA patient. A clinical teacher and infection control nurses monitored the tasks. The students gave feedback anonymously. Knowledge on implementation of infection control measures was assessed in the final examination.

Summary of results: The students agreed how to proceed in the application tasks. The feedback was positive, emphasising the benefits of TBL in combining theory and practical procedures of infection control measures. The results of the written summative examination item were excellent – the scores varied from 5 to 6 (scale 0-6)

Discussion: Infection control practices are too often neglected in daily clinical work. TBL seems to be a suitable method to combine theoretical understanding and practical measures of infection control.

Conclusion: Multiresistant microbes are spreading globally. Successful implementation of infection control measures determines the future of high quality care. New methods to train students and staff are sorely needed. TBL should be consider as an option for that purpose.

Take-home message: TBL is a promising method to train the implementation of infection control measures in patient care.
#4R3 (2912)
Evaluation of student performance patterns in team-based learning

Hollis Lai, University of Alberta, Edmonton, Canada
Rachel Wang
Anna Oswald
Tracey Hillier

Background: Team-based learning is an active learning strategy that promotes collaborative and critical thinking in group settings. As different assessment formats intertwine with TBL delivery, students collectively complete readiness tests prior to each TBL. Our study investigates whether our students exhibit longitudinal performance patterns across multiple low-stake assessments.

Summary of work: Student performance data were analyzed in raw and event-standardized scores across different years, weeks, assessment modalities, and timing of the assessments using multiple regression analyses. Difference scores were also calculated to evaluate impact of performance between weeks to predict their future performance.

Summary of results: While longitudinal analysis across weeks using repeat-measures did not yield a significant trend, analysis using standardized difference scores found a significant correlation in predicting future week performance compared to past week performance. This finding was consistent across years, and timing of assessment.

Discussion: We found a short-term pattern in analyzing TBL assessments. Future student performance is moderated by their comparative performance in the previous week. Moreover, as student demonstrate comparatively high performance, they tend to regress in the following week. These findings suggest students moderate their efforts on TBL based on their performance.

Conclusion: Team-based learning provides a portrait of low-stake student performance across different topics. Our findings may provide new insight to improve assessment reporting and increase student effort. As competency-based education become prominent in medicine, more scrutiny is required to evaluate student performance in a longitudinal basis.

Take-home message: By analyzing low-stake TBL assessment data across time, we found student performance to be moderated by their previous week results. Improvements to assessment reporting may be needed to better motivate students in preparing and learning from TBL across time.

#4R4 (380)
The use of online test results to optimize the readiness assurance process in a blended Team-Based Learning approach

Anne-Petra Rozendal, University Medical Center Utrecht, Utrecht, Netherlands
Harold van Rijn

Background: In a first-year biomedical course with a team based learning approach, students were offered readiness assurance tests online before coming to class to discuss the acquired knowledge in teams. The aim of this study was to explore how the availability of online test results can optimize the readiness assurance process.

Summary of work: Student online test results were provided to teachers as detailed pre-information about difficult concepts to prepare for in-class team discussion and mini-lectures, with the aim to deepen the already gained knowledge.

Summary of results: Teachers used the obtained online test results to visualize and explain the most problematic concepts. The availability of online test results contributed to the optimization of the readiness assurance process because the teachers’ contribution could be geared to student difficulties in preparation. This helped students to process new knowledge and reach understanding.

Discussion: Online test results give teachers insight in the acquired knowledge of students, enabling them to contribute with additional knowledge during the readiness assurance process. Online test results can be used to analyse the learning process during the readiness assurance process and may possibly provide insight into the application of acquired knowledge.

Conclusion: The availability of online test results before class optimized the readiness assurance process. Teachers used the online test results to visualize and explain problematic concepts in class, resulting in new knowledge and understanding for students.

Take-home message: The individual student test results available online provide teacher’s insight in the acquired knowledge and most problematic concepts. This enables teachers to contribute with additional knowledge during the readiness assurance process in a blended Team-Based Learning approach.
#4S Short Communications: Curriculum

Location: Room 203a

#4S1 (419)

Reinventing Japanese Medical Education, One School at a Time

Haruko Akatsu, International University of Health and Welfare (IUHW), Narita, Japan

**Background:** International University of Health and Welfare (IUHW) School of Medicine opens in April 2017, 38 years after the Japanese government ban on the establishment of new medical schools in Japan. This school will be vastly different from any other Japanese medical schools.

**Summary of work:** We will share what went into our many years of planning: from the challenges of assuring a high quality 21st century education in this rapidly changing global community to unfamiliar obstacles like student and faculty adjustment to such a new environment.

**Summary of results:** While all previous Japanese medical schools teach in Japanese and through mostly didactic lectures, IUHW School of Medicine uses English and active learning. One in seven students are international students, including 14 full scholarship students from underprivileged South Asian countries.

**Discussion:** While all medical schools value education, they struggle with striking the right balance between education, research, and clinical focus. This medical school places the utmost emphasis on education. This principle is immediately evident in the recruitment of esteemed medical education specialists as the Dean and the Vice Dean.

**Conclusion:** Reinventing medical education requires both a clear vision and strong leadership that places education as the centerpiece. Furthermore, it is crucial to introduce international perspectives to medical education so that graduates can go on to serve the global community.

**Take-home message:** By sharing the birth of this new medical school with the international community, we hope to get feedback from around the globe that will improve our school’s education as well as encourage the audience to follow their own ideas and dreams in creating something unprecedented in medical education.

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#4S2 (2252)

Patient diversity and student education

Lunelle Pienaar, University of Cape Town, Cape Town, South Africa

**Background:** It is essential that undergraduate medical students have curricula aimed at instilling values which enable the provision of optimal, equitable, non-discriminatory health care to patients from all walks of life. South Africa as a developing country, history of colonialism and post apartheid, need education which do not reinforce past assumptions.

**Summary of work:** Review of the literature focus on undergraduate medical education to view the evidence for teaching and assessment aimed at providing health care to all patients irrespective of socioeconomic background, ethnicity, gender preference, language, physical disability, religion, or spiritual beliefs. Web of science database was searched including search on google scholar.

**Summary of results:** Various educational approaches are offered as a means to educate students include diversity education, cross culture, multi culture and critical culture and cultural competency. Focus on understanding culture within many of the approaches. Teaching strategies were discussed in detailed with limited reference to assessment methods in ensuring outcomes are met.

**Discussion:** The review shows strong focus on understanding culture of others. Limited scope of how knowledge, attitudes and behavior when it is taught is assessed.

**Conclusion:** The literature studied shows that research on diversity broadly emanates from developed countries. For developing countries it is important to interrogate their teaching, learning and assessment practices when including diversity education in the curriculum to ensure that it is contextually relevant and appropriate.

**Take-home message:** Human diversity in health sciences education should cultivate respect for similarities and differences beyond understanding culture. And interrogate the enduring arrangements of power, privilege, and racialised past of some societies. This preliminary research has laid the groundwork for future work in diversity education in a developing country.
#4S3 (381)
First experiences with academic skills training and education using a portfolio in the medical bachelor programme

Dirk Ubbink, Academic Medical Center, Amsterdam, Netherlands
Floor Driessen, Academic Medical Center, Amsterdam, Netherlands
Gabor Linthorst, Academic Medical Center, Amsterdam, Netherlands
Maartje Hoogsteyns, Academic Medical Center, Amsterdam, Netherlands

Background: The University of Amsterdam started a new, 3-year medical bachelor programme in 2016. This aims to improve the nearly 400 students’ academic skills and knowledge (AS&K) education from the start by putting emphasis on academic writing and presenting, scientific methodology, evidence-based practice, medical history and ethics, mostly learnt through self-study.

Summary of work: AS&K is a recurrent theme throughout the curriculum. In each 8-week module, the student is to perform about 5 tasks. Students upload the products of these tasks in their portfolio to receive feedback from content experts. We evaluated via interviews the students’ and coordinators’ experience with the AS&K-training and portfolio.

Summary of results: The 21 students interviewed, including the year’s representative, appreciated the early introduction of AS&K and the tasks to perform. Clear communication about the theme itself, the AS&K tasks and its adjudication was considered crucial, preferably in an introductory lecture. Coordinators doubted whether the portfolio is best to test students’ AS&K.

Discussion: Introducing AS&K, supported by a new portfolio in a new bachelor programme is complex. The eventual students’ AS&K proficiency, based on two feedback moments with mentors on their portfolio, is still to be determined. Clear communication between students, teachers and mentors is crucial.

Conclusion: Teaching of academic skills and knowledge as a recurrent theme throughout the medical curriculum is complex, but welcomed by students. The portfolio and little face-to-face contact may not be the best way to achieve this goal.

Take-home message: Academic skills and education are important for modern medical students. These should be taught from the start, in a recurrent fashion and with increasing complexity. Continual evaluation of the students’ proficiency is a challenge.

#4S4 (17)
Concept Analysis: Value Based Curriculum

Maryam Akbarilakeh, Shahid Beheshti University of Medical Sciences, Tehran, Iran
Shahram Yazdani, Shahid Beheshti University of Medical Sciences, Tehran, Iran
Soleiman Ahmady, Shahid Beheshti University of Medical Sciences, Tehran, Iran
Syed Abbas Foroutan, Shahid Beheshti University of Medical Sciences, Tehran, Iran
Leila Afshar, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Background: Regard to the shortcomings currently existed in the curriculum of the medical sciences education in Iran, the design of a domestic model for the curriculum based on values was placed on the agenda through concept analysis method to reach a proper definition of the concept and its further development.

Summary of work: To model the value-based curriculum, we chose the concept analysis model of Hugh McKenna. In this method qualitative approach is used, in which reality and fact is a relative issue and arises from researcher’s mind and context values.

Summary of results: Purposed Definition of Value Based Curriculum which is Value-oriented curriculum with its special goals; value-oriented content consists of modules, media, and narratives merged into existing courses or offered as a separate training or individual course; preferred education and learning methods and specific assessment strategies in a suitable atmosphere.

Discussion: To present a domestic and final model in Iran, considering the eighth stage of Hugh McKenna’s method, attention to context and cultural values, and obtaining the views of experts regarding the concept of curriculum based on values, are necessary.

Conclusion: For teaching values we must, via value based curriculum, picture them from metaphysical and subjective space to a complete objective and physical form so that we could define and draw the expected educational purposes and consequences.

Take-home message: Value-based curriculum is not just a tool for perception of the educational contents, but it is a movement beyond reasoning and analytical methods and contemplation that usually takes place during education.
One School in Many: Building a New Medical School Curriculum for Multiple Campuses

Marjorie D. Wenrich, University of Washington School of Medicine, Seattle, WA, USA
Michael J. Ryan, University of Washington School of Medicine, Seattle, WA, USA
Suzanne M. Allen, University of Washington School of Medicine, Seattle, WA, USA
Kellie Engle, University of Washington School of Medicine, Seattle, WA, USA
Jan D. Carline, University of Washington School of Medicine, Seattle, WA, USA
Mark Whipple, University of Washington School of Medicine, Seattle, WA, USA

Background: Developing a new curriculum at an existing medical school introduces challenges; doing so at a school with multiple campuses adds layers of complexity. In September 2014, there were 114 USA regional medical school campuses; more are being developed. Insights and guidelines for curriculum development/implementation across multiple campuses are needed.

Summary of work: Our medical school has six regional campuses in five states spanning one-quarter of the U.S. We tracked ongoing challenges during curriculum reform to determine important factors in developing a new curriculum across multiple sites/campuses. Structural challenges were identified for internal factors (primary campus), external factors (regional campuses); and cross-cutting factors.

Summary of results: Challenges included: • Internal: Department priorities, buy-in for regional model, identifying appropriate leaders, and others. • External: Different/unique cultures and resources at regional campuses, perceptions of inclusion, and others. • Cross-cutting: Allegiance to old curricula/courses, human resources, communication, faculty development, and progress toward a common culture. Illustrative case studies will demonstrate challenges/successes.

Discussion: The number/types of tensions and stressors in a multi-campus, multi-disciplinary environment can make major curriculum change challenging. However, sustained focus on cross-campus collaboration/participation has resulted in a modified regional culture characterized by mutual respect, partnership and shared sense of belonging. Due to complex constituents and competing interests/factors, some tensions/challenges endure.

Conclusion: Internal, external and cross-cutting factors must all be addressed—sometimes together and sometimes separately. Change management depends on developing a workable infrastructure to support multiple campuses while building a shared vision/partnership. Frequent, transparent communication and periodic in-person contact build trust and inclusiveness. Implementing appropriate faculty development across sites remains a challenge.

Take-home message: Building and implementing a new curriculum for multiple regional medical school campuses requires attention to factors not encountered in a single-site curriculum reform. Multiple constituents (faculty, staff, students, departments, campuses) present different issues/challenges. Ultimately, success depends on building a culture of partnership, shared decision-making and inclusiveness among all constituent groups.
### #4T Workshop: Applying Threshold Concepts to Medical Education (2213)

**Location:** Room 203b

**Janice Hanson, University of Colorado School of Medicine, Aurora, Colorado, USA**  
**Lindsey Lane, University of Colorado School of Medicine, Aurora, Colorado, USA**  
**Virginia Randall, Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA**

**Background:** A threshold concept is an idea that, once grasped, changes the way learners think about themselves. The concept cannot be forgotten and may be emotionally difficult. An example might be the myth of black/white answers in medicine. Through experience, learners see the fallibility of physicians, but may still hope they can know everything and never make a mistake. Identifying threshold concepts in medicine may help educators support learners through the challenges of becoming a physician.

**Who Should Attend:** Medical educators intrigued by the concept of threshold concepts will enjoy this workshop. Educators may have noticed that some learners get “stuck” when learning to incorporate key aspects of professional identity. These learners may lose empathy for patients, question whether they should remain in medical school, have difficulty with work/life balance, or experience depression. This workshop will provide strategies for educators to support learners through these struggles and move into their professional identity as physicians.

**Structure of Workshop:** A short didactic will introduce threshold concepts. In a facilitated large group, participants will then identify and describe threshold concepts they have experienced as learners, physicians, and educators. Participants will write potential threshold concepts on “sticky notes” that workshop facilitators will gather and group, engaging all participants. Participants will work in facilitated small groups to develop strategies to help learners who seem “stuck” at a threshold concept juncture, then report strategies to the large group.

**Intended Outcomes:** Workshop participants will: 1. Define the four elements of a threshold concept. 2. Collaboratively identify several threshold concepts in medical education. 3. Develop ways to help learners who seem stuck at the identified threshold concepts. Definitions, threshold concepts, and strategies for supporting learners will be recorded on a worksheet, providing participants with a resource to take home and apply.

**Level:** Introductory/Intermediate

### #4U Workshop: Making a “Flipped” Classroom Successful: What is it and how to do it? (1112)

**Location:** Room 204

**Ruth Levine, University of Texas Medical Branch, Galveston, Texas, USA**  
**Sandy Cook, Duke-NUS, Singapore**  
**Lindsey Pershern, University of Texas Southwestern Medical Center, Dallas, Texas, USA**  
**Dawnelle Schatte, University of Texas Medical Branch, Galveston, Texas, USA**

**Background:** Accrediting bodies are increasingly expecting educators to utilize active learning methods in their curricula. Team-Based Learning is one such method which has been shown to increase academic performance, enhance learner attitudes about the value of teams, and improve participants’ interpersonal and communication skills. This workshop is a comprehensive introduction to the elements of Team-Based Learning. In it, participants will learn about Team-Based Learning by participating in a “course” using Team-Based Learning.

**Who Should Attend:** This workshop will provide a comprehensive introduction to the elements of Team-Based Learning (TBL), a successful and structured form of Flipped Classroom. Anyone who wishes to learn how to teach using this “flipped classroom” method should participate. Instructors who are currently using Team-Based Learning and want to become more proficient in their practice will also benefit.

**Structure of Workshop:** 1) Brief introduction to the Team-Based Learning Method. 2) Facilitators will put participants into teams, demonstrating principles of team formation. 3) Participants will take an individual, then a team “readiness assurance test” followed by discussion of answers. 4) Teams will engage in application exercises with intra-team, then inter-team problem solving and facilitator feedback. 5) Debrief of experience with reflection on activities and discussion of specific strategies to apply TBL at home institutions.

**Intended Outcomes:** By the end of this workshop, participants should be able to describe the fundamental principles that foster active learning in small groups. In addition, they should be able to identify the key elements of Team-Based Learning sessions, define the 4S’s of effective group applications (Significant problem, Same problem, Specific choice and Simultaneous report), and access the tools to initiate a TBL course at their home institution.

**Level:** Introductory/Intermediate
#4V Workshop: Group Review Boot Camp for Academic Journal Peer Review: A Train-the-Trainer Workshop (1516)

Location: Room 205

Gail Sullivan, Journal of Graduate Medical Education, University of Connecticut, Farmington, CT, USA
Richard Hays, AMEE-MedEdPublish, Dundee, UK
Ingrid Philibert, Journal of Graduate Medical Education, ACGME, Chicago, IL, USA

**Background:** Peer review of scholarly works is critical to ensuring quality, and peer reviewers are needed for a variety of journals, including open access and post-publication peer review. Educators gain valuable critical literature appraisal skills through peer reviewing, and group peer review allows novice reviewers to improve skills, and may result in more comprehensive reviews. An added benefit is that group peer reviews during journal clubs allow trainees to learn to dissect and interpret papers.

**Who Should Attend:** Faculty, residents and fellows who are interested in the various forms of journal peer review. Medical educators who are interested in this approach as a train-the-trainer model for replication at their home institution for either peer reviewer training, or for highly interactive journal club sessions.

**Structure of Workshop:** After a brief overview of the academic journal peer review objectives and process, and various forms of peer review, participants will work in small groups to review a section of a paper, practicing an effective, efficient approach. Several groups will review the same section, with outcomes compared to each other and a prior review during a report-out. The conclusion will offer tips for using as a train-the-trainer workshop for replication at participants’ home institutions.

**Intended Outcomes:** At the end of the session participants should be able to: 1. Articulate the purpose of academic journal peer review, and different forms and formats of peer review; 2. Use a structured template to review manuscripts and published papers; 3. Organize and deliver a train-the-trainer reviewer workshop at their home sites; 4. Organize an interactive journal club session for trainees and faculty at their home sites.

**Level:** Intermediate

#4/5W Workshop: BarCamp - a space to think - set the agenda yourself, discuss and explore recent work and topics emerging from the conference (620)

Location: Room 209

Tamsin Treasure-Jones, Leeds Institute of Medical Education, UK
John Bibby, Bradford Districts Clinical Commissioning Group, UK
Sebastian Dennerlein, Graz University of Technology, Austria
Raymond Elferink, RayCom, Netherlands
Natalie Lafferty, University of Dundee, UK
David Topps, University of Calgary, Canada

**Background:** Following the successful, inaugural BarCamp at AMEE 2016, we are returning with another chance for you to set the agenda, explore new ideas and have space to think & create with others. BarCamp is an exciting, informal format; with the overall theme and BarCamp rules set in advance, but the agenda and activities democratically decided on the day. Organised by experienced BarCamp facilitators, our theme this year will be technology enhanced learning and practice.

**Who Should Attend:** Everyone is welcome to attend the BarCamp and to propose a session or activity to run within it. The only prerequisite is that you participate – bring your ideas, your experience, your questions and be prepared to explain and discuss these with others, in the friendly and supportive BarCamp way. Have you heard/seen something thought-provoking at the conference that you would like to explore further – bring it to the BarCamp!

**Structure of Workshop:** The BarCamp will run over two separate workshop time slots. You can attend either one or indeed both BarCamp. The structure of each BarCamp will be:

* Introduction to the format (15 minutes)
* Participants propose and vote on sessions and activities to run (15 minutes)
* First chosen sessions run in parallel format (30 minutes)
* Second chosen sessions run in parallel format (30 minutes)

* Summary and feedback (10 minutes)

**Intended Outcomes:** BarCamp is a space to share and discuss emerging topics from the conference and/or recent research results or current projects on which you are working. Following the approach used in 2016, we will be using technology (The Learning Toolbox) within the BarCamp to capture and share reflective notes and reports from the sessions in real-time. You’ll leave with these shared reflective notes, links and personal connections but best of all, “feeling inspired!” (BarCamp 2016 participant).

**Level:** All
#4X  Workshop: Global vs local: the strength of education developed with culturally diverse teams (2548)
Location: Room 215

Samar Mohamed Hassona A. Aboulsoud, Qatar Council For Health Practitioners, Doha, Qatar
Chitra Subramaniam, AO Foundation - AO North America, Paoli, USA
Miriam Uhlmann, AO Foundation - AO Education Institute, Duebendorf, Switzerland

Background: Cultural sensitivity is one of our most important skills in a globalizing world of medical education. The speakers an Indian living in the US, an Egyptian living in Qatar and a Swiss working around the globe provide insight into the process of how culturally diverse teams can develop organizational structures, systems and educational activities that fit the needs of their culturally diverse learners and ultimately their patients.


Structure of Workshop: The workshop will start with a self-assessment of the participants’ own cultural sensitivity. This is followed by three short presentations from the speakers, showing the process of creating and working with culturally diverse teams in different environments. Participants then will work in small groups to apply the process step by step to their own setting and get feedback from their peers and the speakers. Challenges will be discussed and a community of practice implemented.

Intended Outcomes: The participants will be able to: be aware of their own level of cultural sensitivity; apply the process as described by the speakers to their own setting (organizational structures, planning processes); ensure practical translation of the principles of cultural sensitivity in a way that would support the development and implementation of medical education and accreditation initiatives

Level: Intermediate

#4Y  Workshop: Advances in Continuing Professional Development (CPD) (1599)
Location: Room 216

Dave Davis, University of Toronto, Toronto, Ontario, Canada
Mary Turco, Geisel School of Medicine at Dartmouth, Lebanon/Hanover, New Hampshire, USA

Background: In 2016 three CPD educators considered the current status of health care and education, raising the provocative question, “what must be done to achieve better education for better patient outcomes?” They assigned 28 inter-disciplinary scholars five topics: improving the learning environment; workplace learning; improving faculty; creating better learners at all levels; and, implementing and evaluating change. Researching contemporary literature, they developed applications of evidence-based CPD theory and practice, generating guidance for next generation health systems.

Who Should Attend: This workshop is intended for educational professionals and clinicians interested in health care improvements from the perspective of CPD. Participants will come ideally with current problems or topics in CPD and health care delivery. At the conclusion of the workshop, learners will be able to: 1) identify principles of effective CPD; 2) discuss applying CPD advancements to their problem areas; and, 3) through their scholarship and work, achieve learner- and patient-centered CPD.

Structure of Workshop: This highly interactive workshop will consist of a brief overview and introduction outlining the five research topics areas. Each area will feature an opening case and questions, a brief didactic session summarizing the literature and findings, and an extended interactive component. The last element will provide an opportunity to work with workshop leaders and colleagues in small groups to discuss and resolve educational and health system problems. Ample printed materials will be available for use.

Intended Outcomes: Our intention is to achieve outcomes at three levels. At the knowledge acquisition level, learners will gain an overview of the current literature in, and thinking about, principles and practice of contemporaneous and effective CPD. At the knowledge application (and possibly performance) level, they will develop problem-solving skills to tackle their own CPD and health system issues. Finally, this workshop, along with others, will expand the reach and scope of AMEE into scholarly, outcomes-focused CPD.

Level: Intermediate/Advanced
**#4Z Workshop: How Can I Optimize the Training of Invasive Bedside Procedural Skills in Medical Specialties? (2705)**

*Location: Room 217*

*Ryan Brydges, Department of Medicine, University of Toronto and Associate Director & Scientist, The Wilson Centre, UHN, Toronto Canada*

*Rose Hatala, Department of Medicine, University of British Columbia, Canada*

**Background:** Invasive bedside procedures are considered ‘core competencies’ for physicians in many medical specialties, yet no formal training guidelines exist. Potentially variable curricula may not be producing procedurally competent physicians. Our recent knowledge synthesis in internal medicine showed high variability in procedural skills training and assessment, and we concluded that policy-makers may need to re-conceptualize training from expecting core competence for all physicians to training a ‘competent core’ of proceduralists using simulation-based training and clinical rotations.

**Who Should Attend:** Educators in ‘non-procedural’ specialties, who are struggling with how to design training experiences for their trainees and faculty to ensure procedural competence.

Program directors and other educational leaders who want to think differently about competency-based education, shifting the focus from lists of competencies to how to train groups of competent physicians.

Researchers in education and quality improvement who wish to collaborate to design a systems-based approach to training that integrates the educational and clinical settings.

**Structure of Workshop:** Large group discussion with participants regarding their struggles with training and assessment for procedural skills competence.

Short didactic presentation of our scoping review and realist synthesis examining current training and assessment of procedural competence in medical specialties.

Small group work to design training for participants’ local context, considering how to integrate educational interventions (e.g., simulation-based training) with clinical training.

**Intended Outcomes:** After the workshop, participants will have: (i) a broader network of peers working to resolve how to train for and assess competence in invasive bedside procedures, (ii) an up-to-date understanding of the literature on training of these procedures, and (iii) refined ideas for how to design an educational approach, and how to collaborate with education and quality improvement champions to collect meaningful measures of impacts on patients, physicians, trainees, and the local healthcare system.

**Level:** Intermediate

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**#4AA Workshop: Scoring Performance-Based Assessments (281)**

*Location: Room 218*

*John R. Boulet, USA*

*Andre F. De Champlain, USA*

**Background:** Developing meaningful scoring rubrics for performance-based assessments can be challenging. Analytic (e.g., checklists, key actions) and holistic tools (e.g., rating scales), or various combinations, can be employed. The choice (or development) of scoring tools will depend on a number of factors including, amongst others, the purpose of the assessment, the specific skills being evaluated, and the availability of qualified raters. The proper construction and administration of scoring tools is a cornerstone of the validation process.

**Who Should Attend:** Individuals who are responsible for developing, administering, scoring performance-based assessments in any healthcare field. Those involved in the broad field of clinical skills assessment, including both standardized patient (SP)- and mannequin-based evaluations, will benefit from this workshop.

**Structure of Workshop:** The participants will be provided with a brief overview of scoring and scaling processes, including the need to explicitly define what is to be measured, to delimit measurable skills/behaviors, and to choose appropriate metrics. They will then develop a scoring tool for a simulation-based clinical skills scenario. Finally, to better understand scoring issues (e.g., inter-rater reliability), and logistical issues associated with gathering performance data, participants will evaluate a series of clinical encounters.

**Intended Outcomes:** After attending this workshop, the learner will be able to: 1) understand fundamental scoring and scaling issues, 2) develop (or choose) appropriate scoring rubrics that are aligned with skills being assessed, and 3) identify factors that could impact the reliability and validity of scores.

**Level:** Intermediate
#4BB  Workshop: Facilitating international dialogue in medicine: politics, process and people (1201)
Location: Room 306

Jonathan McFarland
Irina Markovina
Annalisa Manca

**Background:** Given the current state of globalisation it is imperative for healthcare practitioners to be prepared and open to internationalisation. Doctors in non-English speaking countries, and non-English speaking doctors in the UK, need English to communicate both with colleagues and patients, as well as keeping up-to-date with current research. The problem of cross-cultural understanding among professionals coming from different ethnic cultures and having different professional linguistic consciousness gains special importance.

**Who Should Attend:** This workshop would be of interest to practitioners who are either non-English speakers or working with non-English speaking medical professionals and are interested in developing effective ways to improve communication amongst colleagues, patients, and the public.

**Structure of Workshop:** This workshop brings together different experiences and perspectives aimed at addressing this important topic. We will present, and discuss with the audience, possible strategies for the integration of international and intercultural perspectives such as: “doctors’ exchange” programmes between Spain, Russia and the UK; the use of social technology aligned with medical English to increase non-English mother tongue doctors’ confidence in networking with the international medical community.

**Intended Outcomes:** Through participating in this highly interactive workshop, participants will learn about different experiences and educational strategies aimed at preparing healthcare practitioners for the challenges of internationalized medical practice. Attendees will actively participate in discussions about the planning of educational activities centred on cultural, linguistic and communicative tools. They will gain an understanding of cultural congruences and incongruences, and how they are paramount to communication between professionals from different backgrounds and countries.

**Level:** All
Andrew Lai Huat Peh, Changi General Hospital, Singapore
Sheng Neng Tan, Changi General Hospital, Singapore

Background: Evidence-based practice (EBP) is important in AGCME-I residency programmes under competency of practice-based learning. As a participating site, the Psychological Medicine Department at Changi General Hospital made a conscious effort to build an EBP culture within the department, as previously it was mainly geared towards providing services, not academic psychiatry.

Summary of Work: Training included: consultant with Masters in Epidemiology; register with Master of Clinical Investigation; courses on biostatistics and reading clinical papers; “train-the-trainer” course on EBM; CME workshops on EBP; the ‘P I C O’ principle taught; training on Quality Improvement (Clinical Practice Improvement Project); doing quality improvement project or clinical audit.

Summary of Results: Our department subscribed to online journals such as psychiatry online, and the hospital/sponsoring institution made available online e-journals (OVID, PUBMED) and facilities such as “Up-To-Date”, etc. The hospital’s Clinical Research Unit also was supportive in terms of literature search. We had a “desk-pad” for daily rounds to access EBP sites.

Discussion: We were able to incorporate EBP into daily practice through: grand ward rounds; journal clubs; training curriculum and records; extended EBP training to medical students attached to the department; questions posed on diagnosis and management of individual patients were immediately answered by checking the internet; accessing clinical practice guidelines online.

Conclusion: Within six years of starting the psychiatry residency at our site, we can confidently say that the department is consciously inclined towards EBP in daily clinical work. We see our own trainees developing expertise in journal critique and this has also helped them to plan for better research study protocols.

Take-home Message: Building an evidence-based practice culture within a clinical department is achievable over a period of time if a conscious effort is made. With increasing expertise in EBP among doctors, the standard of care in daily clinical practice is improved. It will also lead to scholarly culture and increased research interest.
Integrating humanities curricula in medical education: a needs assessment

Anna Taylor, University of Bristol, Bristol, UK
Susan Lehmann, Johns Hopkins University, Baltimore, USA
Margaret Chisolm, Johns Hopkins University, Baltimore, USA

Background: Medical education effectively incorporates new biomedical knowledge and patient-centered communication skills into pre-clinical curricula, but medicine’s increasing technologic complexities limit actual practice of patient-centered skills, which can adversely impact patient outcomes. Humanities-based clinical education interventions may encourage reflective practice and enhance understanding of holistic care, improving patient care.

Summary of Work: A search was conducted in PubMed, utilising the terms ‘humanities’, ‘humanism’, ‘art’, ‘medicine’, ‘narrative medicine’, and ‘medical education’ to identify relevant English-language articles. Discussion with experts yielded further papers, such that 156 articles were reviewed and summarised, with particular focus on those describing novel curricular interventions.

Summary of Results: Sixty-nine percent (108/156) of the articles were commentaries or reflective papers; 21% (48/156) reported on curricular interventions. The majority of interventions incorporated literature or ethics, typically delivered in small-group format. Only eight interventions included impact assessment beyond learner satisfaction. Four were qualitative self-report evaluations; four were quantitative scales or questionnaires.

Discussion: This literature review revealed that most articles did not report original research. Of those that reported a curricular intervention, a minority included evaluations of learner behaviour or patient impact. Measures were self-reported, therefore subject to bias. Challenges identified included little funding and difficulty scheduling humanities teaching amongst learners’ other commitments.

Conclusion: This review identified a number of significant gaps in the literature, the most important being a lack of rigorous evaluation of curricular interventions that include outcomes measures. Future studies should focus on gaining qualitative and quantitative data regarding impact of curricular interventions on learners and/or patients.

Take-home Message: The role of the humanities within medical education has been extensively discussed in theory, but very little has been done to evaluate its use in practice. Much of the relevant literature does not report interventions or provide outcome measures; it is therefore important for future interventions to assess impact.

Visiting tour of medical humanities museum in medical humanities education: 3 years’ experience

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Yu-Feng Lin, Cathay General Hospital, Taipei, Taiwan
Jiin-Torng Wu, Cathay General Hospital, Taipei, Taiwan
Chih-Hui Chin, Cathay General Hospital, Taipei, Taiwan
Hen-Hui Lien, Cathay General Hospital, Taipei, Taiwan

Background: Museum of Medical Humanities of National Taiwan University College of Medicine is a unique medical humanities museum in Taiwan which provides educational information related to medical humanities. The curriculum of medical museum tour as a part of medical humanities education has been conducted for 3 years in our hospital.

Summary of Work: We arranged clerks, interns and PGYS to visit the Museum of Medical Humanities from 2013 to 2016. The curriculum includes (1) main topics of exhibition (2) humanistic issue exploration in medical practice through role presentation, topic discussion and video observation. The participants were asked to fill in questionnaires.

Summary of Results: Totally 211 participants were enrolled. The results showed improvement of self-awareness after the visiting and overall satisfaction score was 83.69%.

After the visiting, Intern and PGY teams had significantly higher than Clerk team in 6 facets of humanities including empathy, altruism, integrity, correct values, self-reflection capacity, and lifelong learning.

Discussion: Our initial two year studies showed participants performed significantly higher empathy scores after touring. Thus, we evaluated the Jefferson Scale of Empathy (JSE) in the last year. The participants did not show significant change in JSE after the course.

Most participants gave positive feedback and were satisfied with course design.

Conclusion: Visiting the medical humanities museum plays a novel role in medical humanities education. It can stimulate the student’s awareness of humanities and promote their qualities of humanism through museum visiting, role presentation and critical discussion. The effect of the touring on empathy needs further follow up.

Take-home Message: Can visiting tour of medical humanities museum to explore the humanistic issues of medical practice play a potential role in medical humanities education?
#4CC05 (1875)
Pear Shaped - Responding to Adversity
Andrea Clay, Mid Wessex GP Education, Winchester, UK

**Background:** I am a GP Trainer and recently supported a trainee through the experience of a patient suicide. For my own professional development I examined our response to this, the effect it had on training and what we learned about resilience. I shared my experiences through a presentation to fellow educators.

**Summary of Work:** My reflections on the event and aftermath were presented as an extended poem in which I considered emotional response and proposed tools to enable a good response to difficult, unexpected situations. The poster represents the text of the poem along with some visual ideas that were part of the presentation

**Summary of Results:** The proposed list of tools expressed in the poem are transferable to different situations for trainers and trainees, and represent a message of hope and encouragement that is accessible and practical. Expressing my reflections as poetry helped focus our training into positive ways to move forward.

**Discussion:** Poetry is a powerful tool for communicating ideas that is becoming more widely used. It crystallises and presents events memorably. My brief was to discuss an aspect of training in an interesting and engaging way. Moments of silence and consideration in poetry underline the emotion of the story.

**Conclusion:** Using poetry gave the telling of a difficult event dignity and weight that simple prose couldn’t. Producing a list of tools helped us to focus on how to progress and these concepts are useful for consideration in a wider range of difficult situations, especially in training

**Take-home Message:** The use of poetry has helped me analyse my response to a challenging situation in a way I wouldn’t have otherwise been able to. I have been asked to perform it on various occasions as I believe the message and the method resonates with many.

#4CC06 (2002)
The Effects of Personality and Resilience on Burnout, Amongst Medical Faculty Members in an Academic Medical Centre in Singapore: A Pilot
Zulkarnain Ab Hamid, National University Hospital, Singapore, Singapore
Shirley Beng Suat Ooi, National University Hospital, Singapore, Singapore

**Background:** Burnout is common amongst clinicians and medical faculty, and its adverse effects have been well-documented. Many factors, including personality and resilience, contribute towards the development of burnout. We study the effects personality (a stable, unchanging factor) and resilience (a trainable factor) have on the risk of burnout amongst faculty members.

**Summary of Work:** We enrolled 45 (out of 52) faculty physicians from various departments who attended a faculty development workshop on the DiSC® profile. They submitted, anonymously, their DiSC® personality profiles, and their responses to the Maslach Burnout Inventory - Human Services Survey and the True Resilience Survey, to study the association.

**Summary of Results:** High S(teadiness) personality style on DiSC has the highest burnout risk, with a RR of 4.3 (p=0.071), while D(ominant) style has the lowest risk, with RR of 0.23 (p=0.071). Resilience mitigates burnout, with a RR of 0.10 (p=0.047) in general and RR 0.13 (p=0.005) for High S individuals.

**Discussion:** The results are specific to the DiSC® system; it is chosen because of its practicality and ease of use outside of research. Additionally, while other factors are likely involved, the large RRs suggests that both personality and resilience may be strong burnout predictors, notwithstanding the lack of statistical significance.

**Conclusion:** While more and bigger studies are required, preliminary results show that personality and resilience are significant factors in burnout development: personality predicts the risk of burnout, while resilience significantly mitigates it, including higher risk personality profiles. These findings have significant and immediate applicability in leadership and staff well-being.

**Take-home Message:** Though personality is usually stable, awareness of personality traits/profiles allows both the individual and the institution/management, to be attuned and identify the risk for burnout early and thus take preventive measures. Resilience training can be a strategy to mitigate the effects of burnout.
#4CC07 (2020)
Students’ and Patients’ Perspectives on National Education Outcomes in Japan: A Qualitative Research Study

Daisuke Son, International Research Center for Medical Education, Graduate School of Medicine, the University of Tokyo, Tokyo, Japan
Mieko Honma, Saitama Prefectural University, Koshigaya, Japan
Joyce Pickering, McGill University, Montréal, Canada

Background: Eight domains of national medical educational outcomes are suggested in the “Model Core Curriculum” of the Ministry of Education in Japan. However, the perspectives of medical students and patients on these are not sufficiently explored. The aim of this study is to explore their viewpoints on these educational outcomes.

Summary of Work: Focus groups were conducted for medical students and patients from 2014 to 2017 (4 times, 4 times respectively). The interview guide included eliciting opinions on the eight educational outcomes and what they desire for medical education. The transcripts were analyzed by a qualitative descriptive method.

Summary of Results: Both students and patients gave many opinions on domains of professionalism, patient-centered care, and communication skills. What was common to both groups was the desire for a rich humanity in an ideal doctor while questioning the role of formal education in teaching skills such as communication and professionalism.

Discussion: Education in humanism has been implemented in a limited fashion in most schools in Japan. Both students and patients feel the limitations of formal university education in fostering humanism; nevertheless, they remain open to more teaching in formal education and to informal learning outside the school.

Conclusion: Japanese medical students’ and patients’ perspectives on national educational outcomes emphasize the need for development of certain humanistic skills and they hope to improve on the current training.

Take-home Message: Medical students and patients bring insights to medical education methods and outcomes and these perspectives should be incorporated in their development.

#4CC08 (2121)
The Benefits of Visualization for Medical Education

Yuir Au, Education Resources, Office of Medical Education, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong
Shekhar Madhukar Kumta
Yan Jin
Alex Yung

Background: The symbolic and representative use of visual art and graphics facilitates a deeper and better understanding of medical knowledge. Visualizing information is necessary in order to enhance the communication of ideas through various static and dynamic visual formats replacing mundane texts.

Summary of Work: We have been transforming traditional learning text-rich materials enhancing them with symbolic graphics and artworks that evoke better recall, trigger appropriate emotions and convey accurate information. 40 medical projects (E-Lectures, Micro-modules, Class lectures, Web-based materials and APPs have been redesigned.

Summary of Results: All enhanced projects have been critically reviewed and appreciated by staff and Students alike. Students have welcomed the reduced text and the creative use of graphic symbolism. This has been particularly useful in Apps based workflows.

Discussion: Symbolic representation through graphics has a major impact on memory retention as well as conceptual understanding. A library of such common icons and symbolisms needs to be constructed.

Conclusion: Over 90% of students are very positive about visualizing medical education. They think it is exceptionally useful in abstract topics.

Take-home Message: Teaching materials can be significantly improved through symbolic graphics and representative icons as these serve to trigger cognitive processes. These may not only improve the learner experience but may result in better learning.
The Change of Characteristics in Emotional Competence during the Clerk-turning-intern Stage of Medical Students in Taiwan

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Wan-Hsi Chien
Chi-Chuan Yeh
Ling-Ping Lai
Huei-Ming Yeh

Background: Emotional competence (EC) is the capability of self-awareness, self-management, social awareness, and social skills that a person demonstrates while coping with various stressful situations. It is crucial for medical students because they confront high-pressure events during their learning in clinical settings.

Summary of Work: We want to know what aspects of EC changed from medical students' clerkship without heavy clinical responsibilities to their internship as primary care providers in a team in Taiwan. We asked them to keep oral diaries during their initial clinical rotations of clerkships and the final stage of their internships.

Summary of Results: Data from 6 participants were analyzed by comparing the percentage in each domain of our EC model, which were vision, personal resource, working resource, social resource, and medical professionalism. The results showed an increase of percentage in the domain of personal resource and working resource for most students.

Discussion: Personal resource and working resource mean what a student can gather from personal abilities and working surroundings to tackle clinical situations. From a clerk-turning-intern stage, the growth in these two domains concerning emotional competence could probably help the students adapt to the more stressful working environment clinically.

Conclusion: We successfully used oral diaries to analyze the changes of characteristics of EC from clerks to interns when they were facing more stressful clinical learning. These changes might indicate that emotional competence varies as a medical student face different stress or environment.

Take-home Message: Emotional competence is crucial for medical students while facing stressful clinical learning. Keeping oral diaries during clinical learning seemed an effective way of developing and reflecting their EC. Changes noted in our EC model probably indicated that EC varies as a medical student face different stress or environment.
#4CC11 (2770)
Finnish physicians: Different professional identities

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Harri Hyppölä, Kuopio University Hospital, Kuopio, Finland
Markku Sumanen, University of Tampere, Tampere, Finland
Hannu Halila, the Finnish Medical Association, Helsinki, Finland
Teppo Helikilä, Kuopio University Hospital, Kuopio, Finland

Background: There is little information about the diverse identities of physicians although the subject has been increasingly recognized in the past few decades. The aim of this study was to describe Finnish physicians’ identity in relation to the changing healthcare system, society’s expectations and the physicians’ future roles.

Summary of Work: The study population consisted of all Finnish physicians (<70 years). Sample was drawn from those born on odd days (n = 10600). Overall, 5350 physicians answered the questionnaire. Professional identity was examined by surveying 25 different fields. Respondents reported how well certain characterizations fit them as physicians on a five-level scale.

Summary of Results: The best fitting characterization was “the helper” and “the team member” which over 70% of the physicians answered describing themselves well. The third best characterization was “the health professional”. Women described themselves more frequently as “the health educators” and “the comforters”, which was the biggest difference between the sexes.

Discussion: Physicians’ identities as “the helpers” and “the health professionals” reflects a traditional image of physicians’ work. As the profession is changing more and more towards co-operation between different occupations, the importance of the role as “the member of the team” is further emphasized.

Conclusion: Physicians’ different work assignments require different types of identities and the changes in the professional environment might give rise to new necessary identities. Nevertheless, it is important that physicians feel themselves as “the helpers”. This identity will presumably remain regardless of the changes of physicians’ work in the future.

Take-home Message: Even though the identities vary depending on the sex and working environment, the majority of physicians’ share the traditional identities of the profession.

#4CC12 (3204)
Embedding ‘Raising Concerns’ in the Culture of our Faculty. How We Did it

Hisham Khalil, Peninsula Schools of Medicine and Dentistry, Plymouth, UK
Hannah Wisdom

Background: The raising concerns (RC) policy covers instances where staff / students / external individuals report incidents where they are concerned about a student’s health or conduct, or have seen something related to patient safety in a clinical environment or where they are witness to a member of staff behaving inappropriately.

Summary of Work: The RC policy and a flowchart summarizing it where displayed in the Digital Learning Environment and highlighted in the induction programmes at the beginning of the academic year as well as staff development events. Credit card sized information cards summarising the policy were also produced for students and staff.

Summary of Results: In its first year of implementation, 7 concerns were raised by students, staff and the public compared to none in the preceding year. These ranged from students’ health, professional behaviour and staff conduct. The concerns were investigated by the RC lead and acted on with feedback to the reporter.

Discussion: Raising concerns is a preferred terminology to ‘Whistle Blowing’. A raising concerns policy is a General Medical Council requirement for all medical schools in the UK and has important implications for patient safety. We believe there is a requirement to appoint raising concerns leads to help coordinate policy implementation.

Conclusion: A meaningful raising concerns policy requires a coordinated effort to increase awareness of its existence and provide appropriate and prompt feedback to those who report concerns. This then leads to a culture were those who have concerns can raise them in a safe environment without fear of retribution.

Take-home Message: A meaningful raising concerns policy for medical schools is important for preparing graduates for clinical practice.
#4DD01 (270)
A psychometric analysis of a cumulative, high-stakes, multiple choice question assessment adapted from North America to a Middle Eastern environment

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Rajwant Minhas, University of British Columbia, Vancouver, Canada
Daniel Rainkie, Qatar University, Doha, Qatar
Kyle Wilby, Qatar University, Doha, Qatar

**Background:** Accreditation necessitates that assessment methods reflect the standards established by the accrediting body. High-stakes exams for assessment should therefore be in line with these standards. However, the process of adapting a high-stakes exam to a new context can present unique challenges with uncertainty around psychometric defensibility of the adapted exam.

**Summary of Work:** A psychometric analysis of a high-stakes, cumulative Multiple-Choice-Question (MCQ) assessment, adapted from a Canadian environment, for graduating pharmacy students from a Canadian accredited program in Qatar was conducted. Rates of difficult items, item discrimination (rpb), and non-functioning distractors (NFDs) were calculated to identify deficiencies and challenges with the adapted assessment.

**Summary of Results:**
Overall score of the 90-item MCQ assessment ranged from 46.7% to 78.9% (mean of 62.9%).

- For difficulty, there were 17 items with less than 30% of students answering correctly, while 29 items had unacceptable or poor discrimination (rpb<0.1).
- NFDs occurred in 78 items with 49 containing at least 2 NFDs.

**Discussion:** While it is feasible to implement a high-stakes assessment adapted from a different learning environment, measures need to be taken to improve psychometric defensibility. The high number of questions with NFDs indicates that the current method of exam development does not encourage the incorporation of logical distractors.

**Conclusion:** Difficulty of the assessment was deemed acceptable yet discriminatory ability requires improvement. The high frequency of questions with NFDs suggests that faculty have difficulty developing plausible distractors for an adapted MCQ assessment. This could be due to a lack of training or requirement for inclusion of too many distractor options.

**Take-home Message:** Faculty training for assessment development should be a priority for those attempting to adapt high stakes exams within new settings. MCQ assessment review should target question options to ensure that plausible distractors exist within each question. Future research should continue to explore how to best utilize distractors for MCQ assessments.

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#4DD02 (1996)
Flagged Items in written assessments correlate with students’ performance

Núria Mascarenhas, School of Medicine, University of Minho, Braga, Portugal
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**Background:** Higher education students are subjected to several stressful events, namely assessment tasks. Their capacity to cope with these stressors is dependent on personal and environmental factors. It is known that individual characteristics affects student’s cognitive performance.

**Summary of Work:** “Biopathology and Introduction to therapeutics” (BPT) is a 24-week course in year 3/6-year program (SMUM)

- Students' flagged items correlated with item performance.
- Electronic register (medQuizz®) of 128 students’ assessment was analyzed.
- Flagged items during the assessment were counted and the resulting score calculated.
- The number of flagged items and the % of correct answers were analyzed.

**Summary of Results:** Average flagged items increased with quartile. The number of correct choices increases with quartile position. The percentage of correct choices in flagged items is higher in Q3 and Q4. The correlation between flagged item average and % correct choices is related to the discrimination power of items.

**Discussion:** Students' performance is positively correlated with the number of flagged item. This suggests that top performers have better strategies to complete the assessment task. This could be used as a marker for students’ performance.

**Conclusion:** Our data suggest that top scorers flag items more frequently and are more likely to correctly answer items that were flagged.

**Take-home Message:** Flagged items analysis provide additional information on students performance.
Two Years Cohort Study of Implementation of On-line Progress Test for Ophthalmology Residents

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Background: Resident usually busy in the hospital setting and overload with responsibilities regarding their duty as resident. However, they have to manage their time to study to improve their competency. On-line media having various benefits related to residents' need. Able to be accessed anywhere and anytime is one of those benefit.

Summary of Work: Cohort study was held between 2015-2016 involving 60 residents in Ophthalmology Department, Universitas Gadjah Mada. Residents should access online progress test in every semester and completed 60 questions in 60 minutes. The questions were arranged from 10 subdivision of ophthalmology. Kruskal-Wallis and Spearman Correlation test were used to analyze result.

Summary of Results: In general, response rate is 54.58%. There are significant different between test score of each level of resident semester (p=0.000). The best score is obtained by 7th semester resident, while the worst score is on 1st semester resident. Test score and semester of the resident correlated significantly (p=0.000).

Discussion: The best score was gained by 5th – 7th semester residents, who will and already facing national board exam. National board exam seems give the residents strong external motivation to study seriously.

Conclusion: There is a significant progress on ophthalmology resident score test. The best score was gained by 5th – 7th semester residents.

Take-home Message: Limitation of internet access, lack of answer keys and discussion, and program interface are considered to be the disadvantages of this program and need to be improved.

External Peer-Review of Multiple-Choice Questions (MCQs): A Novel Method for Quality Assurance of Medical Examinations

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Background: High quality assessment is essential to validly assess knowledge necessary to practice medicine. Medical schools usually test their students using examinations written by faculty members who teach the courses. However, these examinations have been shown to be of poor quality and new quality assurance measures are necessary.

Summary of Work: We developed a novel method for external peer-review of MCQs using junior doctors. The Norwegian University of Science and Technology teaches a six-year medical course with one summative examination at the end of each year. 170 junior doctors were recruited and reviewed 1425 MCQs for item flaws and relevance.

Summary of Results: Of 1425 MCQs reviewed, 1075 items (75.4%) passed peer-review and 58 items (4.1%) were rejected due to irrelevance or flaws. In 292 items (20.5%) the peer-reviewer asked for a revision of either content or structure. In 138 (47.3%) of these the item was changed by the item writer.

Discussion: Junior doctors with at least two years of clinical experience were chosen as peer-reviewers because they are qualified to judge what is up to date and relevant knowledge to prepare medical students for their first years as doctors. Comments are most important when relating to professional content of the items.

Conclusion: In order to ensure that MCQ items are relevant and unflawed, and to increase the quality of in-house medical examinations, new quality assurance measures are necessary. External peer-review is a promising method for quality assurance of medical examinations.

Take-home Message: External peer-review has long been used in research. It is time we welcome the method in medical education and assessment.
**Are single best answer (SBA) questions good indicators of students’ ability to generate a management plan?**

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**Background:** Single best answer (SBA) questions assessing knowledge of medical management frequently ask the next single most appropriate step. However, in clinical practice, doctors are required to generate a management plan. We examined the correlation between the students’ performance in SBAs and their ability to articulate a management plan.

**Summary of Work:** One hundred and twenty-one medical students answered a formative test consisting of 10 SBA questions on the management of surgical and medical conditions. This was followed by a formative oral objective structured knowledge assessment (OSKA) of the same topics examined in the SBA test.

**Summary of Results:** There was a weak, but statistically significant correlation between the students’ performance in the SBA test and the OSKA (r=0.264, p=0.003). There was no statistically significant difference in OSKA marks between the students who answered the corresponding SBA correctly and incorrectly (median: 75% vs 67%, p=0.971).

**Discussion:** SBA questions have limited utility in assessing medical students’ ability to generate a management plan involving multiple steps.

**Conclusion:** Valid undergraduate assessments should include oral assessment of students’ ability to articulate a stepwise management plan.

**Take-home Message:** Undergraduate assessments cannot solely rely on SBA questions for assessment of students’ ability to generate and articulate a management plan.

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**Mid-course online assessment for monitoring student learning among first year medical and dental students**

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**Background:** “Genome and development” is a new course at the University of Helsinki. The course is extensive and the schedule challenging, including a Holiday break. A summative online mid-course assessment was developed. This study explores this type of online assessment practice from both the students’ and teachers’ perspective.

**Summary of Work:** About 200 first year medical and dental students participated in the course. We constructed the online assessment using true/false statements, multiple-choice questions and extended matching questions in Moodle. Students got instant feedback on their performance. The questions were in three languages and randomly picked for each student from question banks.

**Summary of Results:** Students were satisfied with the real-time feedback on their performance and the way the examination covered the wide-ranging learning outcomes. The instant online grading provided the students with formative feedback often lacking in summative assessment. The spread of scores and number of failed students resembled those of conventional written examinations.

**Discussion:** Making questions with closed answers i.e. multiple-choice questions in three languages is more challenging and time consuming than making conventional questions i.e. essays. Students valued this assessment as complementary for the conventional assessment. Mid-course and end of course assessment with different question types might best serve learning in this course.

**Conclusion:** Students’ evaluation of the online assessment was positive, both concerning the technical procedure of online assessment and the timely feedback supporting their learning. An online assessment frees up lecturers from grading. On the other hand, making good closed-answer type question banks in three languages is time consuming.

**Take-home Message:** An online mid-course summative assessment with automated grading and instant feedback for the students' functions well as a part of a whole of the course assessment.
Improvement of Thai National Licence Examination Step 1 (NLE-1) outcome of the Joint Medical Programme (SWU - UoN) students: a decade review

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Background: The Joint Medical Programme (between Srinakharinwirot University (SWU), Thailand and the University of Nottingham (UoN), UK) enrolls students by direct admission since 2003. The students pursue a Bachelor Degree of Medical Sciences at UoN for 3 years and continue clinical phase study for a Doctor of Medicine degree at SWU.

Summary of Work: All Thai medical students including the joint medical programme students take NLE-1 when finishing year three of Biomedical Sciences. We have been monitored the examination outcomes from 2006 - 2016. Distribution of marks and the minimal passing level was analysed in relation to preparation strategies. examination format and preparation time.

Summary of Results: The average of NEL-1 marks gradually increased over the years. Significant improvement were observed from 2013 - 2016 in correlation with intensive revision, change in examination format to English (10% in 2013, 50% in 2014 and 100% in 2015) and preparation time before examinations (from one week to 2 months).

Discussion: The groups of students taking examination from 2013 to 2016 have been on regular tuition schedules once a week while studying at UoN under supervision of programme committees. The review of the passed examination papers, extra topics tuition especially tropical medicine and English format examinations resulted in a significant improvement.

Conclusion: The intensive revision of the Biomedical sciences contents, extra topics tuition, English format of examinations and preparation time have improved the NLE-1 outcomes over the past 4 years. Moreover, students pay more attention to the 1st exposure of the NLE-1 in order to avoid the interference of the clinical study.

Take-home Message: There are many factors that help improving the examination outcomes. Students should work as a group during revision, attend extra topic tuition especially topics that are less emphasised at UoN but critically important in Thai National health care. The preparation strategies is considered more important than preparation time before examination.

Medical Students' Perception of Inconveniences Associated with Computer-Based Examination

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Background: College of Medicine at Alfaisal University in Riyadh is one of the first colleges in the Kingdom of Saudi Arabia to implement computer-based examination.

Summary of Work: A paper-based and online questionnaire was distributed to students from years 1 to 5, consisting of questions with a five-point Likert scale. Students were asked about their perception on issues such as potential computer crashes, laptop battery life, health issues and unfavorable ergonomic factors among many others.

Summary of Results: 61.8% of students (n=123) from our preliminary data show that they worry about CBEs before taking them. 40.7% of students felt anxious, 49.6% constantly worried the computer would have technical issues, and 41.4% developed visual discomfort while taking CBEs. 36.6% of students experience back, neck, and wrist pain.

Discussion: The study showed that students faced some inconveniences while taking CBEs. Most of these students are used to paper-based exams and the switch to CBEs has been sudden. Technical difficulties were the most reported by students. Moreover, health and ergonomic issues were reported, with seemingly no possible solution.

Conclusion: We conclude that although CBEs might seem convenient, they have several negative factors associated with them during test taking. Our results show that a large number of students have complaints about the potential technical issues in particular.

Take-home Message: Since examinations are the main measurements of students' learning process, we must ensure the students are offered the most comfortable environment to reflect their real level of knowledge. As CBEs are being implemented in many universities worldwide; therefore, shortcomings must be assessed to find solutions.
Are items still usable after having been exposed on the internet?

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Background: The HAM-NAT is an 80-item natural science test for medical school selection. Applicants of 2016 had the opportunity to train online with 80 practice items from the preceding 2015 test (N=655). Six of these items were included in the 2016 HAM-NAT and scrutinized for the effect of exposure.

Summary of Work: We compared methods for the post hoc identification of these exposed items: (1) univariate changes in item difficulty, discrimination, item fit, local dependence, (2) a multiplicative index of these coefficients (3) sorting of local dependence by annealing, (4) random forest.

Summary of Results: Item difficulty was reduced but not item discrimination. The exposed items were best detected by an increase of item discrimination. All six items could be detected at the price of 1/31 false positives (31 items were from previous years). Five items could be detected without having to accept false positives.

Discussion: Item preknowledge should reduce item difficulty as well as item discrimination. However the preknown items were distinguished by elevated, not by reduced item discrimination. How can this be?

Conclusion: The 6 exposed items could be used in the computation of the total test score without distorting the result. One explanation for the increased item discrimination might be that being familiar with item content was a proxy for motivation, and, therefore, related to ability, which made these items good discriminators.

Take-home Message: The opportunity to get familiar with actual test items before the test expectancy reduced the difficulty of these items but surprisingly raised item discrimination. Reusing exposed items might be safe if many items are exposed and test takers do not expect them to be reused.
Studies on applying modified Cohen method of standard setting to assessments in a preclinical year

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Background: This study examined the use of modified Cohen method of standard setting when applied to the past results of MCQ tests and final examinations of a preclinical year covering a period of eleven years. The aims were to determine how failure rates would differ and be affected by what parameters.

Summary of Work: Modified Cohen method with no correction for guessing was tested on 67 MCQ tests and 15 final examination papers to determine the pass mark/failure rate using different multipliers (60, 65 and 70%) to the test scores of students at the 90th and 95th percentile.

Summary of Results: When comparing modified Cohen method to a fixed pass mark (PM) of 50%, the failure rates and their variations (standard deviation SD) across different years gave lower values when the standard set PM dropped below 50%. Failure rates showed highly significant positive correlation to the spread (SD) of test results.

Discussion: The modified Cohen method takes into account variation in difficulty levels of assessments. However failure rates would vary depending on the discrimination power of the assessments. In this study, applying the Angoff method to a small number of assessments gave a mean multiplier of ~62% for the modified Cohen method.

Conclusion: Adopting the test scores of students at the 95th percentile as the reference gave more stable results. Using a multiplier of 60%-65% would appear acceptable though a more objective value may have to be determined based on analyzing the past assessments using a criterion-referenced method of standard setting.

Take-home Message: There is a need to adopt standard setting in determining the pass mark of assessments in the medical curriculum. The modified Cohen method appears to be a more objective and economical approach though the use of which percentile and multiplier would have to be established based on the local data.

Customizing standard setting for the assessment purpose: Experiences with the Cohen method for written and OSCE components of licensure screening exams

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Sandra Monteiro

Background: Standard setting should establish credible cut scores consistent with the test purpose. Ebel vs. Cohen calculations were compared for addressing domain specificity and percentage pass marks for four licensure screening examinations: MCQ and OSCE exams (College of Nursing) and Knowledge and Competency MCQ exams (College of Dietitians).

Summary of Work: Cut scores were established in standard setting pilots using Entry to Practice target groups (recent graduates) vs. students. Criterion-referenced pass marks (Cohen method) were derived from performance results of the target group. Expert panels calculated Ebel method pass marks. Percentage passes for criterion group candidates vs. students were compared.

Summary of Results: For all four exams, the Cohen method cut scores were more domain specific and discriminating. They were consequently preferred by Nursing and Dietitian regulators. Established cut scores were applied for launch and subsequent administrations. Percentage pass rates demonstrated the discriminating power of the cut score compared to pilot candidate results.

Discussion: A criterion referenced approach establishes a stable minimum score, based on the performance of a domain group. For screening exams, referencing a criterion group (recent graduates) establishes an Entry to Practice standard. This is a fair, objective and reliable approach customized to the needs of the profession.

Conclusion: The Cohen method (criterion group mean - 1 SD adjusted times the highest performing score) provided domain specific cut scores which discriminated better between candidates vs. the Ebel method in exams assessing readiness for licensure. The Cohen method was appropriate for both MCQ and OSCE exams.

Take-home Message: A customized Cohen approach is a criterion-referenced and economical approach yielding realistic outcomes for high stakes examinations. It can be implemented in exams with either written or OSCE components in varied health professional contexts. It is more specific and less resource intensive than a content focused, expert panel method (Ebel).
**#4DD13 (1704)**
Standard setting for exemption from examinations

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**Background:** Our current fixed pass (50%) and exemption from examination (60%) marks disregard variation in assessment difficulty. We retrospectively assessed methods of determining the exemption mark should Cohen standard setting be introduced. [Cohen60 + 10%], [Cohen70], Cohen60 + 2 standard errors of measurement (SEMs)] and [Cohen60 + 3 SEMs] were assessed.

**Summary of Work:** We retrospectively assessed single best answer papers over 4 years in 2 subjects of our undergraduate medical curriculum. Selecting Cohen60 (60% of the 95th percentile mark) as pass mark, four possible methods of determining the exemption mark were investigated for alignment with the current 60% fixed exemption mark.

**Summary of Results:** Chi square (χ2) statistics measured deviation from the current exemption mark. For courses one and two, χ2 values were [Cohen60 + 10%] = 0.03 and 0.13, [Cohen70] = 0.28 and 0.08, [Cohen60 + 2 SEMs] = 0.34 and 0.86 and [Cohen60 + 3 SEMs] = 0.17 and 0.10.

**Discussion:** In course one, only Cohen60 + 10% closely resembled the fixed 60% pass mark. In course 2, all but Cohen60 + 2 SEMs delivered exemption marks with χ2 ≤0.02 deviation from the fixed 60% mark but only Cohen60 + 10% did not increase the exemption rate.

**Conclusion:** To maintain the current exemption standard, the Cohen60 + 10% method could be the method of choice. Applying Cohen to exemption in our curriculum may enhance the efficiency of our assessment system by ensuring true exemptions and limiting inter alia financial burden and emotional stress of erroneous exemption marks.

**Take-home Message:** Although literature is available on the impact of standard setting on pass marks, no literature is available on methods to determine exemption marks when standard setting strategies are employed in assessment. In our setting, adding 10% to the Cohen-determined pass mark closest resembled our current exemption rate.

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**#4DD14 (2241)**
The Use of Merit and “De-merit” scores to determine the passing threshold of summative undergraduate clinical examinations

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**Background:** Determining a reliable and defensible passing threshold for undergraduate clinical examinations remains challenging. The borderline regression method (BRM) has widespread acceptance as a method of standard setting, but when used in isolation, has weaknesses. We describe a novel method to use in conjunction with the BRM.

**Summary of Work:** The merit – de-merit system assigns a numeric score to a global rating scale, shown below: Excellent: Plus 2. Good: Plus 1. Pass: 0. Borderline: Minus 1. Fail Minus: 2. Positive and negative scores are summed separately to give each student a ‘merit’ and a ‘de-merit’ score. A maximum de-merit score determines the pass threshold.

**Summary of Results:** Every student failing a clinical examination in our institution in the last 5 years exceeded the maximum de-merit score. The vast majority of students failing as a result of their de-merit score would have passed the examination, had the BRM score alone been used as the passing threshold.

**Discussion:** In a perfect clinical assessment, the only outcome variance would be due to student performance, yet as assessments move toward greater authenticity, they become less standardised. The merit / de-merit system relies on the expert judgement of multiple examiners so can be used with varying degrees of standardisation.

**Conclusion:** The merit / de-merit system provides a robust pass threshold and functions well as a conjunct to the BRM. The scores correlate well with accompanying qualitative feedback which has made it acceptable to students as well as being defensible.

**Take-home Message:** The merit – de-merit scores system offers an alternative standard setting method for clinical examinations. It is reliant on the expert judgement of multiple examiners and therefore is not affected by candidate cohort size. It allows assessment of less standardised integrated authentic clinical scenarios in addition to highly standardised items.
Novel application of a diagnostic classification model (DCM) for subscore generation in NBME subject exams: A pilot study

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Amy Morales
Linette Ross
Yoon Soo Park

Background: Diagnostic classification models (DCMs) allow reliable classification of examinees into fine-grained proficiency levels (subscores) – this information can be used to target specific feedback on content areas. DCMs have been used in K-12 education contexts, to generate skill profiles of learners, but not in higher-level medical subject exams.

Summary of Work: This project examines whether the DCM framework can be adopted to NBME Subject Examinations (Pathology and Internal Medicine). A “feasibility study” was conducted (1) to identify content domains that can serve as subscores and (2) examine the consistency of subscores estimated using the DCM approach using model fit statistics.

Summary of Results: A Q-matrix was developed for two Subject Exams & compared to actual large-scale test administration data. O “Feasibility study” - Content experts build a Q matrix for a sample of 43 items to inform a framework & help identify types of items that lend themselves to the DCM framework.

Discussion: Results are being evaluated using model fit statistics (absolute fit and relative fit), attribute classification indices, latent class sizes, and utility among physicians, subject matter experts, and test takers. Data interpretation is underway.

Conclusion: A DCM framework can be adapted and retrofitted to subject examinations developed by the National Board of Medical Examiners (NBME) and can improve the process of identifying whether reliable and diagnostic feedback at fine-grained subscore levels can be reported with better precision, specificity, allowing for enhanced feedback.

Take-home Message: This study examines whether the DCM framework can be adopted and retrofitted to high-stakes NBME exams, and serves to substantially improve feedback at fine-grained subscore levels that can be reported. This will also serve to improve the NBME process for content classification and distribution.

Impact of pass/fail grading system on medical students’ perceived group cohesion and stress

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Background: While many medical schools have been implementing pass and fail grading system, one medical school has changed to the pass and fail grading system in South Korea. To assess students’ well-being after the change, self-reported questionnaires have been used. The current study examined perceived group cohesion and stress.

Summary of Work: A total of 248 individuals participated (131 with ‘abc’ and 117 with ‘pass/fail’ grading system). Samples were collected from one of the largest medical schools in South Korea. Korean version of group cohesion scale for perceived group cohesion and EASSI were used for stress. Both tools used 5-point likert scales.

Summary of Results: The average of GCS scores was 3.67(SD=.7) for abc grading and 3.90(SD=.7) for pass/fail grading system. Independent t-test between the two groups showed that there was a significant difference(p<.05). The average of stress for abc grading system was 2.75(SD=.5) and 2.56(SD=.5) for pass/fail grading system; there was a significant difference(p<.05).

Discussion: Group cohesion(GCS) and stress(social-psychological factor) were examined for medical students in South Korea. The results showed that perceived group cohesion was higher for students experiencing pass/fail grading system than abc grading system. In addition, stress in social-psychological factor was lower for student experiencing pass/fail grading system than abc grading system.

Conclusion: Findings implied that pass and fail grading system influenced students’ well-being in terms of perceived group cohesion and stress. Specifically, students experiencing pass/fail system showed higher group cohesion and lower stress than students experiencing abc grading system.

Take-home Message: Change of grading system has an impact on students’ perception in terms of stress and group cohesion. Pass/fail grading system may encourage collaboration among students. At this point, the authors recommend the continuation of pass-fail grading at Yonsei University College of Medicine.
**#4EE Posters: Faculty Development and CPD**

**Location:** Hall 6

**#4EE01 (1759)**

**Weaving in faculty development for busy surgeons**

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Saleem Ahmed, Tan Tock Seng Hospital, Singapore  
Liew See Yin, Tan Tock Seng Hospital, Singapore  
Sarah Qinghui Lu, Tan Tock Seng Hospital, Singapore

**Background:** Mini-CEX and DOPS are workplace assessment tools in evaluation of surgical trainees. Their utility however is dependent on an adequately trained faculty so that it can be relevant. It is often challenging for residency programmes to get doctors to participate in faculty development programmes due to various reasons.

**Summary of Work:** A survey was conducted among the General Surgery faculty to identify gaps in Mini-CEX and DOPS utilisation; followed by an expert-led workshop demonstrating how to better evaluate residents using these tools. A pre-/post-intervention survey was subsequently conducted among the residents to determine whether the post-intervention assessment tools were more useful.

**Summary of Results:** The study involved a total of 19 residents. Analysis of the pre-/post-intervention survey results showed that the residents perceived the post-intervention mini-CEX and DOPS to be more useful assessment and feedback tools than pre-intervention. The results also revealed that the residents felt the feedback they received was more constructive.

**Discussion:** Heavy workload and unpredictable schedules were reasons preventing the faculty from participating in development programmes. Hence, we circumvented this by scheduling the workshop during the department-timetabled journal clubs. The faculty was also fully involved in the workshop conducted by domain experts by using role-play scenarios in the simulation lab.

**Conclusion:** Residents evidently benefit from the continued development of its faculty, with the evaluation of residents using mini-CEX and DOPS assessment tools being only one of many aspects. It is however often administratively challenging for the faculty to participate in these development workshops.

**Take-home Message:** Surgical residency programmes should look for creative ways to weave training workshops into the busy schedule of the surgical faculty. Empowering the faculty with the skills and knowledge in the conduct of various assessment tools transforms these tools to become more useful and constructive for the trainees.

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**#4EE02 (482)**

**Teachers’ Learning Community to Train Generic Skills in Medical Students**

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Liliana Ortiz, University of Concepcion, Concepcion, Chile  
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Ivone Campos, University of Concepcion, Concepcion, Chile  
Carola Bruna, University of Concepcion, Concepcion, Chile

**Background:** Generic Skills (GS) education plays a key role in medical students’ lifelong learning. To train students in GS is a challenge for medical educators. University of Concepción’s GS Model considers 4 GS: Critical thinking, Communication skills, social responsibility, Entrepreneurship/teamwork. Perceptions of educators, members of learning communities for GS are essential.

**Summary of Work:** A learning community with 7 medical educators was conformed, guided by a GS trained teacher. Through group dynamics, teaching and assessment strategies were analyzed, designing strategies to apply with students. The learning process was assessed with focus groups and discursive analysis, from which elements highlighted by teachers trained are extracted.

**Summary of Results:** Between the perceptions of teachers participating in the learning community are highlighted: importance of being trained to be models consistent with the University GS Model, learning to collaborate by giving when necessary, sharing their knowledge with humility. Participants considered appropriate the learning community to train teachers in GS.

**Discussion:** The positive perception of participant teachers about their training in GS, through the formed learning community, indicates that this type of experience favors collaborative learning among peers, which leads to the conclusion that it is advisable to transfer this type of experience to other medical educators to train students.

**Conclusion:** It is important to consider the medical educators perceptions about their training in GS, as students training is a challenge that teachers should accomplish to develop their lifelong learning. Teachers’ training is essential to be able to exercise the corresponding role model and transfer GS to students.

**Take-home Message:** Learning communities are a valuable tool to train medical educators in Generic Skills, as they favor collaborative peer learning, that is also a Generic Skill.
AMEE 2017 Abstract Book
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#4EE03 (2339)
Diversified teaching strategies in the training reduced the new nursing staff turnover rate within 1 month

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**Background:** The default training period for our hospital’s new nursing staff was 5 days. Mostly, the training courses include advocacy of hospital policies and operational instructions. The technical training was 4 hours. Therefore, new nursing staff had a high turnover rate up to 12-20% after working for 1 month during 2012-2014.

**Summary of Work:** Hands-on teaching and situational practice courses and 5 professional skill courses for 3 days. 11 technical subjects were discussed to equip the trainees with necessary skills. Written and multimedia teaching materials were put together by instructors and 7 interdisciplinary teachers. The teaching material will be uploaded for self-learning.

**Summary of Results:** The training was adjusted from 5 to 9 days. Courses including clinical technical ability, hands-on instructions with lectures, discussions, exercises, and assessments were added to enhance the trainees’ knowledge-base. The trainees’ satisfaction rate was 100%, and the turnover rate dropped to 3.8-5% after the implementation of the new training courses.

**Discussion:** A wide variety of written and multimedia teaching materials was provided for self-learning. Along with 46 clinical teachers in the situational exercises to clarify their questions, the trainees were able to improve their clinical abilities while learning the proper skills and knowledge.

**Conclusion:** Adding technical self-leaning and practical exercises, the pre-service training was able to cater for the different needs of individual trainees. As a result, trainees can have a smoother transition to the clinical environment with less impact, and the one-month turnover rate can also be reduced.

**Take-home Message:** Diversified teaching strategies can enable trainees to clarify their questions and enhance their memories with practical exercises and self-learning. The improved training courses are effective, and should be on going to help the staff to improved their professional ability. They can adjust themselves in the clinical environment more easily.

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#4EE04 (2052)
Post-Graduate Health Professions Education (HPE) course: training the next generation of HPE educators

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**Background:** In Brazil, most of the Post-graduate training courses in Health Professions are mainly focused on biological and Basic-Science topics. There is a lack of learning opportunities for the next generation post-graduate people to develop themselves as educators, during their formal training.

**Summary of Work:** We developed and implemented a 10-week in-site training course focused on Health Professions Education (HPE) topics. From 2013-2016 the discipline had been offered, and every week a group of four students was in charge to design and deliver a topic to the other students, with the support of Faculty members.

**Summary of Results:** At the end of each topic students received feedback from colleagues and Faculty. After 10 weeks they answer a Retro-Pre&Post questionnaire to evaluate their perception about learning, comparing the moment when finish with the discipline first day. Every year the number of applicants was three times more than places offered.

**Discussion:** Using a 9-point Likert-scale to assess the difference between the 1st and 10th week, the Students’ perception about their improvement was 2.4 points higher, on average. Most of them said they had very few teaching skills at the beginning.

**Conclusion:** There is a real need for post-graduate HPE courses during their formal training. Teaching knowledge and skills baseline related to HPE topics are very low. A ten week training-course, based on a hands-on teaching & learning approach, increased students’ perception about their capability to teach/help others to learn.

**Take-home Message:** Training the next generation of educators for Higher Education in Brazil is a need. Post-graduate courses on HPE strategies improve the students’ perception about their knowledge and ability to act as future teachers, and they really appreciate it.
Learning from errors - How to deal with them

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Background: Error prevention and patient safety are daily practices in health care. Medical errors and critical incidents are powerful experiences and important sources for learning and professional development, not to be dealt with alone. Supervisors, colleagues and the whole healthcare teams and units should be involved in the processing of errors.

Summary of Work: We have conducted three workshops on learning from error at the Finnish Doctor conference, the main continuous professional training event in Finland. An interest in the topic has increased. In 2017, we collected feedback from the participants, 32/74 responded. We explored their experiences of and ideas about learning from errors.

Summary of Results: Most participants reported personal experiences of errors. For healing from error, support from their team was crucial. Reflecting adverse events at cognitive and emotional level with colleagues and trusted people enhanced learning. At unit level, change of focus from blame approach to identifying root-causes of the event fostered collaborative learning.

Discussion: Working community learns from errors if the causal chain of events and accumulation of hazardous incidents are carefully identified, analysed and measures are taken to prevent them to recur. Both patient’s and caregiver’s emotions require attention in order to avoid them both to become victims of the error.

Conclusion: Training on learning from errors and patient safety is expanding in medical curricula. The notable interest and active participation in the workshops in continuous professional development prove that it is a crucial topic for practicing physicians. Instruction on learning from error should be provided at all levels of medical education.

Take-home Message: The working community learns from medical errors, if it is ready to analyse the causal chain of events. Learning from errors requires both cognitive and emotional processing in a psychologically safe environment, not seeking for whom to blame but seeking the ways of how to improve.

Advancing Team-Based Care Competencies Through Small Group Learning

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Background: Globally team-based care has become a preferred practice model; however few practising health professionals have been formally trained in collaborative care. Accessible, widely distributed professional development (CPD) is needed. The Office of UBC Health has developed a series of self-facilitated small group learning modules focused on team-based collaborative practice competencies.

Summary of Work: Small group learning (SGL) is recognized as an effective way to move knowledge to behaviour. Across Canada it has become a preferred method for CPD and practice improvement. The Office of UBC Health developed a small group learning series to support health professionals to improve team-based care processes in practice.

Summary of Results: Although too early in the dissemination to demonstrate enhanced collaborative practice, the team-based care SGL series provides a sustainable, broadly distributable evidence based continuing professional development opportunity for health professionals. Compared to traditional CPD, SGL better engages and supports practitioners (adult learners) in continuous learning and ongoing practice improvement.

Discussion: Maintaining competence and implementing care innovations like team-based care, are challenging across the health professions. Practice demands, cost and access all limit engagement in traditional CPD. Practitioner support through small group learning focused on collaborative competencies will not only improve care but also enhance health professional confidence in ongoing improvement.

Conclusion: For successful implementation of practice innovations like team-based care models more attention must be directed at the professional development needs of the practitioners. SGL provides an ideal process for advancing practice innovations, supporting the maintenance of competence and engaging practitioners in sustainable continuous system improvement.

Take-home Message: Staying current, practice improvement and care innovations are challenging for the busy health care provider. SGL is a sustainable, flexible, easily accessed and distributed CPD strategy to support practitioners in accomplishing these professional tasks. The UBC Health SGL series on team-based care is one example of this type of CPD.
Reflective Practice: Evaluation of Creative Writing in Continuing Professional Development and Undergraduate Medical Education

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Background: Reflective practice is a meta-cognitive concept that has the capacity to bring together all domains of learning and increase capability and capacity. Reflective practice, narrative competence and storytelling have all also been cited as crucial components of professional practice in relation to patient safety and effective working relationships.

Summary of Work: In this pilot project thirteen participants were offered creative writing as a tool for enhancing reflective practice. Through a co-facilitated staff development workshop participants were given experience of and confidence to use, support and assess creative writing interventions whilst developing skills and insights for their own CPD and teaching practices.

Summary of Results: Increased confidence using creative writing as a tool for reflection was seen, as well as new insights and strategies for processing patient deaths and the impact of participants own life experiences on clinical practice. Using creative writing as a means to prevent emotional burnout in resource-poor environments was also noted.

Discussion: Creative writing in a reflective practice context offers a way of navigating the uncertainty and complexity inherent to modern day professional practice. One of the main outcomes of professional education should not just be a knowledgeable practitioner but also a safe practitioner capable of learning through reflection.

Conclusion: Creative writing significantly improves health practitioners’ reflective capacity by fostering genuine insights and imaginative leaps of understanding and the ability to understand care narratives from multiple perspectives. This approach is practical to implement in both CPD and undergraduate medical education and necessary for professional wellbeing and relationships in care.

Take-home Message: Creative writing used as a tool in reflective practice leads to powerful insights into the impact of healthcare systems and professional practice on the lived experience of patients and carers and contributes to more sensitive and empathetic practitioners as well as providing a valuable self-care resource for professionals.
Paired Learning – Bringing Clinicians and Managers Together in Great Ormond Street Children’s Hospital

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Background: The paired learning programme originated in Imperial College in 2010. In 2015 it was piloted in PICU (Paediatric Intensive Care Unit) in preparation for a pan-hospital run from January to July 2017. The aim is to encourage cross boundary collaboration between clinicians and managers through project creation and organizational development.

Summary of Work: Twelve pairs of clinicians and managers were selected from across the hospital and matched according to departments as well as Myers-Briggs type indicators (MBTI). Pairs were allocated both a senior clinical and executive supervisor. The programme consists of monthly workshops, work shadowing, supervision meetings, peer mentoring and an improvement project.

Summary of Results: The programme and the participants underwent multiple levels of evaluation. The participants evaluated each workshop for relevance and content with favourable results. Pre and post programme ‘readiness to lead’ questionnaires were used to evaluate progress. The projects chosen by participants ranged from service development to quality improvement and educational projects.

Discussion: The greatest strength of this programme lies in its ability to encourage communication between participants. Techniques used included discussions around MBTI and appreciative inquiry which encourage peer learning. This backbone of communication is laid out early in the programme followed by workshops to assist in the management of their projects.

Conclusion: Paired Learning can be used as an effective tool to break down barriers between clinicians and non-clinicians, fostering understanding and assisting in the creation of a collaborative working environment, whilst maximising the strengths of each profession. Key to its success is opening the lines of communication from the first session.

Take-home Message: The future success of organizations relies on their ability to breakdown silos, create networks and work collaboratively. The paired learning programme through many iterations can be used to teach skills and encourage professionals to learn from one another. Senior supervision and project management assist in consolidating learning.

Mentor training, where shall we begin? A realistic evaluation study on preliminary results from focus group interviews

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Background: Aspiring and young medical professionals can be overwhelmed by challenges in their study and early career. Mentors are mostly clinicians who have not been specifically trained for nurturing mentees. Our study adopts realistic evaluation following preliminary results from focus group interviews to explore the key factors required for mentor training.

Summary of Work: We conducted twelve 1-hour focus group interviews (3-5 participants each; n=49). Participants comprised of medical students, Post-Graduate Year-1, residents, medical mentors and other healthcare profession mentors. Interview transcripts were analysed using realistic evaluation to develop CMO-configurations (Context-Mechanism-Outcome) in terms of what works (outcomes), for whom, in what contexts and why (mechanisms).

Summary of Results: We identified 6 components from 18 CMO-configurations building up to the direction of mentor training: (1) handling mentor-mentee meetings; (2) managing mentees’ emotional issues; (3) being career consultants; (4) managing legal issues; (5) resolving arguments between mentees and other professionals; (6) seeking help to deal with mentees’ difficult problems.

Discussion: In-depth analysis of CMO-configurations revealed a recurrent pattern in mentor-mentee interactions. Mentees seek help from their mentors, however through poor communication either in the request or the assistance provided, the relationship may deteriorate. Mentors need proper training to interpret the needs of their mentees and respond appropriately.

Conclusion: Realistic evaluation can be utilised to analyse the transcripts of focus group interviews to help us reveal the components of the mentor training. The results of our study form the foundation from which further training programmes to improve the competency of mentors can be developed.

Take-home Message: Focus group interviews and realistic evaluation help us collect the information of the existing mentor-mentee issues, make a blueprint to design a better training course for mentor trainees and achieve a feasible and transferable method of mentorship training, which is crucial in medical education.
Faculty development program for clinical supervision: comparison of two training formats

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Background: The transition from trainee to faculty requires advanced clinical supervision skills. Faculty often have difficulty with delivering feedback during workplace observations. The aim of the project was to evaluate whether a personalized coaching format was more effective than a traditional workshop-based format at improving faculty clinical supervision skills.

Summary of Work: We conducted a randomized controlled intervention study. 83 faculty from 5 departments were assigned to either a traditional format with three workshops or a personalized coaching format with two workshops and three coaching sessions. Outcome measures were participants’ self-assessment (self-efficacy) and scores on a four-station objective standardized teaching exercise (OSTE).

Summary of Results: Both groups improved their scores on the OSTE (mean difference=10.36, P= <.001). There was no difference in scores between groups (mean difference=0.48, P= 0.33). Both groups expressed higher self-efficacy post-intervention (mean difference=11.85, P= <.001). There was no difference in self-efficacy for both groups.

Discussion: Both formats of faculty development improved OSTE scores, but there was no demonstrated advantage from personal coaching. This is surprising given the educational value of video-based training. The current results are limited by the small sample size. The study is ongoing to further explore validity evidence for both training formats.

Conclusion: Training faculty on how to supervise and give feedback is effective. The additional impact of individual coaching versus workshops alone is still uncertain.

Take-home Message: A longitudinal faculty development program grounded in theory and practice is effective in improving trainers’ teaching skills in either a workshop-based and/or personal coaching format.

Dare to disagree? ‘Teamthink’ vs ‘groupthink’ among clinical supervisors participating in workplace situated faculty development

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Background: Faculty development (FD) grounded in practice theory emphasizes the embodied, contextualized activities teachers engage in with peers in the workplace setting. The aim of this study was to explore what factors might influence collaborative learning among physician colleagues participating in workplace situated FD-activities as a means to develop undergraduate supervision.

Summary of Work: In cycle one of a longitudinal action research study, thirty-four physicians from four departments participated in FD-activities placing a value on ‘in situ’, collaborative learning and jointly constructed, student-focused goals. We collected data on how the process and outcomes were perceived in audiotaped group-sessions, in-depth interviews and participant- and researcher-writings.

Summary of Results: We found patterns of relationships between certain types of motivators, workplace structures and group-climates. A significant finding was how ‘teamthink’ (e.g. tolerance of uncertainty, disagreement and use of conditional, inclusive language) was related to perceptions of high group-performance. ‘Groupthink-like’ behaviors (e.g. unchallenged decision-making) were related to perceptions of low group-performance.

Discussion: The findings indicate that among agency, structure and group-climate factors, the way groups dealt with tensions of knowing, trust, and belonging significantly influenced the collaborative learning process and outcomes. An implication for FD as practice development is to work with patterns of ‘teamthink’ in phases of contextual and group challenges.

Conclusion: FD-models building on practice theories, guided by principles of collaborative, co- and self-directed learning among colleagues, may benefit from mapping agency, group-climate and sociocultural influences on how the group interacts in pursuing its practice. Working with patterns of ‘teamthink’ may be a route to maintain motivation and enhance group-performance.

Take-home Message: FD located in the workplace social practices imply an understanding of how practitioners deal with roles, tensions and work-demands that drive learning. A way to stimulate positive experiences and high group-performance among colleagues in collaborative learning groups is to surface dissent and work to achieve ‘teamthink’ rather than ‘groupthink’-like behaviors.
#4EE13 (987)
Clinical Teachers’ Translating Learning into Practice Following Faculty Development Program through Self-Regulation Theory

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Background: Faculty development is an essential component of every medical education institution. A survey in Taiwan shows that the satisfaction rates (>90%) of a faculty development program is far higher than the implication rates. (59.3% ~ 79.19%) We aim to look into why their learning does not always translate into practice.

Summary of Work: The study was conducted through semi-structured focus group interview method. Clinical teachers (n=29, medical doctors and nurses) who all had participated a least a faculty development program was recruited from Linko and Keelung branches of Chang Gung Memorial Hospital. Data analysis was done through self-regulation with thematic analysis.

Summary of Results: The findings suggest that previous experiences as students, diverse practicum environments, rotation design and personal beliefs impact on how clinical teachers translate their learning into practice. These are used to form a framework of self-regulation. A self-regulation model was established with multiple layers of context which mediates self-regulation cycles.

Discussion: The framework propose that teachers’ self-regulation is impacted by both external and internal factors. Clinical teachers with stronger personal beliefs in teaching progress as a teacher and deeper reflection in teaching progress and outcomes is more capable to bring themselves into teaching context, translating their learning into practice following FDPs.

Conclusion: The framework of self-regulation can apply in the content of this study in Taiwan. We explored more on how multiple layers of context belong to the organization or hospital domain impact clinical teaching in practicum within medical education in Taiwan.

Take-home Message: The framework of self-regulation consider how environmental factors and personal beliefs influence clinical teachers’ self-regulation in action when they are adopting new teaching methods from faculty development programs. The framework can apply in evaluation outcome of faculty development to a certain extent.

#4EE14 (2568)
Clinical Teaching with Emotional Intelligence: A New Model

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Background: Emotional intelligence helps the human to perceive his/her own and others’ emotions and it helps to make interpersonal communication. Clinical teaching needs a high level of emotional intelligence due to its relevant human interactions. The aim of this study was to develop a model of clinical teaching with emotional intelligence.

Summary of Work: At first a workshop on emotional intelligence was designed and conducted for clinical teachers (n=68). Then a sample of workshop participants (n=18) was selected through purposive sampling and their experiences of clinical teaching with emotional intelligence were described using a focus group (n=3) and directed content analysis.

Summary of Results: A model consisting of 5 concepts was presented. Clinical teachers with high emotional intelligence can prepare themselves before rounds with management of their emotions, can develop and maintain relationship with others and will be success in social environment management throughout rounds. They have the ability to personal development after rounds.

Discussion: To apply emotional intelligence in clinical settings, a teacher should consider all the factors that would bring about a more positive emotional environment and social interactions.These factors may help to create an effective clinical environment for students and patients and consequently may results a better learning outcomes and patient care.

Conclusion: The model includes suggested competencies for effective clinical teaching with emotional intelligence. A suggestion for future research is to examine the effect of using this model in clinical environments on learning outcomes and patient care.

Take-home Message: The model of clinical teaching with emotional intelligence includes suggested competencies for effective bedside teaching. This model and its related competencies can be taught in teachers training programs
Have our Trainers improved? Modernising Medical Careers (MMC) a decade on

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Background: UK post-graduate training dramatically changed in 2007 with MMC, from time-based to competency-based curricula with work based assessments (WBAs). Specialities have individualised WBAs, e.g. Procedure Based Assessment (PBA) in surgery and Direct Observation of Radiotherapy Planning Skills (DORPS) in clinical oncology. WBAs rely on competent trainers. Trainer perceptions were investigated.

Summary of Work: Semi-structured interviews with trainers in their own specialty to assess the perceptions and attitudes of trainers towards these WBAs were conducted and thematic analysis used to explore the transcribed interviews. The questions for the interviews were derived from either a survey of trainers or a focus group.

Summary of Results: Clinical oncology trainers felt they lacked experience and had a desire to understand how “experts” use the tool to best advantage. Surgical trainers reported concerns around developmental feedback that could knock a trainee’s self-confidence. There was little evidence that trainers understood the value of reflection to enable learning from feedback.

Discussion: Key themes were feedback and reflection. Trainers still struggle with giving feedback, mostly using Pendleton-type approaches. Formative vs summative assessment remains unclear and recording developmental feedback difficult. Reflective practice was poorly understood: few trainers formally used it themselves, nor had the knowledge or skills to encourage it.

Conclusion: Despite a full cohort of trainees passing through the competency-based curriculum, trainers generally continued to struggle with the knowledge and skills needed to maximise the educational value of WBAs.

Take-home Message: There is an ongoing need for trainer training in the current educational methods, especially to encourage useful feedback and to enable trainees to demonstrate reflective practice. The annual appraisal of trainers started last year by the General Medical Council may help to spread improved skills for trainers.

Promoting professional development of clinical educators through learning community of practice and appreciative inquiry approaches - A pilot study

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Background: Community of practice (CoP) and appreciative inquiry (AI) models were proposed for faculty development and organizational learning. This study aims to investigate the impacts of both CoP and AI approaches on professional development of clinical teachers, specifically in educators’ role transformation and innovations of educational practice.

Summary of Work: Ten clinical educators (CEd), as department teaching coordinators, participated in learning CoP focusing on Harden’s six roles of clinical teachers. AI model emphasizes discovering and sharing positive educational practice and innovations in clinical teaching. Role transformation and clinical teaching effectiveness were evaluated by self-reflection and interviews after CoP and AI.

Summary of Results: CEd displayed active role transformation from knowledge provider, facilitator, and assessor to role model, course planner, and resource developer. Content analysis identified the key themes as fostering teaching beliefs and intelligence, establishing educational environment, quality assurance, and educational innovations in simulation and digital learning, and aspirations to educational scholarship.

Discussion: CoP incorporated with AI enables CEd to establish role transformation from personal teaching tasks to department clinical educators’ responsibilities. Both approaches enhance CEd’s teaching capacity through peer learning, shared goals, and mutual support. Discovering best practice and designing action plans lead to educational innovations and CEd’s professional growth.

Conclusion: Peer learning CoP facilitates the professional development from individual clinical teaching expert to advanced clinical educators. Four-D cycles of AI model enables clinical educators to discover, dream, design and deliver the best educational practice and innovations, and personal learning goals for pursuing the professional career as medical educators.

Take-home Message: Linking learning CoP with AI acts as an effective faculty development model to broaden clinical educators’ multiple educational roles and promote their teaching competencies. Peer learning, shared visions and actions create the innovations, best educational practice, and clinical educators’ aspirations to educational scholarship for continuous professional development.
Residents’ Reactions to the Introduction of a Competency-Based Program at the University Medical Center in Astana, Kazakhstan

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Background: The number of practical skills needed by residents has not been identified in Kazakhstan. At the “University Medical Center” there are presently 88 residents in 10 programs, including 34 residents in Obstetrics and Gynecology. We are implementing a competency-based program in collaboration with the University of Pittsburgh Medical Center.

Summary of Work: To evaluate residents’ reactions to the introduction of summative and formative assessment forms for over 20 practical skills in Obstetrics and Gynecology, we distributed two months after implementation a questionnaire including 13 questions (five on the formative assessment form, five about the practical skills assessment form, and three general questions).

Summary of Results: A higher proportion of 3rd year residents fill the forms daily in respect of 1st and 2nd year residents. 82% of 2nd year residents think that the assessment forms help to improve clinical knowledge and 100% of 3rd year residents believe that assessment forms help to improve their practical skills.

Discussion: Assessment forms are filled more regularly and are more valued by 3rd and 2nd year residents whereas a number of 1st year residents fail to understand their value. Attending physicians need to be made more aware of the importance of assessing not only theoretical knowledge but also practical skills.

Conclusion: The introduction of a competency-based curriculum is a positive development in Residency Programs that is welcome particularly by last year residents in Obstetrics and Gynecology at the “University Medical Center”. Further work is needed to implement a competency-based curriculum and make it more appreciated by residents and attending physicians.

Take-home Message: 1. A competency-based curriculum has been recently introduced in the Residency Programs of the University Medical Center in Astana, Kazakhstan and is valued especially by 3rd year residents. 2. Further work is required to fully implement it and for it to be appreciated by both residents and attending physicians.

Evaluation of the Competency-Based Achievement System (CBAS): Seven years of competency-based assessment data

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Background: Competency-based medical education (CBME) has gained a strong foothold in medical education worldwide. The “what” of CBME – which competencies to measure - has been a focus of CBME literature. Conversely, the “how” of competency-based assessment – measuring competencies - is still an area of debate and uncertainty.

Summary of Work: Our family medicine residency program has been fully competency-based for 7 years. Based on the theory of “assessment for learning”, our programmatic assessment framework (Competency-Based Achievement System – CBAS) focuses on formative feedback for guided self-assessment, direct observations, and representative sampling across observers, contexts, and patient populations and presentations.

Summary of Results: Data captured through CBAS has been the basis for multiple studies examining specific outcomes. FieldNotes (captures of formative feedback shared in the workplace) (N=39,000) have been reviewed to measure extent of feedback data. Progress reports and rotation evaluations have been compared pre- and post-implementation of CBAS (N=397 file reviews).

Discussion: CBAS has been found to be highly effective for: 1) early identification of learners encountering difficulty; 2) enabling collection of multiple pieces of evidence of learner progress towards competence; 3) capturing data that discriminates between high and low achievers within cohorts; 4) scaffolding for development of guided self-assessment skills.

Conclusion: Overall, assessment information has increased since implementation of CBAS. More narrative comments about progress are found overall on all assessment tools included in CBAS (as compared to before implementation), and there is a distinct improvement in evidence to support summative decisions. Program directors have increased confidence in assessment decisions made.

Take-home Message: CBAS offers proof of concept for improvement of assessment through a competency-based approach (as compared to traditional assessment). Learners encountering difficulty are identified earlier, with better evidence, allowing for targeted remediation of areas of weakness. For all learners, documented formative feedback for guided self-assessment scaffolds development of more accurate self-assessment.
#4FF03 (2968)  
Introducing the TUMS competencies to fresh medical students using movie clips

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Background: Tehran University of Medical Sciences (TUMS) along with reforming the undergraduate medical curriculum formulated the expected competencies of medical graduates in eight areas. This article describes the use of “movie clips” as a tool to facilitate medical students’ awareness with the core competencies of TUMS.

Summary of Work: Movie clips were selected aligned with considered competencies. The duration of each clips varied from 15 to 20 minutes. After the show of clips, performances related to physician and addressed in the movie were discussed. The moderator summarized the golden points and compared them with core competencies of TUMS.

Summary of Results: This was a descriptive study was carried out in 2015-2017. 442 medical students of TUMS participated in this study. Forty-eight percent of participants were female. In general, 89.6% of students were strongly agree/agree that they can gain new insights into expected competencies through watching movie and discussing about points.

Discussion: At Tehran University of Medical Sciences, the Introduction to TUMS Core Competencies program provided an innovative solution to the problem of orientation of fresh medical students to core competencies early in their training. This program promoted fresh medical students’ understanding of what it means to be a competent physician.

Conclusion: Students believed that participation in orientation program had helped them to learn more about core competencies of TUMS medical curriculum and the importance of doctoring skills in their study. Our experience demonstrated that the use of movie clips can be helpful to familiarize students with considered competencies in medical school.

Take-home Message: Using movie clips can be helpful to familiarize students with core competencies of medical education at the early years of medical curriculum.

#4FF04 (2921)  
A step towards competency based medical education: Evaluating a novel integrated Pediatrics residency curriculum

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Background: Competency-based medical education (CBME) is recognized by the Royal College of Physicians and Surgeons of Canada as optimal in preparing residents for practice. McMaster Pediatric residency program has implemented an integrated curriculum to facilitate CBME. Few programs have to integrated CBME into curriculum, and literature on the area is underdeveloped.

Summary of Work: A mixed-methods approach was used to evaluate the curriculum change. An exit survey was implemented to assess residents’ preparedness to practice. Measures of resident performance were compared to determine whether the new curriculum had any impact on scores. Focus groups were conducted to identify perceived benefits and obstacles of CBME.

Summary of Results: The exit survey results suggest that residents feel procedural skills and specific subspecialty areas (Pediatric Dentistry, Gynecology and Psychiatry) are inadequately covered. There was no statistical difference in survey scores after the implementation of CBME. There were no differences in exam scores between the CBME group and the previous curriculum.

Discussion: Our exit survey has clearly identified areas that residents perceive as inadequately covered in the current curriculum. We will continue to analyze the responses to determine the impact that CBME has on these deficits. There were no changes in objective measures of resident performance after implementation of CBME.

Conclusion: Residents perceive deficits in their training. The implementation of CBME has not made a statistically significant difference in these deficits. Further data collection is needed to fully understand the effect of CBME on preparedness to practice. Allowing residents to have more flexibility through IP blocks does not decrease test scores.

Take-home Message: Our study uses both qualitative and quantitative data to understand the impact of CBME on the resident training experience. Consistent deficits (over two years) have been identified through an exit survey. Analysis of qualitative data obtained from focus is ongoing, to evaluate the perceived challenges and benefits of CBME.
Design of 360-degree assessment tool for residents of the Pontificia Universidad Católica de Chile

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Background: To implement the CanMEDS model in the training of specialists, it is necessary that each role is assessed correctly. The role Communicator, Collaborator and Professional are difficult to assess. Therefore, our goal is to develop a 360-degree assessment tool for these roles for PUC residents.

Summary of Work: A mixed methodology was used for the development of the questionnaire. Using a modified Delphi technique to reach an agreement, a panel assessed the importance of each item. Definitive instrument was piloted in two residents. Each resident was assessed by twelve persons: self-appraisal, four senior-doctor, four peers and four non-medical professional.

Summary of Results: We developed a 15-item questionnaire divided into 3 dimensions (communicator, collaborator and professional), with Likert scale 1 to 9. The instrument shows high reliability. The average performance evaluations of residents were 8.23 ± 0.8 (Likert scale 1 to 9). All residents received further feedback after the assessment.

Discussion: Using the 360-degrees assessment method, doctors and non-medical professionals can reliably assess residents on some important learning objectives. This assessment tool can provide feedback for the residents. This model can provide more accurate, reliable and fair decisions than the one based on just a single source.

Conclusion: The 360-degree assessment appears to be a useful framework for implementing a multisource evaluation of residents performance. An instrument was designed to measure the performance of PUC residents in the communicator, collaborator and professional roles of the CanMeds model.

Take-home Message: The 360-degree assessment is an important tool in assessing the behaviors of doctors in training. This tool may be used for identification of performance regarded as poor and for congratulating performance thought to be excellent in interpersonal behaviors.

Development, contextualisation and implementation of an online assessment system (OAS) for outcomes-based education (OBE) across health professions programmes

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Noraidah Yusoff
Kelly Loh
Sheau Yuen Chin

Background: Assessment is an integral component of education management. Assessment implementation requires collaboration among faculty, students, examination office, facilities management and IT, driven by the university learning philosophy and governance. Assessment enables judgement on whether the student’s learning outcomes are achieved through a systematic collection, review and use of information.

Summary of Work: We have developed OAS for outcomes-based education across health professions programmes. The system was developed to overcome common challenges that limit the delivery of assessment for learning concept. Areas to improve were assessment blueprinting, turnaround time for result processing, audit trail, psychometric analysis and providing feedback based on learning outcomes.

Summary of Results: An OAS that is integrated, reliable, secure and valid was developed and contextualized for a range of assessment tools used in health professions programmes, including performance-based examinations. Implementation features include online tests, item banking, analysis and blueprinting based on learning outcomes and difficulty level, standard setting, immediate individualized feedback.

Discussion: OAS development took longer than anticipated due to complexity of user needs and communication between stakeholders to ensure correct interpretation of performance indicators. Faculty, students, exam office and IT staff faced change management issues as there were shifts in procedures, responsibilities and system accessibility to implement OAS successfully.

Conclusion: Assessment for learning is implemented more efficiently via OAS. OAS is innovative as the educational framework of OBE has been translated into one integrated assessment system that can be applied across academic programmes. Key and positive features of OBE including transparency, measurability, relevancy, individualisation and timelines are delivered in OAS.

Take-home Message: The OAS development required continuous stakeholder feedback and engagement, to ensure that the users’ requirements are met. OAS implementation has ensured streamlining and sharing of assessment practices across the diversified health professions programmes. For sustainability of implementation continuous training and support from stakeholders with resource allocation are necessary.
#4FF07 (2406)
Entrustable Professional Activities for Undergraduate Medical Education: Early Lessons in Content Validity and Feasibility

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Katharine Rankin, University of Edinburgh, Edinburgh, UK
Helen Cameron, University of Edinburgh, Edinburgh, UK

Background: Entrustable Professional Activities (EPAs) aim to bridge the theoretical aspects of competency-based education and clinical care. However, data regarding their utility as an assessment is limited to reports on acceptability. We therefore aimed to determine the content validity and feasibility of a suite of EPAs developed for final year students.

Summary of Work: We conducted an online survey asking clinical supervisors in South-East Scotland (n=187) to rate how important the EPAs were; how easy they would be to assess; and how well this collective set of tasks represented the totality of an FY-1’s (intern’s) job.

Summary of Results: Response rate was 61%. Over 80% of supervisors agreed that each EPA was “very important” to being a FY-1, with the whole set encapsulating the totality of the job well. Over 65% felt it would be “easy” to assess performance for each EPA - except “assessing an unstable patient” (41%).

Discussion: The main limitation of this work is that supervisor responses were given on a hypothetical basis and so it remains to be seen how the EPAs work in practice. The positive results do however provide a solid basis on which to build our planned implementation study.

Conclusion: It appears that the content of our suite of EPAs for final-year medical students is hypothetically valid and potentially feasible. The next stage of our research will be to roll out our EPA tools to current final-year students to gather further information on their utility in practice.

Take-home Message: Early investigation has shown: • Supervisors feel that the content of our EPA tools is hypothetically valid. • Moreover, it is potentially feasible to utilise EPAs for final year medical students. • These aspects of assessment utility now need to be tested in practice.

#4FF08 (451)
Developing EPAs for an Undergraduate Course: A Three-Step Approach

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Henrik Hölman, Germany

Background: Currently, the Clinical Competence Course, the last one before the Practical Year, is being restructured to include EPAs both in teaching and testing. After the course, students should be able to name and evaluate differential diagnoses for common symptoms and use clinical reasoning skills.

Summary of Work: As the EPAs will represent what students are expected to know and be able to do in their Practical Year, clinicians must be included in formulating them. Students and stake-holders within the Medical Faculty should also be involved in order to ensure wide acceptance of the concept.

Summary of Results: We identified our regular medical didactics courses aimed specifically at clinicians as a suitable platform for the development of such EPAs. Afterwards, students were invited to review the EPAs. Stake-holders such as departmental chairs will then be invited to discuss in order to reach a broad consensus.

Discussion: Due to the nature of our didactical courses, the groups are usually multidisciplinary and include individuals already highly involved in teaching as well as relative novices. Educators that would not normally attend Meetings to create EPAs were included in the process to ensure acceptance throughout the faculty.

Conclusion: Nesting the development of EPAs in a course on clinical teaching is a feasible, resource-effective approach. Consensus was reached reasonably fast and EPAs were not overly specific. Students that were asked to review the EPAs generally agreed that they were useful and, most importantly, achievable before entering the Practical Year.

Take-home Message: When formulating new learning outcomes or EPAs for clinical teaching, as many clinicians as possible should be included. This might be done by identifying occasions where many are gathered for another reason rather than scheduling a separate event.
Evaluation of an allocation of supervision levels to checklist assessment in undergraduate emergency simulation training

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Harm Peters, Charité Universitätsmedizin Berlin, Berlin, Germany

Background: Entrustable professional activities (EPA) represent units of professional work to be carried out in the workplace under a supervision level reflecting the trainee’s level of competence. Core EPAs for undergraduate medical training have recently been defined, one being the recognition of critically ill patients and initiation of emergency treatment.

Summary of Work: At the Charité Universitätsmedizin Berlin, we compared the OSCE-like checklist assessment in a 5th year emergency simulation training with an additional allocation of supervision levels needed to carry out the task. Trainers and students attributed the supervision level to the teamleader and themselves respectively. Demographics and user opinions were collected.

Summary of Results: A total of 113 students and 13 trainers participated in the study. Levels of supervision in students’ self-rating and trainer rating differed. Level of supervision did not follow checklist rating linearly. The assignment of supervision levels was deemed valuable by students and trainers, while being feasible and non-time-consuming.

Discussion: Albeit or maybe because of discrepancies between self-rating and trainer rating, attribution of supervision levels was regarded as valuable. Students reported clearer understanding of their real-world ability level. Restrictive attribution of distant supervision levels compared with high-score checklists may be due to entrustment decisions encompassing more factors than checklist items.

Conclusion: Feedback on supervision levels regarding the performance in emergency care and life support seems to be feasible and not time-consuming. Students and teachers valued the additional feedback information as it yields a more realistic view of overall performance. Checklists are still important to address single items for further student learning.

Take-home Message: Evaluation of supervision levels needed to carry out a professional activity in emergency care and life support is an easily integrated tool that enables students to get a more realistic view of their overall abilities.

Influence of Non-Academic Factors on Assessments of Entrustable Professional Activities

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Vivien Tang, Duke-NUS Medical School, Singapore
Scott Compton, Duke-NUS Medical School, Singapore
Sok Hong Goh, Duke-NUS Medical School, Singapore

Background: The primary purpose of this study is to determine the extent to which Internal Medicine (IM) Residency Program Directors’ (PD) perceptions of residents’ non-academic characteristics are associated with assessments of core Entrustable Professional Activities (EPA).

Summary of Work: We conducted a Delphi study with IM residency educators in Singapore to identify negative non-academic factors that are unquestionably undesirable characteristics for residents. We subsequently conducted a survey of IM PD’s to rate one of their PGY1 residents in terms of these characteristics and to assess their EPA performance.

Summary of Results: Forty-six PDs participated by rating one of their residents on the 28 negative non-academic factors and on EPA performance. Residents rated as “less competent” overall had lower mean ratings on each of the 13 EPAs, and had higher mean ratings on 27 of the 28 negative non-academic characteristics.

Discussion: EPAs are considered by some to have an advantage over previous residency competency ratings because they are assessments of observable behaviors. However, the results of this study suggest that there may be an association between factors unrelated to actual clinical performance and the rating of each EPA.

Conclusion: While it is reasonable that negative, non-academic factors would impact the trust of a PD, the overall pattern of that relationship seen in this study - if true - would imply that poor residency performance is nearly always tied to poor personal characteristics, rather than merely variable skill development.

Take-home Message: Assessment of EPAs, like all other forms of assessment, are subject to rater bias. Further work needs to focus on methods to minimize rater bias and to determine the extent to which it impacts critical decision making regarding residents’ progression.
#4FF11 (2790)
Longitudinal Integration of EPA-Based Assessment in Performance-Based Decision Making

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Maryellen Gusic, University of Virginia School of Medicine, Charlottesville, USA
Megan Bray, University of Virginia School of Medicine, Charlottesville, USA
Meg Keeley, University of Virginia School of Medicine, Charlottesville, USA
Christine Peterson, University of Virginia School of Medicine, Charlottesville, USA
Linda Waggoner-Fountain, University of Virginia School of Medicine, Charlottesville, USA

Background: Our curriculum is designed to ensure that students demonstrate mastery of the competencies required of the contemporary physician. A four-year Clinical Performance Development course (CPD) provides a longitudinal "home" for documentation of developing competence through EPA-based assessment. This project elucidates the strategy to implement EPA-based decision-making in an established curriculum.

Summary of Work: Critical success factors: • Identify Guiding Principles Leadership Group with expertise in competency based medical education, curriculum design and assessment, student mentoring, and strategic thinking. • Engage curricular leaders in comprehensive content review to find existing opportunities to teach and assess EPA-based tasks. • Partner with educational technologists to develop data platform.

Summary of Results: Outcomes to date include: • Delineation of data needed to inform entrustment decisions. • Inclusion of assessments from Ad Hoc & Master Assessors. • Identification of new faculty roles—Coach and Master Assessor. • Outline of curriculum/assessment strategy for each EPA by faculty/student working groups. • Integration with existing educational and student affairs infrastructure.

Discussion: Continuing efforts include modification of the evaluation tool used in clinical clerkships, design of individualized curricula based on students' need for ongoing observation and supervision, establishment of guidelines for re-affirmation of entrustment decisions and ongoing development of the IT system to collect, monitor and document entrustment decisions.

Conclusion: Planning and implementing a longitudinal curriculum and assessment strategy to inform EPA-based decision-making is an achievable goal when the approach is inclusive, strategic and phased. EPA-based assessments document emerging competence and must be integrated in established decision-making processes related to academic advancement.

Take-home Message: A leadership group, with expertise in educational and student affairs, provides vision and oversight. Inviting students and faculty to participate in the design process promotes inclusivity and viability of the plan. Partnering with educational technologists from the beginning facilitates creation of easy-to-use tools to collect and share data with stakeholders.

#4FF12 (562)
Comparison of OSCE Global Rating Scale and Entrustable Scale in OSCE Assessments

Chih-Ming Hsu, Chang Gung Medical Education Research Centre, Chang Gung Memorial Hospital, Chiayi, Taiwan
Chih-Cheng Hsieh
Cheng-Ting Hsiao

Background: Objective structured clinical examinations (OSCEs) are high reliable and valid tools for assessing clinical skills. Entrustable professional activities (EPAs) are now used in supervisor-student relationships to evaluate how trustable a clinical event is for the particular student-to-practice transition. We aim to evaluate OSCE global-rating and EPAs correlations.

Summary of Work: Interns (n=45) and examiners (n=24) participated. Four types of questions assessed students’ abilities: (1) history taking (HT, n=6 questions); (2) physical examination (PE, n=5); (3) clinical skills (CS, n=7); (4) doctor-patient communication (D-PC, n=8). Total 666 times assessment. Correlation and regression were used between OSCE Global-rating Scale and Entrustable Scale.

Summary of Results: The following correlations were found: (1) PE (r=.724**) and CS (r=.796**) high correlation; (2) D-PC (r=.565**) moderate correlation; and (3) HT (r=.386**) low correlation. Significant regression of 4 question-types (p<.05): the coefficient of the determination, which is square of physical examination (R2=0.524); CS (R2=0.633); HT (R2=0.320); D-PC (R2=0.149).

Discussion: Entrustable scale shows high correlation to global-rating in skill examinations, but intermediate in non-skill examinations. Examiners can observe medical students actual performance, so students with higher confidence might obtain higher global-rating scores. Non-skill examinations of the global-rating scale score is lower than skill examinations under the same level of entrustability.

Conclusion: Medical students received higher scores for EPAs in skills examinations, possibly due to direct observation of skill performance. Because of the diverse aspects of non-skill examinations, the scores are lower. The scores of EPAs appear to better evaluate the clinical performance of intern doctors. The skill examination has higher scores.

Take-home Message: EPAs appear to be as efficient as OSCEs for assessment of medical students’ PE of patients and CS competencies. However, they appear to fall short in the area of HT. However, because EPAs and OSCE methods had question types and assessment form differences, these areas are worthy of further exploration.
#4GG Posters: Curriculum Development

Location: Hall 6

#4GG01 (3193)
Integration-teaching-service and community in early experience in medical education on the Brazilian Amazon

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Jhone Curti
Maira Nazima

Background: Public health in Brazilian Amazon urges action to achieve the WHO philosophy declared in 1978: "health for all by 2000" (WHO, 2015), and the UNIFAP Medicine Course in compliance with the National Education Guidelines, has an active clinical experience since first year for students, in 2010.

Summary of Work: The research seeks to improve medical education in the State of the Amazon in conjunction with WHO through the construction of the Competency based workplace curriculum for the Module of Integration Learning and Community of the medical course of UNIFAP to development of cognitive maturity of medicine students.

Summary of Results: The first evidences of the survey are an early experience in clinical and community setting to contribute to medical education, but with the need to improve the preparation of pre-clinical students and teachers without teaching training and promote the insertion of students to the SUS (Public Health care of Brazil).

Discussion: The improvement of medical education focused on public health is one of the ways to attend the objectives of WHO, but demand integration and dynamism between the institutions of education of the courses of health and public institutions with the structure of public health in community.

Conclusion: Competency-based curriculum structured of early clinical experiences for students that will enable the gradual and structured insertion of medical students during the training in community health care of the "Unified Health System" (SUS) that is the public health program of Brazil.

Take-home Message: With precocious experience in the community, the students could learn how make clinical decisions, besides assess the relationship between curriculum objectives and outcomes and help guide choices for local community health programs in Brazilian Amazon.

#4GG02 (3295)
14 steps to do curricular reforms and introduce competences and clinical simulation in to a traditional curriculum of health sciences

Adalberto Amaya, Pontificia Universidad Javeriana, Bogotá, Colombia

Background: Background: The most frequently ask is, how introduce practices of clinical simulation in to the traditional curriculum in medicine and other health sciences. we have been working during 20 years in curriculum, competences and simulation and have designed an interesting structure.

Summary of Work: The author of the present poster have had the experience to be a leader of change a traditional curriculum in medicine for a curriculum by competences in four universities. In this experience have developed 14 significant steps to introduce simulation and relation between level of competences and type of simulation

Summary of Results: With the experience in four curricular reforms beginning with a deep institutional analysis, normative health situation, goals, objectives, context and other steps, we have obtained good results thru simulation in different skills and competences with students of medicine and nurse. They have been compared before and after of the change.

Discussion: Simulation is simply one didactic strategy with a lot of benefits including to be objective at the moment to apply the formative evaluation but, it needs to be introduced with more analysis than people believe because they think that it has only an instrumental utility.

Conclusion: We must have a defined strategy and structure in order to include clinical simulation in the new curriculums by competencies. We present 14 steps that teachers and directives must have present at the moment to do curricular reforms by competences including simulation.

Take-home Message: It’s necessary to define the profiles, objectives, competences, context, outcomes, etc. before to introduce clinical simulation in to the traditional curriculums. When you have a defined structure is easier to make the work.
#4GG03 (2620)  
Respiratory therapy students participate in patient-centered pulmonary rehabilitation of Holistic Health Care Program

Ching-Yi Chen, Department of Pulmonary Medicine, Taipei Medical University - Shuang Ho Hospital, Taipei, Taiwan  
Chien-Ling Su  
Ya-Chi Chang  
Ya-Ting Lee  
Ling-Ling Chiang  
Tzu-Tao Chen

**Background:** The pulmonary rehabilitation courses for RT interns will be arranged during patients' hospitalization. The medical relationship will be terminated when they discharge. We started the Patient Centered Health Care since October 2015. The interns intervened in patients under stable condition, developed discharge plans, participated the home care and patients followed up.

**Summary of Work:** Under guidance of teachers design the interventional pulmonary rehabilitation programs. Before discharge, organize multidisciplinary team including students. Students complete basic discharge assessment, planning individualized home-based rehabilitation program, design brochure for patients. Then participate home visiting and continue following the efficacy of patients self care. They complete case report at third month.

**Summary of Results:** When students participating in holistic health care, patients self-assessment of social skills and family relationships become better. Patients home self-care ability improved from 3.2 to 4.5 (total 5.0). Students involved patient assessment, exercise training, education, discharge plan. Students satisfaction with teaching also improved from 3.8, to 4.6 (total 5.0).

**Discussion:** From hospitalization to home care, students participate in medical care, learn the importance of psychological and family support. Students feedback the training program not only to learn the medical care during hospital, but also to learn the importance of long-term care for patient self-care, community general practitioners and Preventive Medicine.

**Conclusion:** During the inpatient period, the students learn the cooperation and communication with interdisciplinary medical teams. During discharge preparation period students learn to participate in planning, implementing, assessing and understanding the importance of home care. Promote the patient back to a healthy home life.

**Take-home Message:** Clinical pulmonary rehabilitation training program would enhance the concept of holistic health care.

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#4GG04 (1976)  
“DISCOVER” MSc Medical Education

Sai Sreenidhi Ram, University of Liverpool, Liverpool, UK  
Madhav Sanatkumar Davé  
Katherine Deasy  
David Taylor

**Background:** As an intercalating medical student, the MSc programme has helped to “DISCOVER” what medical education is all about. The course acts as a journey plan for students: how a student learns, how different teaching methods are used to impact their learning and how to design and evaluate learning.

**Summary of Work:** The anagram “DISCOVER” was created to highlight the advantages of the MSc programme, with particular attention to transferrable skills.

**Summary of Results:** D- Discovery; I- Initiative; S- Structure; C- Communication; O- Open Discussion Board; V- Valued Feedback; E- Evaluation; R- Research.

**Discussion:** As a medical student, it is interesting to discover what happens on the other side. Critical analysis, self-reflection, time management, providing feedback are a few of the many transferrable skills developed. One of the greatest skills fostered with a safe environment is feeling confident with voicing personal thoughts and opinions.

**Conclusion:** An opportunity to develop multiple transferrable skills and encourage interpersonal skills is provided, by the diverse range of healthcare professionals, which can be utilised in all aspects of the students’ careers.

**Take-home Message:** The intercalated MSc programme provides a fantastic opportunity for medical students to broaden their mind to research in medical education and understand the fundamental principles of student learning.
#4GG05 (2450)
Nationwide occupational medicine training program in the Finnish Institute of Occupational Health

Jari Stengård, Finnish Institute of Occupational Health, Turku, Finland
Eva Helaskoski, FIOH, Helsinki, Finland

Background: Teaching of occupational medicine is an integral part of the training of specialists in occupational health. This training takes place in the Finnish Institute of Occupational Health Institute in Helsinki and its regional offices. A challenge is that instructors in different regions have different skills and their resources are different.

Summary of Work: Here we present our new, nationwide occupational medicine training program. It consists of six modules, which include lectures, workshops, workplace visits, outpatient work, literature search and self-study. In teaching we use web-based learning platform. The program was developed in collaboration with trainees and all the instructors in the various regions.

Summary of Results: Benefits for trainees:  • Trainees receive same kind of training, regardless of where they specialize.  • Trainees can discuss with other trainees and instructors in other areas. Benefits for the instructors:  • Instructors can take advantage of each other’s material.  • We can employ modern pedagogic theories and use a variety of teaching methods.

Discussion: We had a need to reform and unify occupational medicine training at our Institute. Our aim is to offer trainees same kind of training, regardless of locations they specialize. Using web-based learning platform and participation of students and all regional instructors was central to the success of the program development.

Conclusion: Here we present our new, nationwide occupational medicine training program, where we employ web-based learning platform. It enables us to take advantage of instructors’ different skills and to use new pedagogical theories and methods in our teaching. Program has been well received by trainees and instructors according to collected feedback.

Take-home Message: Cooperation between teachers and students and a use of modern information technologies is useful in a development of training programs.

#4GG06 (1838)
An innovative process to include the different stakeholders’ input for curriculum development in Medicine

Eduardo Durante, Instituto Universitario Hospital Italiano, Buenos Aires, Argentina
Sergio Giannasi
Clara Facioni
Luis Cámera
Marcelo Figari

Background: Our new University Board considered a redefinition of medicine curriculum that has been in action for the last 15 years. For a new professional profile and curriculum design the input of the different stakeholders is fundamental. The inputs of teachers, students and public is especially challenging for this purpose.

Summary of Work: The opinions of teachers and students were collected through a nominal group technique (NGT). Data from teacher were synthesized in 33 items and using a Delphi method (DM), an electronic form was sent to teachers to reach agreement. General public opinions were investigated using the snowball technique to recruit participants.

Summary of Results: 52% (82/340) of teachers participated in NGT and 30% (102/340) in DM. Six groups of students (60), one of each year, participated. About 250 forms were completed by general public. All opinions were synthesized and a new professional profile was articulated. The entire process lasted 6 months.

Discussion: The definition of professional competencies to be a good doctor should be contextual and according to the opinions of all stakeholders. In this trial we describe first the characterization of a professional profile for a doctor of a large city and its surroundings.

Conclusion: This is an innovative and efficient method to gather the different stakeholders input for defining aspects of a new curriculum.

Take-home Message: The professional profile of the graduate and the competencies of the good doctor must be re-evaluated at regular intervals. The opinions of all the interested parties are important and not only those from university board and teachers.
#4GG07 (1820)

‘Learning to become a veterinarian’: A supportive course for veterinary medical students

Sami Junnikkala, Faculty of Veterinary Medicine, University of Helsinki, Helsinki, Finland
Mirja Ruohoniemi

**Background:** The curriculum of veterinary students is demanding and the well-being of the students is a concern for the developers of the curricula. In addition, generic skills are highly important for the successful career of veterinarians. A course supporting the professional growth of the veterinary medicine students was developed.

**Summary of Work:** The course “Learning to become a veterinarian” (4 ECTS credits) contains different tasks for each of the three first years of studies. The course aims to support and develop studying and life-long learning skills, group-work skills, self-assessment skills and ability to give and process feedback.

**Summary of Results:** The inquiry during the initial orientation period, reflections during the first and second year of the studies, private and group discussions with direct feedback and portfolio reflecting the first three years give valuable information about the students. Students' feedback during the course is valuable for the curriculum development.

**Discussion:** Most of the veterinary students are motivated, perform well in their substantive tasks and set extremely high standards for themselves. However, in some cases they may not see the importance of generic skills for their future profession or get exhausted. This course was planned to support students in these fields.

**Conclusion:** A vast majority of the students have excellent learning capabilities but it is also important to monitor their overall progress and offer help for their well-being whenever needed. Different kinds of tasks during the course give possibilities to learn generic skills needed for veterinary career in the future.

**Take-home Message:** Regular follow-up of the students during the three-year course makes it possible to pick out the students who need academic support or support for their well-being. It is important that different types of generic skills are studied throughout the curriculum and already at the candidate phase of veterinary medical studies.

#4GG08 (1658)

Introduction of Collaborative Learning Cases (CLCs) into Phase I Curriculum of Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine)

Clara Chan, National University of Singapore (NUS Medicine), Singapore
Nicholas Wong, National University of Singapore (NUS Medicine), Singapore

**Background:** Every year, graduating cohort participate in the Graduate Exit Questionnaire to provide feedback on their medical education and learning experience. One recurring point was the difficulties students faced in linking basic sciences knowledge learned in their earlier years to their clinical training years. To address this, the School devised CLCs.

**Summary of Work:** In 2016, the School rolled out 5 CLCs in the Phase I curriculum. Each session was taught by a pair of preclinical and clinical tutors. Cases were presented through short videos and images in a progressive manner. The groups discussed questions posed and provided answers via a classroom response system.

**Summary of Results:** 143 out of 300 students participated in the survey which consisted of 6 questions with a 4-point Likert scale (from strongly agree to strongly disagree). On average, 89% of the students rated strongly agreed/agreed for all the questions. Generally, the students were very receptive to CLCs.

**Discussion:** The survey questions covered the quality of content, pre-reading materials, duration of the session and tutors’ facilitation. Students strongly agreed/agreed that CLCs helped them to learn the content better, having pre-reading materials helped to learn more effectively, duration was sufficient to cover the relevant contents and tutors’ facilitation was effective.

**Conclusion:** The results showed that CLCs have a great potential in transforming how students learn through collaboration while integrating students’ learning across disciplines and body systems. Students enjoyed the highly interactive teaching style and benefitted exceedingly from having a pair of preclinical and clinical tutors to teach each case.

**Take-home Message:** The School will be expanding the use of CLCs in AY17/18 by introducing 10 CLCs in Phase I and 8 CLCs in Phase II. There are plans to introduce them into clinical phases too and making it the signature pedagogy of NUS Medicine.
#4GG09 (2965)
Innovative implementation of a curriculum reform - The Effect of Student feedback, Self-Evaluation and Systematic Evaluation Meetings for Developing Study Modules

Jussi Merenmies, University of Helsinki, Faculty of Medicine, Teacher’s Academy, Helsinki, Finland
Leila Niemi-Murola
Eeva Pyörälä

Background: One of the challenging tasks in medical curriculum reform is ensuring the concrete implementation of aimed changes. Motivating the disciplines to perform the required changes in course content and teaching, learning and assessment methods requires special effort. A successful development of study modules usually involves iterative process including repeated evaluations.

Summary of Work: To foster development/change in study modules, we used the Educational cycle (Plan-Do-Study-Act) in the form of self-evaluation, repeated evaluation meetings and constructive critical student feedback. Before the evaluation meetings, we collected and analysed the web-based questionnaire data of the study modules and dealt it within the meetings.

Summary of Results: Most of the study modules were updated and new modules were developed. The learning outcomes, the content of the course, instructional methods and assessment were revised in most of the study modules. In addition, the learning outcomes of the medical curriculum were well covered in the course offer.

Discussion: The web-based questionnaire data, a new evaluation method, gave valuable basis to the discussions at the evaluation meetings. In addition, the evaluation process helped the modules to find the crucial points requiring attention and improvement. Commitment of the disciplines to revise the study modules was increased after the meetings.

Conclusion: The goals set for the Helsinki 2020 Curriculum included updating core content analysis and the learning outcomes, renovating instructional methods and assessment. In spite of substantial efforts and commitment this remains a challenge. The deliberate educational cycle provided a tool for monitoring the changes and continuously developing the study modules.

Take-home Message: We have strived to find and deal with the essential problems needing improvement. In addition to student feedback, self-evaluation and critical discussions new perspectives are needed. The critical elements and processes of the curriculum reform can be traced and collaboratively developed by the well planned and repeated Educational cycle process.

#4GG10 (2679)
Incorporation of the Spiral Curriculum Model in Chiropractic Education

Vincent DeBono, Logan University, Chesterfield, USA

Background: The use of a spiral curriculum model in the training of healthcare care practitioners is to introduce key patient care concepts to novice students then cover these concepts repeatedly and with increasing levels of complexity as the students be foundational science and clinical knowledge expands.

Summary of Work: Logan University underwent a complete curriculum revision in 2014 incorporating a spiral curriculum model for the first time in a U.S. chiropractic program. The curriculum frame work was modeled off of the published work from the Center for Medical Education at the University of Dundee.

Summary of Results: The first cohort began the spiral curriculum in September 2014 and sat for their first part of the the National Board of Chiropractic Examiners Part 1 exam in the Spring of 2015. This cohort demonstrated a significant increase in standardized board performance as did subsequent cohorts that followed.

Discussion: There are unique challenges to incorporating a spiral curriculum model in a chiropractic education program since the clinical training programs largely take place in outpatient settings that may limit the complexity of the presenting cases. The presentation of complex cases can be accomplished through the use of standardized patients, simulations.

Conclusion: The incorporation of a spiral curriculum model has been successfully incorporated in a U.S. chiropractic education program as evidenced by increasing board score rates, increase in student performance on clinical exams and floor evaluations and increase in student satisfaction.

Take-home Message: While the incorporation of a spiral curriculum model may present challenges in chiropractic education programs however they can be successfully implemented with positive outcomes on student education and ultimately patient care and services.
Reforming a recently reformed medical curriculum in a top-down process: a case study from the Charité Berlin
Asja Maaz, Charité Universitätsmedizin Berlin, Dieter Scheffner Center, Berlin, Germany
Tanja Hitzblech
Peter Arends
Harm Peters

Background: At Charité-Universitätsmedizin Berlin a recent major curricular reform took 5 years and was a bottom-up stepwise process involving the whole faculty. While the reform was still ongoing, another reform was required due to a change in the legal conditions, organizational problems, and in feasibility regarding to the resources available.

Summary of Work: Faculty stakeholders demanded a compact transition procedure to achieve planning reliability regarding staff resources and their teaching obligations. Therefore, the study board decided to use a systematic time-saving top-down approach. Curricular experts developed a blueprint for the whole curricular adaptation considering teaching content needed and a fair staff allocation.

Summary of Results: Based on this whole curriculum blueprint, the study board together with key faculty members discussed the transition of the curriculum in a one-day retreat. The affected departments were notified and given the opportunity to raise objections. After clearing these objections, content and structure of the curriculum were finally redesigned.

Discussion: Curriculum development as a bottom-up process is time-consuming and involves many faculty members. A top-down process can be appropriate to allow instant security in long-term resource allocation for the faculty.

Conclusion: Reforming a curriculum in a top-down process seems to be an adequate change management intervention, if the faculty body is exhausted of long-term participatory curricular reform.

Take-home Message: If changing a curriculum be aware that a reform of the ongoing reform might become necessary.

A new medical undergraduate program. What have we learned?
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Background: The 7th medical school in Sweden started in January 2011 at Örebro University. This was made possible through a partnership between the university and the county. The successful application was the result of several years of planning and cooperation with the medical schools at Maastricht University and University of Glasgow.

Summary of Work: The PBL structure of the program is built to support a high degree of integration between theoretical and clinical education, between basic science and clinical medicine, and between traditional subjects and disciplines. The students will early meet patients and focus on practice skills and knowledge, general for the medical profession.

Summary of Results: The program is designed for 60 students each semester, i.e., admission of 120 students per year. The total study period is 5.5 years. The first students graduated from medical school in June 2016 (43 students) and a second round in January 2017 (42 students).

Discussion: Our experience is that it is not enough to have received government approval to start a medical program as well as financial resources and a dedicated faculty. The success factor in our program was also due to a long planning phase and to the cooperation with two very experienced universities.

Conclusion: The success of this new medical undergraduate program was the opportunity to start the program without having to coordinate it with an already existing program and the hard work from Örebro University and Örebro County together with the heavily support and knowledge of Maastricht University and the University of Glasgow.

Take-home Message: To start a new medical undergraduate program it is essential to have both adequate resources and cooperation with experienced universities such as Maastricht University and University of Glasgow.
Curriculum mapping using the MERLIN database – a powerful tool for analysis and comparison of the “taught” and “learned” curriculum

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Background: In Germany, the National Competency-Based Catalogue of Learning Objectives for Medical Education (NKLM) was adopted in 2015, providing a framework for reviewing and redesigning undergraduate medical curricula. Curricular mapping is the method of choice to record and analyse the status quo of the competency oriented curriculum from different perspectives.

Summary of Work: In Tuebingen, 85% of curricular courses were mapped concerning the “scholar” role and “scientific skills” by 65 medical teachers and 18 students (3–10. semester, 3 rater/course, inter-rater agreement: 81%). Courses were mapped online on the Merlin-Database by defined mapping-categories: competency-level, transparency (explicit, implicit), objectives coverage and assessment.

Summary of Results: Comparing students and lecturers, results differed. Lecturers mapped contents 2 to 3 times more explicit than students. Students perceived several implicit competencies, teachers were not aware of. Comparing “taught” and “learned” contents provide valuable data for a critical reflection of the curriculum.

Discussion: Data visualization and analysis enables lecturers to identify taught contents not adopted by students. Furthermore, taught implicit competencies bear great potential; lecturers can be motivated to teach them explicitly. Faculty, teachers and students profit from transparency. Data on differentiated perspectives facilitate constructive discussions about taught objectives to improve medical education.

Conclusion: Presented data show the potential of curriculum mapping from different perspectives. Goal oriented curriculum development is facilitated. Visualization of mapping data supports curricular transparency, revealing gaps and redundancies. As an effective door-opener, the visualization of mapping data encourages lecturers and departments to participate in future longitudinal development of competencies.

Take-home Message: The MERLIN-mapping database is a powerful tool for goal oriented curriculum development. Mapping data allows detailed analysis on course level: which contents are taught and which are really perceived by students.

Mental-health patient perspectives' on how to better teach and evaluate diversity education in healthcare institutions: “Knowing one’s ‘self’ is the key to knowing others”

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Background: Despite the frequent inclusion of the term ‘diversity’ in educational policy and healthcare, ambiguity remains in its usage and implementation in education and training. This study aimed to gather the perspectives of mental-health patients around how to better teach and evaluate diversity training.

Summary of Work: A participatory research approach was adopted, three participatory workshops were conducted in collaboration with five mental-health patient organisations. A total of 42 mental-health patients were involved, which enabled a focused set of findings for a specific patient group to be attained. Template analysis was used to analyse the data.

Summary of Results: The findings revealed that diversity education should be focused on the nuances and dynamics of clinical relationships, where the influence of both the patient and the professional are acknowledged and explored. In particular the relationship considered the most important to examine with respect to diversity education was the ‘practitioner-self’ relationship.

Discussion: Consistency in what was expected of professionals who are competent to provide care for diverse patient needs was achieved. Participants reported that cultural differences were significant variables in impeding the development of a good therapeutic relationship, participants’ principal expectation was that professionals should have a better understanding of themselves.

Conclusion: The findings provided clarity around how diversity education can be better theoretically informed and evaluated. Framing diversity teaching around ‘relationships’ with the ‘practitioner-self’ relationship at the centre holds promise for a theoretical model that could integrate diversity education throughout the healthcare curriculum.

Take-home Message: The starting point to understanding and recognising the complexity of what diversity brings to clinical settings resides with first understanding one-self. Unlike traditional theoretical diversity models, which prescribe the necessity to develop cultural knowledge, these findings suggest an emphasis on developing meaningful clinical relationships where differences are acknowledged and valued.
#4GG15 (1464)

Cultural Awareness of Paediatric Residents in a Diverse Asian Population – An Exploration of Experiences

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Fred Stevens, Maastricht University, Maastricht, Netherlands

Background: Provision of culturally sensitive healthcare improves patient-clinician relationships and health outcomes. Despite multicultural hospital environments in Asian countries, cultural awareness is not adequately emphasized in postgraduate medical training. This study explores paediatric residents’ awareness of cultural differences, impact of cultural differences on interpersonal interactions, and learning experiences through these interactions.

Summary of Work: This study was conducted in a tertiary academic paediatric hospital in Southeast Asia with a diverse ethnic and sociocultural composition of patients and healthcare professionals. A qualitative phenomenological approach through use of semi-structured individual interviews and purposeful sampling of residents, faculty, nurses and caregivers from various sociocultural backgrounds was used.

Summary of Results: From a multifaceted perspective, paediatric residents acknowledge cultural diversity within the healthcare environment. However, patients’ linguistic and social needs can be overlooked. Cultural differences impact physician-patient relationships through resident perceptions of “difficult parents”, while cultural insensitivity can negatively impact inter-professional relationships. Healthcare staff learn cultural differences predominantly through personal experiences.

Discussion: Although paediatric residents have developed an awareness of cultural diversity, and even cultural and ethnic bias through personal experiences, there are still learning gaps in: provision of culturally effective communication, recognizing personal bias including perceptions of “difficult parents”, reducing cultural insensitivity among colleagues and understanding the parental perspective.

Conclusion: Possible educational interventions for paediatric residents in a multicultural Asian context to address learning gaps in cultural competency could include: effective role modelling by senior staff, facilitation of patient complaints and negative work experiences by faculty, increased inter-professional interactions, as well as formalized sharing sessions by patients on personal experiences.

Take-home Message: 1. Cultural awareness among paediatric residents can be increased especially in meeting patients’ linguistic and social needs. 2. Cultural differences can impact physician-patient and inter-professional relationships, notably for minority ethnic groups. 3. Facilitated experiential learning is preferred over a formal cultural competency curriculum in this context.
#4HH Posters: Student Characteristics and Learning Styles

Location: Hall 6

#4HH01 (1626)
Differences in learning strategies and study skills between high and low achievers among undergraduate pre-clinical medical students at a medical college: A qualitative research

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Background: Understanding the factors that differentiate high- from low-achieving medical students can provide invaluable opportunities to help low academic achievers. The aim was to identify whether differences exist in the learning strategies and study skills of high- and low-achieving undergraduate pre-clinical phase students and to suggest the necessary educational interventions.

Summary of Work: This qualitative study was carried out through semi-structured interviews with an interview schedule. These interviews were conducted with nine volunteer pre-clinical medical students. The sample was chosen purposively according to the students’ cumulative grade point averages. Verbatim transcripts were analysed using thematic analysis to produce codes and themes.

Summary of Results: The findings revealed both differences and similarities between high and low-achievers. High achievers performed better in the use of deep learning strategies, proper application of various study skills, intrinsic motivation, positive attitude towards their studies, effective use of time management skills, persistence and exertion of effort than low achievers did.

Discussion: The themes that emerged as factors affecting and contributing to students’ achievement were students’ attitude towards their studies, study habits, use of study resources and study environment. These themes resonate well with the studies that discussed this issue, but some differences emerged because of the interaction of entangled factors.

Conclusion: Supporting students in learning and practising deep learning approaches, as well as encouraging them to apply and properly utilise study skills, would boost their academic performance.

Take-home Message: An educational intervention at the educational institution level must be developed to address the weaknesses and further reinforce the strengths of both high- and low-achieving medical students.

#4HH02 (1333)
A longitudinal study of Undergraduate Medical Students’ non-cognitive skills in Italy. First Results: the characteristics of the students selected

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Maria Grazia Strepparava, Milano-Bicocca University, Department of Health Sciences, Milan, Italy

Background: Universities worldwide use entry tests to assess both the cognitive and non-cognitive skills of undergraduate medical-school (UMS) applicants. In Italy, current UMS assessment procedures test applicants’ cognitive skills only. The Italian Conference of UMS Directors promoted research to validate written tests capable of identifying non-cognitive success predictors for medical students.

Summary of Work: The research was longitudinal and involved eight Universities equally distributed throughout Italy. It measured: personality and self-efficacy; psychological well-being; motivational and vocational factors; socio-demographic variables. The questionnaires contained Self-Efficacy Scales, a short version of the BFQ, IRI, SCL-90-R and Positivity Scales. 980 students were enrolled in the first year.

Summary of Results: Preliminary results obtained from the analysis of the questionnaire show that students expect a socially useful profession which provides help to patients. They do not expect low remuneration or a health-endangering job. Students are motivated mainly by a desire to care for others. Various opportunistic aspects are far less relevant.

Discussion: Students show high capacity of self-regulation, a high level of empathy (propensity to engagement with others in their difficult moments and tendency to spontaneously take the perspective of others), while they are able to maintain a goal directed behaviour even in the presence of suffering others.

Conclusion: Students are basically satisfied, showing a confident and positive attitude towards life and substantial psychological health. However, it is possible to identify a small sub-group of students revealing signs of psychological fragility who need to be carefully monitored: their profiles will be analysed during their study-in-progress.

Take-home Message: Psychometric validated scales permit one to predict medical students’ attitudes and study their psychological profiles throughout their academic careers. Tracking changes in interpersonal and intrapersonal competencies helps identify vulnerabilities and strengths crucial for professional development. The results allow to individuate non-cognitive variables to be included in national UMS tests.
The Impact of Gender Stereotypes on the Workflow at the Emergency Department in an Asian Context

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Background: Gender stereotypical attitudes in Asian societies pose unique challenges for medical practice, especially in emergency medicine (EM) where attitudes can impede workflow processes. Furthermore, emergency departments (EDs) often comprise fewer females than males in Asia. Understanding gender issues and culturally sensitive solutions is fundamental for gender-sensitive care.

Summary of Work: We conducted a qualitative study with 410 postgraduate year-one residents’ narrative writings of gender issues observed during their one-month ED rotation training in Taiwan. Narrative theory underpinned the thematic analysis that identified four themes within this cultural context: patriarchy, gender role stereotypes (GRS), sexual harassment (SH) and domestic violence (DV).

Summary of Results: Women were overrepresented among DV/GRS narratives which contained many gender-role expectations, including towards female residents. Some victims were reluctant to report DV for fear/pressure from family. Gender imbalance in decision-making (patriarchy) stood out. Residents feared being considered as SH during EM practice. Teachers’ feedback did not facilitate residents’ gender-issues insight.

Discussion: Understanding gender issues can strengthen residents’ ability to include patients and family in decision-making or reporting abuse. Increasing proportion of females in EM is challenging for patients who consider them as nurses, refusing to accept their medical assessment. Adjustments to ED environment/workflow might reduce residents’ worry around SH misunderstanding.

Conclusion: The majority of residents cited enhancing communication as a means to overcome resistance from culturally-specific gender stereotypical issues. Emergency faculty can provide feedback to aid gender-issues teaching in EM. We believe that narrative writing enabled residents to exhibit gender consciousness from medical, legal, psychosocial and cultural perspectives.

Take-home Message: Understanding culturally-sensitive gender issues and developing EM guidance can aid physicians in developing strategies to facilitate care delivery in EM and reduce the barriers caused by gender stereotypical thinking. Further research might focus on evaluating educational interventions for achieving cultural and gender-sensitive care in EM clinical setting.

The feasibility of an innovative ‘Emotional Competence Curriculum’ for medical students

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Background: Emotional Competence (EC) was believed to enhance the ability to adapt to social life, which could be learned and trained through training based on emotional intelligence. Medical students will face many unexpected, emotive and formative situations when they enter the clinical practice. There is no curriculum for enhancing EC currently.

Summary of Work: We set up a new ‘Emotional Competence Curriculum’ for medical students in 2016 included six one-hour sessions led by a psychologist to guide them to develop their emotional skills and by an experienced clinician to help them coping with clinical frustrations by sharing students’ narrative diaries and tested its feasibility.

Summary of Results: We used qualitative analysis, 3 kinds of questionnaires (Emotional Intelligence Scale, Medical Students EC scale, Simple Personality Scale) and participant observation to exploring the data from 8 participants. We found that the clinician effectively stimulated them to think how to manage emotions and stress.

Discussion: Participants highly appreciated for improving their clinical performances, enhancing their self-confidence, lowering anxieties, managing their emotions during medical practice and facilitating to build better social relationships with both colleagues and teachers. Medical students’ health states were also obviously improved physically and psychologically through the curriculum.

Conclusion: We successfully set up a new ‘Emotional Competence Curriculum’ for medical students and its feasibility was revealed by the benefits from participants
and the format of this curriculum will be minor revised. The curriculum can be formally implemented and evaluated for enhancing EC of medical students.

**Take-home Message:** The feasibility of a new 'Emotional Competence Curriculum' for medical students included psychological activities for developing their emotional skills and sharing their narrative diaries for coping clinical emotional events has been tested. The curriculum can be formally implemented and evaluated for enhancing EC of medical students after minor revisions.

**#4HH05 (2969)**

**Thriving in medical school: is it really in the genes?**

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Amany Elshaer, Alfaisal University, Riyadh, Saudi Arabia
Mayar Helaly, Alfaisal University, Riyadh, Saudi Arabia
Dalia Sriwi, Alfaisal University, Riyadh, Saudi Arabia
Akef Obeidat, Alfaisal University, Riyadh, Saudi Arabia

**Background:** Excelling in medical school is attributed to numerous factors which have been thoroughly investigated in the literature. However, there is little data on socioeconomic conditions of students and whether these will affect academic performance. We aim to see if there is a correlation between doctor parents and the student's cGPA.

**Summary of Work:** 160 medical students from Year 1 to Year 5 at Alfaisal University filled out an online questionnaire. Students were asked whether any of their parents were medical doctors. Other factors including age, gender, pre-university GPA and additional socioeconomic variables, including type of high school attended and first language, were assessed.

**Summary of Results:** Results showed that 14% of students had both parents working as medical doctors, with an average cGPA of 3.64. 31% of students had one parent as a medical doctor with an average cGPA of 3.49. The other 55% did not have medical doctor parents, with an average cGPA of 3.42.

**Discussion:** cGPAs of students with both parents as medical doctors were significantly higher compared to those who did not have any parents in the medical field. Doctors tend to exert a supportive influence on their children due to their past experiences. Students would also look up to them as mentors.

**Conclusion:** Having one or both parents as medical doctors is associated with better academic performance in medical school, irrespective of age or gender. Nonetheless, other variables such as the level of high school students attended and the students' first language have an impact on the overall capabilities of those students.

**Take-home Message:** Although a correlation has been discovered, this topic needs to be explored further by looking into other socioeconomic factors including ethnicity, median household income, and urban background. These results could provide valuable practical implications for student selection and academic support during medical school.

**#4HH06 (2930)**

**Studying High School basic sciences in English: does it translate into medical school excellence?**

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Amany Elshaer, Alfaisal University, Riyadh, Saudi Arabia
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Dalia Sriwi, Alfaisal University, Riyadh, Saudi Arabia
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**Background:** In the Middle East, transitioning from high-school to studying medicine has been arduous for students who studied basic sciences in languages other than English. With that in mind, we ask Alfaisal University students about their English language endeavors for high-school basic sciences and how it affected their medical academic performance.

**Summary of Work:** An online questionnaire yielded 160 responses from medical students of all years. Students were asked to disclose their cumulative GPA, mode of admission and IELTS/TOEFL scores, reveal the language by which basic sciences were taught in their high schools, and match the governmental sector to which their schools belonged to.

**Summary of Results:** 46.6% of respondents studied high school basic sciences in English, compared to 53.1% in Arabic. Those who studied in English had a significantly higher average cGPA (3.57) compared to those who did not (3.38). Several other lingual correlations were explored to assess impact of exposure to English on academic performance.

**Discussion:** Studying basic sciences in English language during high school must have made it easier for students to comprehend complex medical terminologies. It would have also facilitated communication between medical staff and students with regards to teaching, academic feedback, active learning sessions, oral examinations, and more importantly, clinical practice.

**Conclusion:** Medical students who were enrolled in English-based teaching systems early on during high school years performed markedly well from an academic point of view, compared to their peers deprived of such a "head start". The privilege of studying in an English-based system reaped massive benefit on the academic long run.

**Take-home Message:** Arab universities need to devise a strategy to accelerate the settling-in process of medical students who have had less exposure to English language during high school. It would help ensure physicians develop a better grasp of what is needed to communicate and perform efficiently in the medical world.
The NEO-FFI in health students: Characterization in relation to gender and the course

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Background: Personality is a construct studied in Psychology that allows perceiving the individual differences of the subjects, in other words, their true essence. There are several theories that focus and present different aspects and axioms. Five Factor Models has been described as being a flexible, comprehensive, universal and culturally replicable model.

Summary of Work: The aim of this study was to characterize the personality of a 1st year students in a Portuguese Faculty of Health Sciences. NEO-FFI questionnaire was applied and is based on Five Factor Theory. Allows the analysis of personality on a more global level based on five basic and universal dimensions.

Summary of Results: Personality survey was administered to 241 students. The 3 courses were homogenous of the evaluated personality dimensions with one exception: neuroticism dimension. The Scheffer Test showed that this difference occurs between scores obtained in the Medicine and Pharmaceutical Sciences courses. Gender revealed significant difference with the dimensions neuroticism, agreeableness, conscientiousness.

Discussion: Results to gender revealed that women are given more emotional characteristics, social expectation. Medical students had lower score on the neuroticism dimension. Can be a good predictor of academic and professional success. Medical profession require personal attributes for managing psychosocial aspects (calm in crisis, reassure patients, act quickly, consciously, effectively.

Conclusion: This study reinforces the confirmation of the universality of the NEO-FFI scale in the comprehension of the personality at its most global level. The results obtained contribute to the consolidation of those verified in other studies. It is considered relevant that future projects should include students from other scientific areas.

Take-home Message: The study of personality is extremely relevant and can be very useful in the teaching-learning process. The individual characteristics of the subjects influence the methods of study, the learning styles and consequently the whole process of acquisition of knowledge.

Is medical student personality stable across the study of medicine? An exploratory longitudinal study at Minho Medical School

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Background: Research on medical students assumes that personality traits are stable throughout medical school. However, the wider literature suggests that the personality of young adults is not completely defined. This study in one medical school in Portugal assessed whether personality traits of high school entrants were maintained in their senior years.

Summary of Work: Two student cohorts answered the NEO-FFI questionnaire at entrance and, respectively in year 5 (n= 85; 67.1% females) and year 6 (n=84; 70.2% females). Scores in the 5 dimensions were compared with mixed-design ANOVA considering two within subject factors (time and personality) and gender as a between subject factor.

Summary of Results: Conscientiousness significantly declined in both cohorts: Year5:: M1= 35.2; SD1= 5.2 ; M5= 29.8; SD5= 4.7; p< 0.001; Year6:: M1= 34.8; SD1= 5.5; M6= 31.0; SD6= 4.7; p<0.001. Additionally in 5th grade a decline on Extraversion was also observed: M1= 32.0; SD1= 4.9 ; M5= 29.8; SD5= 6.1; p= 0.013.

Discussion: The findings of this exploratory longitudinal study are coherent with the concept that personality of young medical students may vary during medical studies. The primary change was a decrease in conscientiousness. Further studies are needed to clarify underlying causes. There were no gender specificities in changes in personality dimensions.

Conclusion: The personality of medical students is not as immutable as often assumed. It is important to clarify whether changes in personality are also evident in other student populations, and to understand how processes of change are influenced by environmental, social effects and/or issues related to well-being and burnout.

Take-home Message: The stability of personality traits of medical students during their studies cannot be taken for granted.
Evolution of medical students' learning approaches during their preclinical and clinical trainings: a cohort study

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Background: Learning approaches are central to students' learning outcomes. Existential evidence suggests that students adopt deep (DA) or surface (SA) approaches depending inter alia on the educational context. We aimed to investigate the evolution of students' learning approaches throughout undergraduate medical studies, based on their individual baseline scores.

Summary of Work: DA of 90 students was measured using the R-SPQ-2F at 4 occasions from their 1st to their 5th study year (DA1, DA2, DA3, DA5). Evolution of DA was investigated using mixed ANOVA and the effect of baseline DA1 on DA evolution at subsequent years was assessed using mixed ANCOVA.

Summary of Results: Overall, students' use of DA was stable during the preclinical years, but decreased during the clinical training (ANOVA p<10^-3). DA5 was lower than DA3 of 3.1 points (ANCOVA p<10^-3) regardless of DA1 (DA range: 10-50). Baseline DA1 increased DA for all subsequent study years by a factor of 0.6 (p<10^-3).

Discussion: Findings from this cohort suggest that the clinical educational context influences students' learning approaches, independently of their baseline level. This is paradoxical with regard to the deep approaches needed to clinical reasoning. We hypothesize that this could be due to the perception by students of their educational environment.

Conclusion: In this study, while students' baseline level of DA positively influenced their subsequent use of DA, the clinical educational context led students to use less DA regardless of this baseline level.

Take-home Message: Assessing students' learning approaches throughout medical studies might be a useful indicator on whether and how the educational context influences learning.

Matching Baby Boomers with Millennials in a Physiology Course

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Background: At our university, students attending the physiology course belong to Generation Y also known as millennials, who has unique characteristics that affect their learning in positive and negative ways. In the other side, professors are baby boomers with their own characteristics, to ensure success professors must understand millennials learning needs.

Summary of Work: Keeping clinical reasoning as the course corner stone, we design strategies taking into account millennial characteristics: technology savvy, like immediate feedback and solve challenging problems through collaborative learning and hands-on activities. The goal was to encourage students to solve increasing challenges using technology and team-work while professor provides immediate feedback.

Summary of Results: Students were surprised they were allowed to use mobile devices in class, soon they feel comfortable with the learning strategies. If anyone knew the answer, they were encourage to look for in internet and share the results. Team-work and group discussions using technology was accepted and they welcome immediately feedback.

Discussion: Characteristics that define personality and the way to face learning are different in millennials and baby boomers. Faculty may not like the way millennials behave and think, but this is the way they are. It is important that professors realize this and design strategies to communicate and work with them.

Conclusion: At the present time, students and professors from generations separated for more than 30 years, must interact in the classroom. They behave and think different, so that professors challenges are directed to create learning strategies according to their students characteristics.

Take-home Message: Flexibility and adaptability are required to successfully work with millennials.
#4HH11 (442)
Learning-style Preferences, Academic Performance and Active Learning of Phramongkutklao College of Medicine, Thailand, 2016

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Background: Understanding of learning styles can enhance teaching and learning effectiveness by identifying students’ preferences for comprehending and utilizing information presented in classes. No study examining the learning styles of medical cadets has been conducted. Assessment of the learning styles can help educators recognize and respond to diverse learning styles.

Summary of Work: A cross-sectional study was performed at 2016. Demographic data, learning styles and academic performance PBL were obtained using electronic standardized questionnaire. We used the Franklynn Chernin of learning styles, which has four dimensions (Visual, Visual reading, Auditory, and Kinesthetic) comprising to discrete-choice questions. Data were analyzed using STATA version 13.

Summary of Results: 472 students were enrolled. Of those 73.3% of them never fail any class and 76.3% preferred active learning. Their self-assessment learning styles were kinesthetic (45.1%), visual (30.9%), visual reading (16.1%) and auditory (7.9%). Learning styles was associated with preference of active learning; visual reading (OR=1.55); visual (OR=2.51) and kinesthetic (OR=3.61).

Discussion: Knowledge of learning styles of students at educational institutes, is valuable and helps solve learning problems among students, and allows students to become better learners. Moreover, it can help provide learning situations tailored to the student’s individual preference, overcome the predisposition to treat all students in a similar way.

Conclusion: Appreciation of different learning styles as well as increase understanding of their own preferences in this regard may help students relate to their supervisors’ learning and coaching styles, enabling better adaptation and more expeditious resolution of differences in the service of getting the most out of medical college.

Take-home Message: Adapting students’ participation in medical school to their learning style, experience and fostering their reflection may improve how students learn in medicine. Educational planners should know students different learning styles in order to design approaches that promote lifelong learning skills as well as disciplinary knowledge.

#4HH12 (2923)
Learning style in clinical year medical students of Bhumibol Adulyadej Hospital

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Background: Human’s mind has a diverse platform that makes people developing their individual best learning technique to approach and understand things. Preparing teaching methods corresponding with students’ learning style help understanding and applying medical knowledge in clinical year.

Summary of Work: The Self-report study using VARK questionnaire was conducted on all clinical year medical students of BAH in 2016 academic year to interpret and to categorize their learning styles into 4 groups: visual, aural, reading and writing, and kinesthetic. The data was described by using percentage.

Summary of Results: Data from the questionnaire was collected from 61 medical students. 46 (75.4%) students reported their best learning style as kinesthetic, 39(63.9%) as visual, 36(59%3) as reading and writing, and 34(55.7%) as audio. The multimodal learning style was noted in 35(57.4%) students despite unimodal learning style in 26(42.6%) students.

Discussion: The majority of students tended to use multimodal learning style. Focusing on individual preference, the kinesthetic style was predominantly adopted by students; suggesting that the students generally focused on practicing. This means that they could use their background experiences, senses of perception, and practical exercises to cooperate with learning processes.

Conclusion: Most of the students in clinical years are multimodal learners. They tend to learn by using the kinesthetic style which might be different from those in preclinical years. Medical teachers should arrange the course to further enhance students’ learning experience focusing on practicing.

Take-home Message: Taking multimodal learning style into improve the curriculum could enhance learning outcome. However, we need to consider the limitation such as the learners’ potential, the difficulties of lessons, the insufficient resources, and the possibility of achievement.
Qualitative assessment of learning strategies among medical students using Focus Group Discussions and In Depth Interviews

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Background: Gaining admission to medical schools is an uphill task, getting harder with each passing year. Even best of students find it difficult to maintain high academic performances and may flounder after admission. This study attempts to find various Effective Learning Strategies used by medical students for enhancing academic performance.

Summary of Work: Students were categorised into High, Average and Low rankers, based on their last academic performance. Semi structured questionnaire was administered, to find learning strategies. FGD & IDI in High & Low performers was conducted. Discussions were audio-recorded, transcribed, content analysis was done to find general themes and subthemes.

Summary of Results: Evident themes which emerged as effective strategies were regular hard work in studies, constructive utilization of time & learning styles, E-learning modalities, learning with patients and using specific exam oriented strategies. Guidance from seniors, family encouragement, a good mix of sports and studies were also identified as effective.

Discussion: Current study helped identify effective learning strategies used by students e.g. having proactive attitude towards studies, utilizing time effectively, having knowledge of learning style and learning approaches. Factors like language barrier, stress, non availability of rapid reviews and difficulty in marking glossy art papers were hindering in learning as reported.

Conclusion: Addressing the effective learning strategies like regular reading, identifying one’s learning styles, meticulous planning, time management, internal motivation, active adoption of strategic and deep learning approach, in a systematic manner can help students achieve better results in examinations. Thus encouraging use of effective learning strategies are essential for academic success.

Take-home Message: Proper planning of studies, understanding ones strengths and weakness, being regular to one’s schedule and utilizing time effectively are key to good performance in medical examinations. Early recognition and timely intervention in dealing with language barriers, and stress can go a long way in improving academic performance.
Student experience in postgraduate entry level health professional programs

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Background: Diversity of educational experience amongst health professional students is increasing as countries like Australia and the UK increasingly develop graduate entry programs (e.g. in the UK and Australia the proportion of graduate-entry medical programs is approximately 40% and 70% respectively). Addressing the needs of postgraduate students is therefore increasingly important.

Summary of Work: An Australian Government Department of Education and Training, National Strategic Priority Project, explored good practice in postgraduate education from perspectives of educators and students including health professional students. 319 students contributed through facilitated group discussions, interviews and focus groups exploring meanings of student experience and positive/negative aspects of their programs.

Summary of Results: Whilst overall satisfied, students identified the need for greater support of (1) transition to challenges of postgraduate study, expressed by one student as “...[like] a tennis player on court... there are 1000 balls being thrown at him and that is my postgraduate experience... ” and (2) networking contextualised for postgraduate employability.

Discussion: Amongst key themes identified by students, challenge, stress, and uncertainty would be reduced by university supports targeting the needs of postgraduate students. Such support strategies are complicated by postgraduate student diversity but would fast-track their becoming independent learners capable of the life-long learning required for successful health professional careers.

Conclusion: Whilst universities have improved the undergraduate student experience, students and educators identified that similar focus has not been applied to understanding and improving postgraduate student experience. Greater attention to understanding the needs of students in postgraduate programs would increase student satisfaction and achievement of program outcomes.

Take-home Message: Graduate entry programs should seek to understand their student cohorts from perspectives of educational background, prior learning, and career goals. Such understanding would facilitate development of support for student transition to the rigors of health professional programs and provide a framework for students to apply to their career journeys.

#4II02 (1676)

Academic performance of selected students from diverse educational backgrounds in a Graduate Entry Programme in Medicine

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Background: VUmc Zigma, our Graduate Entry Programme in Medicine, aims to select talented students who are motivated to become physician-scientists and stimulates students to attain optimal learning outcomes. We investigated whether our selection procedure yields a group of students with a diverse educational background and we studied their academic performance.

Summary of Work: Students were selected using a three-step selection procedure based on a cognitive test, screening of past performance and multiple mini interviews. Using data collected from 2012-2016, we analysed data related to the selection procedure, student learning outcomes and student evaluations of the programme.

Summary of Results: Students with a large variety in prior education (14 different Bachelor studies among 93 students) were selected. First year GPAs were significantly higher compared to their peers in the regular six-year programme (n=93; p<0.05). Students state (n=72; 92%) that working in learning communities is supportive for enhanced learning.

Discussion: In VUmc Zigma, selected students are eager to show high academic performance and work closely together in student learning communities. These communities seem to stimulate their learning and the enriched programme seems to nourish their existing interest in research. Personal coaching supplies feedback and insight in their competence and opportunities.

Conclusion: Our three-step selection procedure appears to result in the selection of talented students with diverse educational backgrounds, who perform at a high level in VUmc Zigma, a Graduate Entry Programme in Medicine. Student communities and close mentoring are greatly appreciated and might be helpful for their achievements.

Take-home Message: The selected graduate entry students show excellent academic performance throughout the four-year programme. Working in communities with peers with similar abilities is considered valuable by the students. They may benefit from the diversity in their educational training, knowledge and skills.
Looking at the selection of residents through a lens of diversity

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Background: The increased diversity in society is not yet represented by our medical workforce. Selection committees for residency are the proverbial gatekeepers of the medical specialties. Currently, little is known on decision-making by selection committees, which is required to optimize selection procedures with regard to diversity.

Summary of Work: Using a constructivist perspective, we explored how residency selection decision-making occurs in practice. We analyzed selection procedures for 2 specialties at a Dutch university hospital. Transcripts of observations of selection decision meetings and of one-on-one interviews with committee members before and after the meetings were analyzed using template analysis.[1]

Summary of Results: We specifically focused on aspects which could hinder or stimulate diversity. Dedicated to look for the best candidates, committee members look for nearly impossible combinations of good qualities. These impossible combinations lead to various areas of tension, such as ‘fitting in’ versus ‘diversity’ and ‘authenticity’ versus ‘playing the game’.

Discussion: Our results highlight unintentional, yet existent practices in current selection decision making processes, which negatively influence diversity. Underlying causes are probably deeply rooted and might therefore be hard to change. Awareness of these barriers is the first step.

Conclusion: Based on our study of residency training position selection in Netherlands, we argue that there are unintentional barriers for diversity in the current way of selecting residents.

Take-home Message: The highly valuable research on selection tools, should be extended with research on how these tools are actually used in decision-making in current practice. Our advice is to look for unintentional barriers for diversity in our current selection decision making practices.

The Widening Access to Medicine Society (WAMSoc): a student led widening participation initiative at the University of Southampton

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Background: Widening Participation aims to provide inspiration, support and opportunities for students to access higher education, regardless of their background. Classically, medicine has been perceived as a career for the more privileged. The 2014 ‘Selecting for Excellence’ report found that 80% of medical students in Britain originate from 20% of schools.

Summary of Work: All British medical schools are now required to provide an outreach scheme. The WAMSoc aims: a) Inspire students to consider medical school. b) Prepare applicants through practice interviews & e-mentoring. c) Help individuals seeking medical work experience.

Summary of Results: WAMSoc worked with ~1000 students between 2015-2016, through interview workshops and interactive/informative sessions. WAMSoc runs an e-mentoring programme, where prospective applicants receive support from current medical students over email. Currently, there are ~40 mentor-mentee pairs. Through forming contacts with doctors, WAMSoc is building a platform to help provide work experience.

Discussion: It is important that doctors reflect the population that they serve. Doctors from diverse socioeconomic backgrounds may be more equipped to meet the needs of a heterogeneous hospital population. Students who study at demographically diverse universities, gain experiences of other backgrounds and thus are able provide more culturally sensitive care.

Conclusion: Despite efforts from universities, inequality in opportunity remains. There needs to be a ‘bottom-up’, student-led effort to encourage recruitment from all social backgrounds. This has been successful on a small scale and can therefore treat and care for that population more effectively.

Take-home Message: Student led initiatives should be encouraged by the universities. These initiatives should also support each other in the set up and maintenance by sharing resources and strategies. Medical students should be at the forefront of Widening Participation as they are the ones who successfully completed the admissions process.
#4II05 (2049)
Influence of Public Inclusion Policies on Socio Demographic Profile of Medical Students from University of Campinas, Brazil

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Background: Since last decade, Brazilian public policies aimed to inclusion have provided greater access to university, a phenomenon also present in medical education at University of Campinas, Brazil. In this context, little is known about sociodemographic profile of these students and its influence on choice of medical career or future specialty.

Summary of Work: Year 1, 3 and 6 medical students at University of Campinas, Brazil were invited to take part in a questionnaire, which approached subjects such as demographic factors, career preferences and influencing factors. The questionnaire was designed by the authors based on current literature about career preference and choice.

Summary of Results: The overall response rate was 86.30% (n=290). Significant differences between Y1 compared to Y3 and Y6 (p<0.001) were found among ethnicity, greater public school provenience, lower maternal education and family income. Further significant difference alludes to inclination to medical practice at public health service among Y1 students (p=0.024).

Discussion: 2016 improvements on public policies aimed to social inclusion in UNICAMP have been effective in broadening access to medical education as reflected on profile changes presented by Y1 students in comparison to Y3 and Y6. Further studies are necessary to evaluate whether these changes influence the choices during medical career.

Conclusion: These changes in the socioeconomic and demographic profile of medical students may be continuous evaluated over time as a way for medical education community to better understand this process. This information can be an important tool to identify obstacles and orientation in relation to career counseling among students.

Take-home Message: Public policies aimed to social inclusion in UNICAMP have been effective on broadening access to medical education for different ethnicity, public school provenience, lower maternal education, family income. Continuous evaluation these students should help educators to understand the influence of these new profile on graduation, specialty choice and medical career.

#4II06 (2940)
Limits to widening participation outreach: both academic and non-academic factors limit the progression of students from deprived postcode areas

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Background: According to the Scottish Funding Council less than 5% of school leavers from deprived postcodes achieve the qualifications needed for entry to medicine. To ensure access to medical studies the University of Glasgow employs contextual admissions for Widening Participation students (MD40* postcode residents who complete the Reach outreach program).

Summary of Work: WP students performed less well in early years of the course when compared to ‘non-WP’. In addition, there was a difference in attainment level between those who did and didn’t receive the Reach intervention. Focus group interviews revealed WP students’ views on perceived barriers and useful interventions to help remove them.

Summary of Results: Key themes identified as barriers to attainment in the early years of study: (1) writing skills/critical thinking, (2) student finances, and (3) home support. Whilst the former two were correctly hypothesised areas of difficulties the outreach programme aimed to address, they formed only part of a wider set of problems.

Discussion: The results of this study, in addition to the previous 2016 quantitative study that demonstrated differences in overall academic attainment between the two groups provides evidence towards the need of an intervention to help ameliorate these difficulties. We have designed the program of intervention and will aim to evaluate it.

Conclusion: Our results indicate that the Reach pre-entry programme provides benefits at the application stage and should be extended to all WP students; however it is not sufficient, in itself, to help them succeed on the course.

Take-home Message: The Reach programme allows effective engagement with a diverse population of prospective students, however once on the course, these students feel that extra support is still required to help them reach their full academic potential. The intervention program will need to be evaluated.
#4II07 (1065)
Association of marks in entrance examination test with academic achievement at the end of medical course in a PBL hybrid curriculum

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Background: The impact of marks of entrance examination tests of pre-university students on the academic achievement at the end of medical course is debatable. The aim of this study was to evaluate the association of entrance examination marks, including those from assays, with academic achievement at the end of medical course.

Summary of Work: Marks obtained in the entrance examination test (including those in the essays), marks obtained in the OSCE, in the Progress Testing (TP), and the average marks obtained in clinical disciplines in the clerkship (from the 9th to the 12th stage) were studied by multiple linear regression analysis (p<0.05 considered significant).

Summary of Results: Data from 48 students were included. When the marks in entrance examination tests were associated with marks in the OSCE, the PT and the average marks obtained in clinical disciplines in the clerkship (from the 9th to the 12th stage) were studied by multiple linear regression analysis (p<0.05 considered significant).

Discussion: Our results suggest that marks in entrance examination tests are associated with academic performance in terms of cognition, abilities, and attitudes, as observed in the clerkship. This fact may be ascribed to the quality of the selection process itself, except for writing assays, and the quality of the selected students.

Conclusion: Marks in entrance examination tests, but not in written essays, is associated with academic achievement of students at the end of medical course.

Take-home Message: Marks in entrance examination test may predict outcome of medical students.

#4II08 (1826)
Admission procedure: Comparison of the distribution of marks obtained on open book tests and closed book tests

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Background: Students learning methods are influenced by the assessment method. The University of Angers (France) has implemented an experimental admission procedure including elective modules. One of these modules (Disability and health) was assessed by open book multiple choice tests (OBT) which are one of the methods described as assessing deep learning.

Summary of Work: Elective module OBT marks were compared to core program marks assessed by closed book tests (CBT). The skewness and kurtosis coefficients which describe how symmetrical and how flat the distributions are were compared. The correlation between OBT and CBT marks was assessed by the Bland and Altman graphic method;  

Summary of Results: The skewness coefficient of the OBT was 0.24 versus -0.12 for the CBT, and the kurtosis -0.76 versus -0.22. The grade point average was significantly higher for OBT (12.47/20 versus 11.47/20); The Bland and Altman method showed very good concordance between both methods.

Discussion: OBT marks have a distribution close to normal and similar to CBT and can be used for selective procedures. The marks are higher but correlated to those of CBT and this should be considered when setting cut-off thresholds.

Conclusion: The metric properties of OBT and CBT are similar. This makes it possible to use OBT for selective admission procedures and could help and avoid exclusive surface learning. This result has been obtained in the specific setting of French admission procedures but could be relevant to other settings.

Take-home Message: Open book multiple questions are a feasible method for large scale admission procedures and could avoid exclusive surface learning of medical school applicants.
#4II09 (1392)  
The Current Status and Issues regarding Student Selection for Medical Schools in Japan: A Multi-institution, Cross-sectional Study of Eighty Medical Schools  
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Background: The student admission process is an essential component for assessment in medical education. Medical schools have been seeking to improve their admission strategies to select the most competent and motivated students. Currently, there is no best method established for student selection due to significant originality and diversity among medical schools.

Summary of Work: To evaluate the student admission process, we have examined a selection of systems and procedures for all 80 medical schools in Japan, using a multi-institution, cross-sectional questionnaire study from 2015 to 2016. This consisted of three components; (1) selection process, (2) academic and non-academic performances, (3) quality of admitted students.

Summary of Results: The achievement tests, pre-university students' grades for cognitive abilities have been implemented in most schools, whereas interviews, essays, and recommendation letters for non-cognitive abilities were applied in combination. The deficit in knowledge in biology, basic academic skills, motivation and communication skills of students were extracted as problems to be considered.

Discussion: In Japan, academic abilities are often considered as more important for physicians than non-academic performance criteria. The diversity of systems and procedures, as well as the multiple assessment methods for student selection have recently grown and developed, with the ideology that students should develop competencies of professionalism and humanism.

Conclusion: Multi-faced selection processes may contribute to the development of a more humanistic focus in medicine and emphasize the importance of professional behavior among potential medical students. The processes should be evaluated regularly and systematically for the improvement of student selection.

Take-home Message: Reforming student selection is crucial for the continuous improvement of medical education. The selection processes, which can identify the best students with the most appropriate competencies, should be implemented whenever possible. Further follow-up studies are required to establish the effectiveness and appropriateness of selection systems.

#4II10 (2839)  
Explaining the concept of motivation from the perspective of medical students: a qualitative study  
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Background: Motivation is a complicated part of human psychology; it affect how people choose to spent their time, how they think about tasks and responsibilities, and how much time they spend for duties. The aim of this study was to describe and reveal the motivation from the perspective of medical students.

Summary of Work: This study used Conventional Qualitative Content Analysis (CQCA) on 15 samples between medical students of Guilan University of Medical Sciences, applying Purposeful sampling method. Data collection was based on semi-structured interviews method.

Summary of Results: By content analysis, 618 initial codes were extracted while these codes were revised until the final phase so that decreased to 256 codes. In this study two main themes (human and supporting factors) and 6 sub-themes with 32 categories were extracted.

Discussion: In this study, participants described motivation as excitement, driving force, progress, and a new leap. Participants' opinions are in line with the definition that psychology experts have suggested for motivation. All factors that force to work living creatures, including human, and push them in a certain direction, psychologist call motivation.

Conclusion: It was concluded that motivational factors have great impact on learning and academic achievement; and since medical students' academic achievement is related to public health, it is recommended that authorities and planners of medical education pay more attention to motivational component.

Take-home Message: It is recommended in addition to the scientific selection, some of the necessary capabilities and motivation factors to studying in medical field in candidates evaluated. Care must be taken in the selection of teachers, because teaching methods, professional knowledge and personality of teachers have great impact on students’ motivation.
#4I11 (2490)
Use of Context Scoring in the Medical School Admission Process as an evolving and flexible Tool to Address the Social Accountability Mandate of the Northern Ontario School of Medicine (NOSM)

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Background: Research has shown medical school graduates who have grown up in rural areas are more likely to practice in a rural setting. The Northern Ontario School of Medicine was established in 2001 with a social accountability mandate to contribute to the health of the people and communities of Northern Ontario.

Summary of Work: To develop through the admissions process a mechanism to promote selection of a student body reflective of the needs, demographics and communities of Northern Ontario. We have developed a context scoring guideline to assess and rank applicants based on geographic, Indigenous and Francophone backgrounds.

Summary of Results: From 2006 through 2013, 92% of students matriculating at NOSM were from Northern Ontario and 8% were from rural and remote areas from the rest of Canada. In addition, 7% of students were Indigenous and 22% were Francophone.

Discussion: Analyses of admissions data has allowed us to adjust our context scoring algorithm to optimize the likelihood of our offers of admission being accepted by applicants from our target demographics. This tool is used in conjunction with each applicant’s GPA and autobiographical sketch to rank applicants prior to interview selection.

Conclusion: Use of context scoring incorporating length of time applicants have spent in rural and remote areas along with Indigenous and Francophone backgrounds is an effective and flexible tool to address the social accountability mandate through the admissions process.

Take-home Message: Context scoring has helped guide selection of an academically strong medical school class that better reflects the population distribution of Northern Ontario.

#4I12 (82)
Cognitive and non-cognitive selection criteria in predicting performance in preclinical medical education

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Background: To predict which applicants will be successful in medical school remains challenging (Cleland et al 2012). This study aimed to compare performance outcomes for students either admitted via a two-step selection process (first step non-cognitive, second step cognitive tests) or by weighted lottery based on pre-university GPA.

Summary of Work: Performance of selected (S, n=416) and lottery-admitted students of four bachelor cohorts were compared using logistic regression analysis. Four groups of lottery-admitted students were distinguished: selection step 1 rejected (L1, n=169), selection step 2 rejected (L2, n=57), withdrawn from selection (L0, n=42) and non-participants in selection (Lx, n=366).

Summary of Results: Selected students had significantly higher bachelor graduation rates after three years than L2, L0 and Lx students. Selected students were significantly more likely than L0 students to obtain 60 ECTS within one year and were less likely to have dropped out after six years (unenrolled without diploma) than L0 students.

Discussion: Step 2 success was associated with higher chances of graduation within 3 years, possibly because the bachelor curriculum is mostly geared toward cognitive tests. Withdrawing from selection was associated with more dropout and study delay, which may be due to self-selection or study choice doubts.

Conclusion: Students selected after step 2 outperform step 2 rejected students and lottery-only students. As step 1 rejected students do not perform significantly different from selected students in the bachelor, further research is planned to assess if cognitive and the non-cognitive steps predict clinical performance in the master of medicine.

Take-home Message: A cognitive step appears to be a useful instrument to select students who are likely to perform well in the bachelor of medicine. Students who apply for selection, but withdraw without participation, seem to be less successful in the preclinical years of the medical curriculum.
#4II13 (1558)
Medical School Admissions: Does Selectivity Matter?

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**Background:** Medical school admissions committees often use the selectivity of an applicant’s premedical college as a competitive admissions factor. Barron’s Profiles of American Colleges publishes an annual selectivity index, ranking pre-medical schools from non-competitive to most competitive. Does Barron’s selectivity index predict medical student success?

**Summary of Work:** 2,746 matriculant records for 12 admissions cycles were grouped into the most and least selective cohorts, per the Barron’s selectivity index of their premedical baccalaureate college. Relative medical school successes were compared, as measured by their preclinical grade point averages (PC-GPAs), and performance on national licensing exams (NLEs).

**Summary of Results:** T and Mann-Whitney tests were performed as appropriate, and the significance of P values corrected using the Bonferroni method. When comparing the most to the least selective cohorts, no statistically significant differences were observed for PC-GPAs, or all three levels of NLEs, including preclinical, clinical, and post-graduate levels.

**Discussion:** Admissions committee members anecdotally consider selectivity of applicants’ baccalaureate granting colleges. While our study appears to show no differences in medical school performance of selectively index cohorts, it is possible that students less likely to succeed in medical schools from less selective colleges are weeded out during the admissions process.

**Conclusion:** When comparing selectivity of matriculants’ pre-medical colleges, there is no observable statistical difference in medical school between the performance of the most vs. least selective groups. This appears to be the case for PC-GPAs and all three levels of NLEs.

**Take-home Message:** Our study suggests that Barron’s selectivity index does not reliably predict medical student success. Therefore, it may not be appropriate to consider Barron’s selectivity index as a competitive factor for admission into medical school. For greater generalizability, additional studies of this and other selectivity indices may be warranted.

#4II14 (2982)
Remediation for the match: A unique approach to equipping medical graduates for gainful employment

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**Background:** Students who have not matched in the first round of residency matches find themselves challenged to develop their profiles and thus improve their competitiveness for residencies. In order to help these students enhance their chance to match after a first failed attempt, a research and teaching fellowship program was instituted.

**Summary of Work:** Graduates who failed their first match for residency are recruited for either the teaching or research fellowship program, taking into consideration their USMLE scores and socio-cognitive criteria. For one year these students are trained to facilitate groups of 10 students in small group and ultrasound skills labs, and bioethics discussions.

**Summary of Results:** An intake of 45 students in the last 5 years led to 184 publications, 20 poster presentations, and 53 chapters to date. A 90% successful second match has been obtained. The remaining 10% chose to either complement their MDs with MPH, MBA or to pursue a career in medical education.

**Discussion:** Depending on the program, teaching or research may be more emphasized. Additionally, all fellows develop their professional identities and residency interviewing skills and build their personal statements for residency application. Research projects are supervised by faculty and attendance at conferences for presentations is reimbursed.

**Conclusion:** Graduates for various reasons may go into the residency match process over-confident or ill prepared, and thus fail to successfully match. A teaching and research program is offered to re-mediate short comings and to enhance a graduate’s competitiveness in the second match attempt.

**Take-home Message:** Some graduates who fail to match for residency realize their potential to contribute to medical education or build their capacity in complementary fields. With a teaching or research fellowship program, no graduate is left behind, and benefits are realized by both the fellows and the institution.
#4II15 (2695)
Internal Medicine Residency Selection Criteria: The stakeholders' perspectives

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Background: Designing specialty-specific selection criteria is the important process for residency selection. The lack of literature on criteria selection made committees often focus on academic potential more than other essential non-academic attributes. The purpose of this study is to survey the stakeholders’ perspectives for internal medicine resident qualities.

Summary of Work: One hundred and five stakeholders were invited which consist of 17 medical staffs, 12 residents, 9 internists, 21 medical students, 18 nurses, 3 pharmacists, 3 medical department secretaries and 22 patients. The participants were asked to prioritize the three most important attributes for internal medicine resident.

Summary of Results: The most important attribute, which medical staffs and residents required were responsibility, whereas nurse, intern and medical students required medical knowledge. Attention to work and patient care were most desirable attribute of the patients. The second and third important attributes were interpersonal skill, teamwork, communication skill, stress tolerance, diligent, etc.

Discussion: There were a diversity of stakeholders' requirements, which not only on medical knowledge but they also focus and valuable on the non-academic attributes. Interestingly, medical staffs, residents and patients prioritized non-academic attribute as more important than medical knowledge. This finding changes the point of view which selection committee should concern.

Conclusion: From the result of stakeholders’ perspective showed that curriculum vitae and traditional interview might not be enough for residency selection. We suggest the method and criteria should be structured and designed to cover both academic and non-academic attribute.

Take-home Message: The stakeholders’ perspective are the useful resource for designing the residency selection criteria.

#4II16 (1247)
Convergent validity of the “bright” and “dark” side of an integrity Situational Judgement Test for medical school selection

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Background: Situational Judgement Tests (SJTs) are increasingly used for medical school selection due to their predictive and incremental validity. To gain more insight into what SJTs exactly measure, we examined the convergent validity of appropriate and inappropriate response options (“bright” and “dark” side) of an Integrity SJT for medical school selection.

Summary of Work: The Integrity SJT consisted of 57 scenarios, each followed by four response options, two depicting the “bright” side and two depicting the “dark” side. The SJT was administered to a group of medical school applicants (N=367). The convergent validity was tested by examining the correlations with four external integrity-related measures.

Summary of Results: The “bright” SJT subscale was significantly correlated in the expected direction with three of the four integrity-related measures. The “dark” SJT subscale was significantly correlated in the expected direction with all integrity-related measures. Additionally, the “dark” subscale correlated significantly stronger than the “bright” subscale with two of the integrity-related measures.

Discussion: Convergent validity appears stronger for the “dark” side than for the “bright” side. Knowing what one should do and knowing what one should not do in a challenging situation might involve different abilities. Prior research demonstrated that knowing what one should not do is a better predictor of job performance.

Conclusion: This study provides more insight into the features of an SJT and paves the way for SJTs with more convergent validity. Moreover, focusing on the “dark” side might even lead to stronger predictive validity. Further research is necessary to compare the predictive validity of the “dark” and “bright” SJT subscales.

Take-home Message: Scoring an SJT based on the ability to recognize what one should not do as opposed the ability to recognize what one should do in a challenging situation strengthens the convergent validity of that SJT.
The power to surprise! Surprises for educators from a phenomenological study of stakeholder experiences with doctors

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Gary Rogers, Griffith University, Gold Coast, Australia
Author Poropat, Griffith University, Brisbane, Australia
Louise Alldridge, Peninsula Medical School, Universities of Exeter and Plymouth, UK

Background: The contribution of stakeholders to inform the selection and education of health professionals has been widely acknowledged yet undervalued. This study used an innovative approach that enabled greater contribution by diverse stakeholders to the medical selections and education debate.

Summary of Work: A phenomenological interpretive study revealed how stakeholder experiences of doctors could better inform medical selection and education. Doctors, patients, academics, health executives, clinicians, students, educators and community representatives were interviewed. Anonymised transcripts were analysed using an interpretive phenomenological analysis methodology, assisted by qualitative data analysis software.

Summary of Results: Responses from stakeholder groups differed substantially: for example, patients primarily focused on human capabilities (e.g., compassion and communication) while clinicians emphasised professional expertise (e.g., clinical and ethical competence).

Discussion: Although participants were asked about experiences that typified ‘the good doctor’, many spontaneously provided accounts of unprofessional and unsafe practice, providing an element of surprise that was not only significant for the study but particularly for informing the selection and education of future doctors.

Conclusion: This study revealed unique complexities surrounding entry and progression through professional medicine, with implications for students, educators, health managers, patients, families and communities. The experiences of stakeholders — particularly those of patients — provide indispensable information for medical selection and education debates on local, national and global scales.

Take-home Message: 1. Patient perspectives are particularly pertinent and profitable when discussing medical selection and education; a broader representation of stakeholders will be even more informative. 2. Current approaches to evaluating and planning medical selection and education that ignore patient and community perspectives cannot be justified and must be revised.
#4JJ Posters: Management
Location: Hall 3 Foyer

#4JJ01 (1796)
The Role of Teaching Services in Emergency Department Overcrowding: A System Dynamics Approach

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Viktor Sigalov

Background: Over the past 15 years, emergency department (ED) overcrowding has continued despite the number of interventions. While numerous factors were investigated from system dynamics perspectives, to identify their contribution to ED overcrowding, the impact of teaching services on ED throughput was not, to our knowledge, investigated from the same perspectives.

Summary of Work: A broad literature search on ED flow, overcrowding, and impact of teaching services on ED throughput was performed. Using Vensim software, a causal loop diagram (CLD) was designed to visualize the relationships between the identified variables and analyze the feedback structure of the system as the causes of its behavior.

Summary of Results: The CLD demonstrated that clinical service capacity is the main driver for ED disposition, impacted by both tangible (i.e. number of providers) and intangible factors (i.e. resident clinical decision certainty). Typical teaching services decrease clinical service capacities by decreasing the time for clinical care, thus, increasing ED length of stay.

Discussion: This study used system dynamics to associate clinical and teaching structures of the ED with specific decisions that affect ED flow and to analyze policies for optimization of that flow. The model uncovered nonlinear relationships between resident clinical decision certainty, the number of tests and interventions performed, and disposition rate.

Conclusion: While on-shift teaching is required to train the next generation of emergency medicine physicians, it has the potential to lengthen patient wait times and decrease ED throughput. Proposed policies, including the introduction of dedicated teaching shifts and increasing off-shift teaching, have the potential to increase throughput without compromising medical education.

Take-home Message: The CLD with inclusion of teaching services provides a platform for a more complete dynamic hypothesis of the ED. It also allows developing and testing policies on changes in the structure and logistics of teaching services for overall optimization of ED flow without prohibitive costs or risk of squandered resources.

#4JJ02 (1444)
Imbalance of Specialist Doctor Distribution in the Ministry of Public Health Thailand

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Rajin Arora
Parinya Chamnan
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Arunee Tipwong

Background: Specialist doctors are important human key success factors of postgraduate training. However, the imbalance of doctor distribution is raising concerned. There was insufficient data of specialist’s allocation in Thailand. This study described geographic distribution and physician-to-population ratio of specialist doctors worked with the Ministry of public health Thailand (MoPH).

Summary of Work: A cross sectional study was done. Data was analyzed from the geographic information system of Thai's MoPH and the medical council database. Doctors were categorized into non specialist, family physician, and other specialist. Distributions were described by specialists, gender and regions. A descriptive analysis used frequencies, percents, and physician-to-population ratios.

Summary of Results: There were 13,487 doctors worked with the MoPH between 1981 and 2014. The median age was 28 years (21- 56). There were twelve any specialists for every family doctor and one-and-a-half specialists for every non-specialist. The physician-to-population ratio of family doctors and other specialists were 0.01 and 0.13 per 1000 population respectively.

Discussion: The proportion of family doctor was lower than the figure in high income countries. The physician to population ratio was lower than the figure in OECD countries and South East Asia countries such as Korea, Maldives, India, Sri Lanka and Myanmar.

Conclusion: In conclusion, there was an imbalance of specialty distribution in Thailand particularly primary care physicians. The physician to population ratio was evidently lower than many high income countries and it varied across regions. Thus, increase production of family doctors would be rationale to medical school and policy makers.

Take-home Message: Imbalances in specialty of specialist doctors worked with the MoPH were observed in Thailand. Physician-to-population ratios were very low compared with WHO countries. Urgent policy is needed for increase production and re-allocation of doctors. Postgraduate training should call attention to produce family physicians as well as other specialists.
#4JJ03 (730)
A 10-year experience of the “new track” doctor production program in Thailand

P Ongartboon, Phare Medical Education Center, Thailand
T Dusitsoonthornkul, Phichit Medical Education Center, Thailand
S Natongsong, Taksin Medical Education Center, Thailand
K Jaruchart, Uttaradit Medical Education Center, Thailand
O Chaimahapruk, Buddhachinaraj Medical Education Center, Thailand
S Siriluk, Naresuan University, Thailand

**Background:** In Thailand, students enter medical schools from high schools and study 6 years. The “New Track” doctor program was established in 2003 but required the applicants to have a health-related bachelor’s degree with 2 years working experience. The course lasts 5 years: training in 3 provincial hospitals.

**Summary of Work:** A descriptive study was done in 1,620 medical graduates from Naresuan University focusing on GPA, National License (NL) test results, community retention rate, opinions and recommendations in terms of work compared between “New Track” doctor production program and the students graduated from conventional track.

**Summary of Results:** A community retention rate of the physicians graduated from new track program (98%) is significantly higher than that of the regular track. GPA and NL test results were found similar in both groups. Most medical graduates commented with satisfaction while studying and thinking that produced this useful.

**Discussion:** The study shows that the objective of the program is achieved according to a high retention of doctors in rural areas. Key success factors are believed to be from the maturity and working experiences of the students. It’s making access to learning and understanding more than willing to learn.

**Conclusion:** The “New Track” doctor production program met the objectives by producing equally standardized doctors to work in the rural areas sustainably. It is therefore a promising model of doctor production for communities. Learning this considered to be a hallmark of rural doctors to come true. Meet the needs of the country.

**Take-home Message:** Teaching and learning for a specific learner in a context match results in a desired outcome.

#4JJ04 (1396)
Biggest Med School in Mexico: a 20 year quick portrait

Maria de los Angeles Fernandez-Altuna, UNAM School of Medicine, Mexico City, Mexico
Diego Gutierrez-Rayon, UNAM School of Medicine, Mexico City, Mexico
Mariela Ramirez-Resendiz, UNAM School of Medicine, Mexico City, Mexico
Alejandro Martinez-del-Prado, UNAM School of Medicine, Mexico City, Mexico
Gerardo Lopez-Alba, UNAM School of Medicine, Mexico City, Mexico
Irene Durante-Montiel, UNAM School of Medicine, Mexico City, Mexico

**Background:** UNAM School of Medicine has the highest number of students among medical schools in Mexico. Undergraduate population is equivalent to the joint enrollment of 12 Med schools in Canada. This large number of students allows and stimulates educational research.

**Summary of Work:** Information about enrollment, graduation, age, gender and marital status of UNAM School of Medicine students during last 20 years was investigated using school records. Information was analyzed according to undergraduate and postgraduate (medicine specialization) population.

**Summary of Results:** Annual first year new enrollment is 1000 students and 3700 residents. Total enrollment of residents increased substantially from 1995 to 2015 (5,896 to 10,380). 850 students and 3500 residents graduated annually. Women’s pregraduate participation increased from 43% (1995) to 64% (2015); in medicine specializations remains 51%. 70% residents are single.

**Discussion:** Variation in enrollment has been discrete in pregraduate population but significantly increased in medical specializations. Women’s pregraduate percentage is high but has remained equal in postgraduate population. Terminal efficiency is acceptable. Student and Resident populations are young (mean age 21 and 30 years respectively). Majority of students are single.

**Conclusion:** UNAM School of Medicine has a huge student population characterized by youth, being single and predominantly women. All these characteristics account for a very special student community, requiring special education policies.

**Take-home Message:** Mexico’s UNAM School of Medicine student population characteristics have changed over last 20 years similar to others Med Schools worldwide. More quantitative and qualitative studies are needed to investigate the impact of such changes.
#4JJ05 (774)
ComPACT: towards Computerized Performance Analysis for Clinical Teams in health care – a simulation based study of feasibility and professional attitudes

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Andrew Norris, Nottingham University Hospitals, Nottingham, UK

Background: Health services aim to provide safe reliable care. However, in practice, the processes involved, the clinical outcomes and patient experience, all vary significantly, indicating there is scope for substantial improvement if most care could be brought to the standards already met by strongly performing teams.

Summary of Work: The Computerized Performance Analysis for Clinical Teams (ComPACT) tool is an automated system employing computer vision which is being developed, with the goals of objectively and reliably analysing clinical performance. Medical students’ attitudes towards the system being deployed in a simulation center where they undertook simulation based training were explored.

Summary of Results: Participants were receptive towards the educational value of this technology in simulated scenarios. Perceived educational benefits particularly included the potential for accurate objective feedback, especially around “soft” skills. Students had more concerns over reliability, use of data, consent and confidentiality in a clinical environment.

Discussion: This is one of the first attempts to introduce computerized analysis of clinical team performance in a health care setting. This potential technological development raises a number of professional and ethical concerns. Participants thought it could improve care, but significant benefits would need to be evidenced to offset these concerns.

Conclusion: There was generally a positive response towards ComPACT. Further feasibility testing is required on the system, but if the technology proves effective, any introduction will need to be communicated carefully and managed sensitively in knowledge of wide ranging concerns around confidentiality, consent, reliability and how data might be used.

Take-home Message: As technologies like computer vision, deep learning and artificial intelligence develop, they will inevitably be increasingly applied to clinical care. There is an urgent need to anticipate some of the implications arising from these developments, as well as just targeting areas for application.

#4JJ06 (1883)
Differences between the factors influencing students’ satisfaction regarding the study programme’s language

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Background: The University of Pécs Medical School offers study programmes in Hungarian, in English (students from 52 countries) and in German language. The curricula of the 3 programmes are identical. The goal of our study was to explore the differences between the student’s satisfaction of the education in the different programmes.

Summary of Work: Altogether 21 338 anonym questionnaires were processed. 13 568 items were analysed after data cleaning and balancing based on academic years and programmes. Factor analysis was applied to validate the inventory. Automatic linear modelling was used to explore the underlying connections between the items, and determine the predictors importance (PI).

Summary of Results: The most important factors in the Hungarian programme: practices’ quality (PI:36%), lectures’ quality (PI:22%) and topic’s fascinating (PI:18%). In the English programme: practices’ quality (PI:29%), the professors’ breadth view (PI:18%) and fascinating performance (PI:12%). In the German programme: practices’ quality (PI:38%), subject’s organization (PI:26%) and lectures' quality (PI:14%).

Discussion: Based of our high validity (89,6%) questionnaire, accurate models (65-80%) were determined. In the more homogeneous Hungarian and German programmes, the three most important factors cover more than 75% of the predictors, in contrary to the English (international) programme, where it’s just 59%.

Conclusion: The quality of the practice is the most important in the judgement of the subject in all programmes, but there were differences between the other factors, as well.

Take-home Message: The quality of the practice is the most important factor independently from the study programme’s language.
#4JJ07 (1404)
Managing MD Curriculum: Computer-Based Tools
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Tahereh Changiz
Nikoo Yamani

Background: Curriculum monitoring and management is an essential function that has been addressed in WFME standards for undergraduate medical education. This process, especially when intended to be focused on expected competencies, requires an integrated information system. This study was designed to define characteristics of MD Curriculum Management Information Systems (CMIS).

Summary of Work: In a review, “google scholar” and “PubMed” were searched with appropriate key words: curriculum, medicine, management information system. Furthermore, websites of several CMIS were reviewed.

Summary of Results: Twelve full text articles and 5 websites were included in the review. The first computer-based system for curriculum information (early 1960s), was able to locate any entered subject code all over the curriculum. Nowadays these systems can do more complex functions such as curriculum mapping, scheduling and assessment.

Discussion: Computer-based curriculum management is expanding especially in undergraduate medical education. Curriculum management information systems can help curriculum managers to assure curriculum implementation as planned.

Conclusion: Using IT for MD curriculum management seems to be essential. In countries with a centralized system for curriculum governance, adding national level to the control hierarchy over the implementation of program in diverse medical schools necessitates computer-based CMIS. New CMIS softwares may provide better solutions for concerns of curriculum stakeholders.

Take-home Message: According to the diverse CMIS softwares, it is essential to have more comparative studies on their quality and effectiveness. However it seems that there is no choice but integrating CMIS into the curriculum management process in medical schools.

#4JJ08 (2721)
Attendance in Medical School: Should it be Mandatory?
Amany Elshaer, Alfaisal University, Riyadh, Saudi Arabia
Mayar Helaly
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Eiad Ahmed H Moha
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Background: Alfaisal University is known for its strict regulations regarding student’s attendance. Recently, the attendance policy for the College of Medicine has been changed to allow maximal 15% absenteeism. The University’s mandatory raise in attendance to 85% is based on the perceived assumption that attendance contributes to improved overall students’ performance.

Summary of Work: A total of 160 medical students (Years 1 to 5) were surveyed regarding their preferences and general outlook on the attendance policy. Additionally, the student’s academic performance and the impact of attendance were evaluated. The aim of this study is to analyze any significant association between attendance and improved performance.

Summary of Results: After analyzing the results, a total of 81% of the students do not approve with the attendance policy. However, a significant improvement was observed in the students’ cGPA. Those who attend the lectures have a cGPA of (3.5), compared to those who do not attend have a cGPA of (3.3).

Discussion: The results indicate that attendance has a statistically relevant effect on students learning. Furthermore, attendance is proved to be positively correlated with the overall academic achievements. Further aspects have been examined to determine the effects of applying mandatory attendance on medical students.

Conclusion: In our university, no previous studies examined the inter-relationship between attendance and educational performance. Therefore, after conducting the study, we concluded that the attendance policy implemented has contributed to improved academic performance. The results indicate that students, regardless of their gender and socioeconomic status, perform exceptionally better when present.

Take-home Message: Studies can examine several other factors in relation to attendance, but it all comes to the conclusion that students are required to be more academically engaged throughout the learning process to gain the utmost knowledge. It might also be indicative that certain fundamental aspects are only acquired through active attendance.
#4JJ09 (1543)
Mind the Gap: Discursive Discontinuities in the Professional Role of the Pharmacist in Pharmacy Education and Practice Literature Over the Last Century in North America

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Elise Paradis, University of Toronto, Canada
Mirjam Oude Egbrink, Maastricht University, Netherlands
Cees van der Vleuten, Maastricht University, Netherlands
Zubin Austin, University of Toronto, Canada

Background: Pharmacy is seeking professional legitimation as clinicians. Historically, pharmacy education and practice were aligned; however currently there exists significant divergence in professional prototypes. The aim of this study was to examine the divergent evolution of the construct of the pharmacist in education and practice and its impact on the profession.

Summary of Work: A Foucauldian discourse analysis was used to identify dominant discourses of the professional role of the pharmacist in pharmacy education and professional practice literatures from 1920-present day. The preeminent journals in pharmacy practice and pharmacy education were included in the archive and analyzed.

Summary of Results: Four dominant discourses of the professional role of the pharmacist have evolved: chemist, dispenser, drug advisor and clinician. Misalignment between professional and education discourses is apparent. Currently, the clinician discourse is dominant within education literature, whereas the dispenser and drug advisor discourses remain dominant in the practice literature.

Discussion: Academic pharmacy is educating pharmacist clinicians, as a means to professional legitimation. Yet, post-graduation pharmacists struggle to internalize their educational experiences within the current practice environment. This creates tension within the profession that can be partially understood by the gap between the adoption of professional discourses in practice and education.

Conclusion: This study illustrates lack of alignment between academic aspirations and professional realities in pharmacy. The discontinuities between what is professionally possible within educational institutions and practice settings impacts the profession significantly. It contributes to workplace dissatisfaction, issues with workforce retention and uptake of professional responsibilities, and enrollment in pharmacy programs.

Take-home Message: Foucauldian discourse analysis is a useful methodology to explore the process by which professions seek legitimation. Discursive misalignments and discontinuities in the literature reflect intraprofessional tensions rooted in role, identity and professional legitimacy.

#4JJ10 (258)
Value Analysis for Determining the Cost of Medical Education

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Janet Lindsley, University of Utah School of Medicine, Salt Lake City, Utah, USA
Tony Tsai, University of Utah School of Medicine, Salt Lake City, Utah, USA
Jorie Colbert-Getz, University of Utah School of Medicine, Salt Lake City, Utah, USA

Background: There is increasing recognition of the importance to calculate cost and define value in health professions education. Yet, to date the field has not figured out how best to determine the cost of medical education.

Summary of Work: The University of Utah Health Sciences lowered costs of healthcare while improving patient outcomes using a framework termed Value Driven Outcomes (VDO). VDO aggregates data and organizes it into Professional and Facility Costs. In 2016 we used the VDO method to calculate medical education costs at the School of Medicine.

Summary of Results: The highest price tags in medical education were associated with the cost for faculty to teach and supervise students, staff costs, and building costs. Excluding time faculty spent in the clinical learning environment supervising students, the majority of the faculty cost was in the first two years of the curriculum.

Discussion: We have identified the categories of cost and actual dollar amounts for undergraduate medical education in the US. However, the total price tag of medical education likely varies by country and even within countries. Our next step is to add education quality metrics to the VDO method.

Conclusion: It is imperative that academic medical centers consider the cost of their medical education program and create tools that analyze cost and quality to make informed decisions.

Take-home Message: Calculating the actual cost of undergraduate medical education is challenging. Application of a value driven method for determining cost in health care shows promise when applied to medical education in the US.
Developing a new type of Health Professional - what we can learn from Developing and Developed Countries

Nick Bass, East London NHS Foundation Trust, London, UK
Andy Roney

Background: Physician Associates have been proposed by Health Education England as part of the solution to growing demand and complexity in health provision in England and the UK against a background of a medical workforce shortfall and limited government investment in the NHS. This is a new development for the UK.

Summary of Work: We are piloting a new curriculum to support PAs destined to work in some hospital but mainly community settings. This adapts successful programmes in both the US but also Uganda. Resource-limited countries can offer examples of innovation which may lead to cost-effective solutions for a variety of health systems globally.

Summary of Results: The first year’s cohort consists of 23 PA students. A new curriculum offering a broad range of specialties but focusing on priority clinical assessment and management areas is described along with assessment methods. Theoretical teaching, clinical workshops, clinical placements and assessments are all described.

Discussion: Positives include enthusiastic students with prior theoretical grounding in basic medical science able to ‘fast-track’ a broad but reduced ‘MBBS’ curriculum and focus on key clinical priorities. Negatives include a lack of precedent for the UK or exact equivalent anywhere, uncertainty about professional accreditation and future application in the UK.

Conclusion: There is an undoubted need for broad cost-effective health provision in the UK and other developed countries and Uganda and neighbouring countries have demonstrated the success of the Clinical Officer model. US Physician Assistants are also increasingly employed. The UK context differs from these but PAs may prove invaluable yet.

Take-home Message: All health systems - in rich or LAMIC countries - are under financial pressure and need to meet growing demands from their communities. We all need to innovate and test the viability of potentially cost-effective ways to cover broad public health needs. We can and should learn from each other.

Building Health Systems Based in People’s Needs

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Background: Actions towards social justice at the individual and institutional level is a foundational feature of the practice of social accountability. These actions are possible and desirable at scales from local/interpersonal to global/societal. Two well-established threads of endeavour have been woven into positive change in a range of situations. These are the pentagram partners in health system change articulated by the WHO and the approach of appreciative inquiry in addressing problems.

Summary of Work: The authors have been involved in the development of social accountability as an idea and a practicality for many years. This has included participation in the development of concepts, systems, institutions, networks and a global consensus on social accountability. The engagement of all five pentagram partners and the use of appreciative inquiry have been variable features of this work over much of the last two decades.

Summary of Results: Using Schon’s reflective practice as a guide for retrospective analysis, it is apparent that two features have characterized the most effective initiatives when measured against effective change—in either rhetoric or subsequent action: 1. The simultaneous engagement of all five of the pentagram partners, and 2. The collective engagement of the partners in an approach of appreciative inquiry.

Take-home Message: Planning and action based on the pentagram partnership at various scales and using an approach of appreciative inquiry is more effective in promoting positive change than traditional approaches.
Background: The University of Saskatchewan College of Medicine offers a four-year graduate MD program in a distributed three campus model. Following significant curricular and administrative changes, the College initiated the “Lived Experience Project”. The main question was: What are the notable differences in experiences among the campuses and medical student classes?

Summary of Work: Forty-one students from four classes and three campuses participated in 60 – 90 minute confidential, semi-structured interviews with an external consultant. Data from the interviews were organized by year/class and geographic centre. Cross-themes were then identified for the entire group and presented widely through the College, allowing for broad discussion.

Summary of Results: Three broad themes persisted: continuous and often disruptive change; continuity of relationships; and balancing site distinctiveness with comparability. Site-specific strengths and challenges were identified. Although the identified themes and issues were not entirely new to Faculty, the experiences of students were not fully appreciated prior to this project.

Discussion: This project provided insight into how our students experienced medical school academically, socially, and emotionally. Hearing the voices of students led to fulsome discussion and in some cases, immediate action. Other themes require further investigation, but respectful listening and responsiveness are essential next steps.

Conclusions: Qualitative data from students is a valuable addition to the other sources of information used by medical schools to improve programming. Though the methodology is resource-intensive, providing an opportunity for students to recount their experiences candidly and with anonymity can lead to new insights.

Take-home Messages: A qualitative study of learners’ lived experiences applies a quality lens to assist in improving academic programming and engaging the learners directs us to leverage the important unique characteristics of each campus to support readiness to learn, enable students to succeed and lay the foundation for a lifelong relationship.
Background: Better clinical leadership improves performance of health institutions. Moreover, refining the governance of healthcare services has brought doctors on significant leadership roles throughout healthcare system. However, no structured education is accessible in curricula or career development. Therefore, we aimed to develop and provide medical leaders with a governance-training program.

Summary of Work: A 24-hour of contact course aiming to advance skills on creating and communicating personal concepts, effective negotiation, setting clear direction, improve and redesign healthcare, raise self/others awareness, and develop collaborative work was designed. No restriction on participants’ selection was made. Methodologies included mentoring, coaching and active role-play learning.

Summary of Results: Results of the assessment made by questionnaire and by individual structured-interview show that the governance training program was evaluated as highly effective mostly due to the experiential learning that the governance training program was evaluated as highly effective mostly due to the experiential learning. It also provides an opportunity to practice important skills in a safe environment and prepare junior doctors for independent practice, we introduced reverse ward rounds, led by trainees and supervised by a single consultant. We evaluated the impact on professional development by conducting semi-structured qualitative surveys which were completed retrospectively by seven participating trainees. Summary of Results: All survey responders found reverse ward rounds to be a useful experience. Reasons included improved confidence in diagnostic skills and communication skills, greater understanding of the roles played by other team-members, and the opportunity for direct senior feedback.

Discussion: Most respondents felt that reverse ward rounds were most useful when used alongside traditional senior-led rounds, to complement observational learning. They also give consultants the opportunity to understand individual learning needs and tailor further training, developing a master-apprentice model of learning.

Conclusion: Leading a ward round is a vital skill that is often insufficiently taught to junior doctors. Our qualitative survey study suggested that enabling trainees to practice this skill under senior supervision promoted confidence and prepared them for independent practice.

Take-home Message: Reversing traditional hierarchies enables junior physicians to practice important skills in a controlled environment. It also provides an opportunity to stimulate discussion on leadership style and communication techniques, allowing trainees to develop as a clinical leader.
Leadership and Mentoring in Nursing Research (LMNR) programme: expectations and professional identity perception of participants

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Shaun Cardiff
Thóra Hafsteinsdóttir
Marieke Schuurmans

Background: Clinician-scientists are crucial for leading connections between care and research. International concern exists about decreasing numbers and lack of diversity among this important category of scientists. To stimulate capacity within the nursing(science) field, a leadership program was developed for postdoctoral nurse-scientists. We have been evaluating the programme influence on participants.

Summary of Work: Open interviews were conducted with all 12 participants in 2016 at the start of the first Dutch ‘Leadership and Mentoring in Nursing Research (LMNR)’ programme, and are repeated annually. The (3 male, 9 female) participants averaged 43 yrs (range 30-54). Interviews were transcribed verbatim, thematically analysed and member-checked.

Summary of Results: All participants are engaged in postdoctoral research (n=12), frequently combined with education (n=8), patient care (n=4), and/or policy&management (n=3). All express a strong researcher and nurse identity, and aspire to a research career. Programme expectations included career reflection, personal growth, increased visibility, research network extension and broadened research competency.

Discussion: Although literature defines clinician-scientists as researchers active in direct care, only 33% of the participants practice clinical nursing. However, all preserve their nurse identity and passion for nursing, which motivates their research. Leader identity was less well articulated, and programme expectations were very content driven and aimed at collaboration.

Conclusion: Nurse-scientist expectations were aligned with leadership program goals in terms of expansion and depth of leadership (personal and community) and research competency. Although relatively few were practicing clinicians, a strong professional identity as a nurse, and drive to work with and for nurses in practice, clearly influenced their research approaches.

Take-home Message: Passion for nursing is the primary research motivation for Dutch nurse-scientists. Clinical roots are very strong but a current active clinical role is not a prerequisite for a strong clinician-scientist identity.

Medical leadership development in undergraduates: Global Physician-Leadership Stream (GPS) of The Chinese University of Hong Kong

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Vincent Mok, CUHK, Hong Kong
Simon Ng, CUHK, Hong Kong
Albert Li, CUHK, Hong Kong
Justin Wu, CUHK, Hong Kong

Background: In an era of technology explosion and ultra-specialization, doctors tend to be trained as technicians with specialized skills. There comes a need to nurture a new generation of well-rounded doctors with a global perspective and leadership skills. The GPS was established as the first undergraduate medical leadership programme in Asia.

Summary of Work: GPS aims to prepare students to become future medical leaders for local and international communities. Through personalized mentorship, medical leadership workshops, supervised projects and overseas internship, they are equipped with basic skills of medical leadership and enhanced capacity of intellectual curiosity, critical thinking, social intelligence and sense of social responsibility.

Summary of Results: Since the establishment in 2013, GPS students have outstanding achievements in various fields. These include student-initiated research training and medical humanitarian service platforms, first-authored papers in leading journals, international young-investigator awards, prestigious local and international scholarships, collaborative research and humanitarian projects with international institutions.

Discussion: In addition to the core curriculum of medical studies, GPS offers individualized extra learning opportunities for talented students with aspiration, which allows earlier and personalized career development for these future leaders in various fields of biomedical research, clinical service, healthcare administration and medical education.

Conclusion: GPS is an innovative medical leadership program which combines personal mentorship, structured leadership workshops, practical field experience under supervision and International learning experience for budding medical leaders with talents and aspiration.

Take-home Message: GPS is the first medical undergraduate leadership program in Asia with pedagogical innovations and mission of developing well-rounded medical leaders with global perspective.
Background: Leadership is needed in the dental profession to obtain success. Dental students are exposed to multiple situations with new challenges, developing accomplishments based on past experiences. There is a shortage of papers published about students’ perceptions of leadership importance along with their interest in developing leadership skills as an undergraduate.

Summary of Work: The aim of this study was to explore dental students’ perception regarding leadership development. Data were collected through an online questionnaire composed of 12 questions and distributed to 74 dental students, and 58 were returned. The data were statistically analyzed using SPSS.

Summary of Results: The majority of responders (92%) reported that they agreed the significance of leadership skills, (94%) believed it can be learned. (97%) assumed that they will expect to lead in their dental practice and (87%) will lead non-dentistry roles in community. Almost all students agreed that they benefit from leadership courses.

Discussion: The results of the study were in agreement with other studies. Dental students showed a great interest in learning leadership and believed that leadership skills can be acquired. They also reported the desire to improve their confidence, assertiveness and to be able to influence others.

Conclusion: The dental students at Qassim University showed an interest in developing leadership skills. They assume they are expected to be leaders in their own practice. Perceptions from students from this research can help in the design of leadership skills course.

Take-home Message: Dental students value the acquisition of leadership skills for their future role as dental surgeons. They accept that leadership skills can be taught and learned. More leadership courses are needed to meet the dental students’ interests in Qassim University. Results of this study will help in their design.

Summary of Results: The EFA extracted 27 item scales into 4 components of leadership skills (74.76% of cumulative Eigenvalues; KMO=0.90, M=3.99±0.58) representing risk management and conflict resolution (Eigenvalue=6.56; 22.60%, M=3.96±0.73), management principles (Eigenvalue=5.81; 20.05%, M=3.91±0.61), community health promotion (Eigenvalue=5.40; 18.61%, M=4.04±0.60) and communication skills (Eigenvalue=4.04; 13.50%, M=4.18±0.62). The questionnaire reliability coefficient was 0.97.

Discussion: The scale demonstrated excellent internal consistency reliability. Communication skills and community health promotion were higher order implementation leadership factors correlated with the learning objective of Community Medicine program for medical cadets in Phramongkutklao College of Medicine. There is no significantly different item functioning between genders and position within the group.

Conclusion: The MLQ is a reliable and efficient measure of leadership skills in Community Medicine and can be used without significantly different item functioning. This study suggests that effective medical leaders should be properly skillful in risk management and conflict resolution, management principles, community health promotion and communication.

Take-home Message: The EFA resulted in a 27-item scale with four medical leadership skill components and demonstrated excellent reliability. In the future, we will provide the same questionnaire to fourth-year medical cadets to prove the constructed validity and evaluate the factor structure identified in the EFA above by confirmatory factor analysis.
Informal education as a tool to foster leadership in medical students: IFMSA-Québec’s case study

David Alexandre Galiano, Faculty of Medicine - McGill University, Montréal, Canada
Chérine Zaïm, Faculty of Medicine - Université de Montréal, Montréal, Canada
Aline D. Khatchikian, Faculty of Medicine - Université Laval, Québec City, Canada
Claudel Pétrin-Desrosiers, Faculty of Medicine - Université de Montréal, Canada
Lily Na-Ham P. Nguyen, MDCM, MSc, FRCSC, Pediatric Otorhinolaryngology and Head and Neck Surgery, Montreal Children’s Hospital, Montréal, Canada

Background: IFMSA-Québec, the international branch of the Quebec Medical Student Federation, offers numerous leadership opportunities. We wonder how medical students contrast experience of leadership gained in their curriculum (MC) versus IFMSA-Québec (IQ) to ultimately help shape their medical practice. To our knowledge, such an impact assessment has never been undertaken.

Summary of Work: A survey, in which student volunteers (n=55) were asked scaled (1-5) questions about leadership skills was sent by email and social media. Participants were recruited on the basis of present and past involvement in IFMSA-Québec. This survey was based on the CanMEDS Competencies Framework and the NHS Leadership Framework.

Summary of Results: Overall, students consistently rated the organization higher in terms of leadership skills acquisition (MC mean 2.92 vs IQ 4.11; mean difference +1.18), regardless of their campus and year of study. Students were also more confident in their leadership skills (MC mean 3.19 vs IQ 4.33; mean difference +1.14).

Discussion: The analysis conducted highlights the positive impact of IFMSA-Québec on leadership skills and self-confidence. Recurrent themes were the autonomy and support given by the Executive Board for local and national projects. Alumni also credit the organization for their sustained community involvement, be it in a medical capacity or not.

Conclusion: Evaluation of student-led initiative is rather uncommon and we hope that this study will benefit medical education and show that students can have a positive impact on their own skills and capacity building with activities created by them and for them.

Take-home Message: This study demonstrates that students can have a positive impact on skills development via capacity building, outside of the classic curriculum. Through its leadership opportunities, IFMSA-Québec remains a source of inspiration and skill acquisition for future health leaders, empowering them to take an active role in their communities.

Management in Health Care - a Field Approach

Benjamin Sablan Jr, College of Medicine, University of the Philippines Manila, Philippines
Alvin Caballes, College of Medicine, University of the Philippines Manila, Philippines
Paulo Medina, College of Medicine, University of the Philippines Manila, Philippines

Background: Healthcare delivery in the Philippines has evolved from the traditional clinical and specialist oriented care in tertiary care hospitals to a more public health care approach where doctors assume a leadership role in developing effective programs to address relevant health care concerns.

Summary of Work: Health Management Course is an introduction into Healthcare Delivery Systems. Objectives are to discuss principles particularly, leadership, controlling, planning and organising. The field work is where the undergraduate students apply the management theories and concepts. Several institutions visited are Health Ministry and Food and Drug Agency, pharmaceutical and non-government organisations.

Summary of Results: The approach in the course has produced leaders who have a more public health orientation. A growing number of medical graduates have volunteered to take on healthcare provider roles in far flung areas and those in most need. A number have continued into masters in health administration.

Discussion: The undergraduate medical students have expressed an appreciation of a bigger view of health care and roles beyond clinical service delivery. An emphasis on the role of the doctor as a social mobiliser, health educator and effective advocate has been reinforced through this course.

Conclusion: The Medical Curriculum has benefited from this course offering because this has empowered the medical student in the multi-potential roles each can assume - as a public health advocate, mobiliser and provider. This has prepared the medical graduate to assume bigger roles after graduation.

Take-home Message: Medical graduates are destined to be leaders in health care in the country. This course prepares the student in four aspects needed to become effective managers, particularly in leadership, organising, controlling and planning. This has made students appreciate better their roles as health care providers.
Surgical Residents’ Perceptions of Leadership Education in Specialist Training

Pekka Kejo
Minna Kaila, University of Helsinki, Finland
Johanna Louhimo, University of Helsinki, Helsinki, Finland

Background: Practicing clinicians require leadership and management skills to deliver high-quality, cost-effective care. Competent clinical leadership contributes to efficient teamwork which improves clinical outcomes. In University of Helsinki, we introduced leadership education for the residents in 2009. This work surveyed the attitudes and perceptions of our department’s residents towards leadership training.

Summary of Work: For this survey in our Department of Abdominal Surgery, six residents were interviewed. A questionnaire was sent to ten residents and six replied. These fourth to sixth year residents were questioned about perceived problems and challenges in the training, but also about possible benefits and implications from this education.

Summary of Results: Many declared lack of motivation for the leadership education, only surgical training was considered to be important. Reflection was considered challenging, as was time management. The benefits were that the education had broadened the view of underlying processes in healthcare system, and had helped in self-evaluating personal practices.

Discussion: The residents failed to see the leadership education as part of their professional development in becoming a specialist. The attitudes towards leadership training were rather negative which may be also a reflection of the attitudes of the senior specialists. The current leadership education was regarded to be too time consuming.

Conclusion: The results of the survey will help in formulating a further strategy in advancing the leadership training, improving the attitudes, and promoting the importance of leadership skills in delivering superior patient care. Patient safety, healthcare quality and job satisfaction are important factors for all of us in the medical profession.

Take-home Message: The practicing clinicians today should have not only medical knowledge, but also competency in leadership and management, as well as the ability to continuously evaluate and improve on how care is delivered. Leadership can be taught, but the main obstacles seem to be the negative attitudes of the physicians themselves.

A Comprehensive Leadership Development Programme for an Entire Postgraduate Specialism

Laura Spurgeon, University of Birmingham, Birmingham, UK
Carolyn Hicks, University of Birmingham, Birmingham, UK

Background: In 2010, the General Medical Council (GMC) required Medical Schools (undergraduate) and each specialty Royal College (postgraduate) to incorporate leadership development into the training of doctors. Implementation has been uneven with some institutions doing rather more than others and various approaches being adopted.

Summary of Work: A detailed, comprehensive and systematic leadership programme was developed for all postgraduate doctors (N=350) in a particular specialty within the West Midlands. Training was provided to educational supervisors and tutors so that work-based opportunities and reflection sessions could be provided to support the acquisition of leadership skills.

Summary of Results: A leadership development programme was provided across all hospital sites in the region. All tutors in the specialism received appropriate training and an independent evaluation has recommended a roll-out to other regions; a guide is being developed to support this implementation.

Discussion: Although leadership development for doctors has been advocated for sometime, most provision has taken the form of short-courses, which are typically for volunteer or funded individuals, thus creating an elite subgroup. The new systematic approach ensures all trainees are exposed to common leadership skills, creating a critical mass of doctors.

Conclusion: Lack of appropriate leadership training for educators has been a major obstacle to implementation of leadership provision for postgraduate doctors. This comprehensive training programme increased knowledge of relevant leadership skills and also promoted greater confidence. An independent evaluation has identified greater awareness and communication about leadership between trainees and tutors.

Take-home Message: A systematic, comprehensive and unified programme to develop leadership skills would provide relevant training across all sites and years for junior doctors. Training of educators is essential and provides a cost-effective model as the tutors can offer training to future postgraduate medics for many years ahead.
#4KK11 (3322)
Outcomes-based education deserves outcomes-based accreditation: Canadian Residency Accreditation Reform (CanRAC)

Sarah Taber, Royal College of Physicians and Surgeons of Canada, Ottawa, Canada
Ric Almond, College of Family Physicians of Canada
Anne-Marie MacLellan, College des médecins du Québec, Canada
Louise Samson, College des médecins du Québec, Canada
Bailie McGurn, Royal College of Physicians and Surgeons of Canada, Ottawa, Canada
Jason Frank, Royal College of Physicians and Surgeons of Canada, Ottawa, Canada

Background: Accreditation is a quality improvement process that evaluates programs against national standards. In 2013, the Royal College, the College of Family Physicians of Canada and Le Collège des médecins du Québec partnered to develop a new postgraduate accreditation system, based on leading practices and a competency-based approach to medical education.

Summary of Work: The three colleges’ collaboration, known as CanRAC, undertook consultations with key stakeholders. Multiple expert committees were struck to oversee this work over several years, resulting in the development of a blueprint for a 21st century accreditation system balancing both continuous and episodic elements, and comprised of 10 key components.

Summary of Results: The proposed new system emphasizes outcomes focused on residency program quality, strengthens the evaluation of the learning environment, aligns with the principles of competency-based medical education, introduces a digital platform and embodies the values of efficiency, consistency, and continuous quality improvement (CQI).

Discussion: CanRAC has developed a roadmap to transform Canadian residency education accreditation, promising an enhanced system for programs, institutions, residents, surveyors, and ultimately, patient care. The implementation plan is a multi-year, iterative approach to allow for robust evaluation and testing, prior to widespread implementation anticipated for July 1, 2019.

Conclusion: The Canadian residency accreditation system has not undergone a comprehensive review and reform in more than 20 years. The new system will ensure residency programs are accredited in a system that is outcomes-oriented, aligned with competency-based medical education principles, digital, and CQI driven.

Take-home Message: As medical education worldwide moves towards a competency-based model, there are implications for how programs are accredited to ensure standards, processes and systems emphasize the right markers of quality and encourage quality improvement.

#4KK12 (3145)
Have Canadian medical schools developed a culture of continuing quality improvement?

Danielle Blouin, Queen’s University, Kingston, Canada

Background: Accreditation aims at ensuring the quality of medical education and at promoting continuous quality improvement (CQI). The degree of CQI implementation at medical schools, a proxy measure of their adoption of a CQI culture, was assessed by the Baldrige ‘Are we making progress’ questionnaire, adapted to the Program education framework.

Summary of Work: In 2015-16, leaders and teachers at 16 of the 17 Canadian medical schools were invited to electronically complete the questionnaire; one school was excluded due to ongoing accreditation activities.

A Rasch modeling evaluated the survey measurement properties. CQI implementation was determined for each program (means/standard errors) and compared between programs.

Summary of Results: Thirteen (82%) schools participated, with 57 to 256 respondents/school (for a total of 491 respondents). Response rates cannot be calculated as total numbers of teachers/leaders were unknown at each school. Means and standards errors, using Rasch-person measures, varied from 0.36 to 2.32 (0.22 – 0.49), with significant differences between programs.

Discussion: Although the degree of CQI implementation differed between schools, all scored low, suggesting incomplete CQI culture adoption. Schools had all gone through several accreditation cycles. This implies that current accreditation does not promote CQI, schools are not receptive to CQI promotion, or the instrument does not appropriately capture CQI implementation.

Conclusion: Despite their participation in many cycles of accreditation over the years, Canadian medical schools have not fully adopted a CQI culture, as measured by the perceived degree of CQI implementation on the Baldrige survey. Additional studies are needed to further explore the link between accreditation activities and promotion of CQI.

Take-home Message: Accreditation does not appear to promote the development of a CQI culture within medical schools, when using the Baldrige survey as proxy marker. Additional studies are needed to further explore the link between accreditation activities and the promotion of CQI at Canadian medical schools.
#4KK13 (1301)
How about having your training center accredited?

Teuvo Antikainen, Centre of Medical Expertise, Jyväskylä, Finland
Minna Ruoranen, Centre of Medical Expertise, Jyväskylä, Finland

**Background:** After graduating the medical professional steps into an educational era known as “continuous professional development (CPD)”, but, how to identify good educational quality here, in Europe? As from 2015 NASCE (Network of Accredited Skills Centers in Europe) has begun to provide accreditation service for medical training centers.

**Summary of Work:** The NASCE accreditation, a European quality system, is a good guarantee for premium education. The accreditation process along with the criteria also aids the center itself in further developing its operations. Knowing about the quality of the educational provider helps the trainee in selecting between various options.

**Summary of Results:** The NASCE accreditation provides the key criteria and an international evaluation process on which to base high quality skills training operations. In Finland only the Centre of Medical Education, Central Hospital of Central Finland, Jyväskylä, is accredited and our two years experiences are in agreement with the NASCE narration.

**Discussion:** In our experience the NASCE accreditation is a tough process to go through, but rewards by offering an internationally noticed quality certificate and most importantly, a reliable proof of high quality educational services. This is what the medical trainees and professionals in CPD phase are ultimately looking for.

**Conclusion:** The thorough NASCE accreditation criteria covering: governance, administration, teachers, learners, competencies and research are all issues to be addressed when running a high quality medical skills training center. The Centre of Medical Education, Jyväskylä, Finland, has so far alone accomplished the accreditation process in Finland and is offering national collaboration.

**Take-home Message:** If you are offering medical skills training services, do go for quality and get accredited! The trainees and the patients deserve it. The NASCE organization (https://nascenet.org/) is a European accreditation organization tailored for European demands.

#4KK14 (2091)
Experience of the Clinical Audit Training Program in Taiwan

Chien-Ming Lo, Joint Commission of Taiwan, New Taipei City, Taiwan
Shing Liao, Joint Commission of Taiwan, New Taipei City, Taiwan
Pa-Chun Wang, Joint Commission of Taiwan, New Taipei City, Taiwan

**Background:** It has been a trend that hospitals enhance the quality of healthcare via third-party accreditation. Such accreditation usually causes extra workload for staff. By developing a training program that introduces the British Clinical Auditing to Taiwan, we hope that the auditing becomes routine self-check reducing the paper work during accreditation.

**Summary of Work:** The program aims to enable staff to design and prepare a clinical audit, and to analyze and act on the findings. Each trainee acquires a reference book on clinical audit. The book contains clinical audit designs and structures, the practical work, and guidance for leading clinical audit in a service.

**Summary of Results:** The program involved 27 hospitals. Feedbacks were collected through a questionnaire with a recovery rate of 89.4%. The results show that the trainees were unanimously satisfied with the workshop. The most welcome courses were how to design a clinical audit (21%) and draw up measures for a clinical audit (15%).

**Discussion:** This program offers a complete package of clinical auditing. The trainees particularly appreciated clinical audit design. They also identified problems, drew up measures, and extracted findings. They planned to make such auditing a routine to deliver quality healthcare in hospitals. The program turned out to have fulfilled its original objective.

**Conclusion:** The program primarily focuses on practical operations and case exercise. With group discussions and coaching from the instructors, the trainees—the potential internal auditors in the clinics—could quickly pick up the auditing essentials that would be applied to the clinic management and accreditation preparation.

**Take-home Message:** Medical staff may have had some concepts of clinical auditing. The program reinforces the concepts by providing trainees more cases that are practical. An updated program will adopt diverse experience sharing regarding clinic auditing. It’s expected that all the participants can effectively learn how to design a clinical audit.
SESSION 5
Monday 28th August: 1600-1730

#5A Symposium: Validity Revisited: applying the Kane validity model to health professional assessment
Location: Hall 1

David Cook, Mayo Clinic, USA
Sandra Kemp, Curtin University, Australia
Katharine Bouriscot, Health Professional Assessment Consultancy, Singapore
Richard Fuller, Leeds University, UK
David Swanson, ABMS, USA
Trudie Roberts, Leeds University, UK

Summary: Kane’s model of validity is becoming more prevalent in the health professions education world as a holistic and robust way of evaluating assessments. In this symposium, we will revisit the practical application of the Kane validity framework, and present different and innovative ways of applying it in various contexts: planning a programme of assessment, evaluating a system of assessment and the sometimes messy world of workplace based assessments.

Who should participate in the symposium? Health professions educators who are involved with designing and evaluating assessments.

What will they gain from participating? Understanding of the Kane validity model and its application in designing and evaluating assessments and ensuring ‘fitness for purpose’.

#5B Symposium: Postgraduate Medical Education across Borders: Innovations, Tensions, and Curiosities
Location: Hall 3a

Rille Pihlak, European Junior Doctors, University of Manchester, UK
Arnoldo Riquelme, Universidad Catolica de Chile, Chile
Jason Frank, Royal College of Physicians & Surgeons of Canada
Fedde Scheele, VU University Amsterdam, Netherlands
Jessica van der Aa, VU University Amsterdam, Netherlands
On behalf of the AMEE Postgraduate Committee

Summary: Postgraduate training differs greatly between countries- starting from the length or milestones, prerequisites, to the subjects, assessments and standards. Usually, the main driver for change in training programmes are the national health care systems or society, making the training more and more oriented around a specific country’s needs and problems and less influenced by the global perspective. We see problems like health care migration and lack of funding impacting many training programmes with possible negative effects.

On the other side we see many international organisations like the WFME and specialist societies trying to standardise the training in order to compare and overcome country-specific problems.

With this symposium we will once and for all try to tackle these varieties in postgraduate training using a modified Delphi method with international experts and junior doctors on stage in AMEE conference. We aim to compare and learn from the differences by letting both the experts and the audience to actively contribute to the discussion and give their perspective.

Who should participate in the symposium? Junior doctors, medical students, supervisors, programme heads, policy makers, people involved in programmes’ accreditation, stakeholders and all AMEE delegates interested in postgraduate training.

What will they gain from participating? Participants will get a better understanding of the variations in postgraduate training, reasons why these differences have evolved and how they have been reshaped by health care systems. We are also giving the audience a possibility to actively engage in the discussion by openly debating on the pros and cons of their own systems.

#5C Symposium: What keeps you awake at night?
Location: Hall 3b

J.M. Monica van de Ridder, Michigan State University, Grand Rapids, USA
John Cookson, Emeritus Professor of York Hull Medical School, Hull, UK

Summary: Sharing stories is important, people tend to remember stories. This session will encourage both novices and expert in medical education to share stories about professional difficulties that can keep them awake at night. Sharing the issues and controversies that influence the daily practice will give insight in what problems we encounter in medical education, and it will help us further understand the complexity of the medical education environment. Further it will raise the awareness that the problems we are facing in general are not unique. In this highly interactive session the audience can share what keeps them awake at night. Together with the audience a panel will reflect on possible solutions.

Who should participate in the symposium? Both novices and experts, participants with a medical and non-medical background from different professions; from all area’s within medical education.

What will they gain from participating? Both senior and junior participants will gain lessons from the problems, processes and solutions that are shared in a highly interactive manner. Further people will learn from the variety of practices within medical education. No problem is unique.
#5D AMEE Fringe: Fringe 1
Location: Hall 3c

#5D1 (546)
Jeopardy: Evidence-Based Medicine vs “Alternative Facts” Edition
Janet Corral, University of Colorado, Aurora, USA
Holly S Meyer, Graduate Programs in Health Professions Education (HPE), Department of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD, USA
Lauren Maggio, Uniformed Services University of the Health Sciences, Bethesda, USA

Summary: Going right to the heart of evidence and opinion, this Jeopardy game will invite audience members to explore changes in the evidence base throughout the history of medicine, including contemporary practice and medical education. Categories will draw from well-defined areas where there was one approach, and then after scientific inquiry, a shift to another practice (e.g. not handwashing between patients and cadavers, and Semmelweis’ reduction in maternal mortality with handwashing). Audience members will be asked to select questions among six categories, after which three volunteer ‘contestant-participants’ will ring the ‘buzzer’ to answer the question. Participation from the greater audience will be invited through: shouting answers, discussing amongst each other, and encouraging the ‘contestant-participants’. Questions will be structured so participants need to reflect about opinion (e.g. ‘Doctors don’t need to handwash between cadavers and delivering babies’) and the evidence base (e.g. “Simmelweis demonstrated handwashing reduced maternal deaths”). The host and the ‘fact checker’ (an evidence-based medicine specialist) will debrief the contrast between the question and the answer before the winning ‘contestant-participant’ selects the next question. This session will be framed by: 1) neuroscience, which demonstrates we may not be able to ascertain what is true, but we can establish what is false (https://blogs.scientificamerican.com/illusion-chasers/the-delusion-of-alternative-facts/) and 2) the current political conversation in the United States where verifiable, objective truths are being countered with ‘alternative facts’ movement of ‘alternative facts’ uses social media and other outlets to create the illusion of alternative explanations regarding objectively verifiable events in order to sway public opinion (e.g. https://www.theguardian.com/commentisfree/2017/jan/23/kellyanne-conway-alternative-facts-lies). Simultaneously, big data is being used to sway public opinion towards alternative explanations with targeted advertisements in social media (http://motherboard.vice.com/read/big-data-cambridge-analytica-brexit-trump; https://cambridgeanalytica.org). The alternative facts movement challenges fundamental truths our health professions community holds about scientific inquiry and evidence-based practice. ‘Contestant-participants’ will be given small gifts of thanks.

#5D2 (627)
“I’m not there”: (medical) identity in Bob Dylan’s songs
Sergio Zaidhaft, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil

Summary: Who am I? What am I? Am I a physician? What gives me a professional identity? Certain kinds of feelings? Certain kinds of thoughts? Is there any pattern to be followed? What feelings may I have to be a physician? May I feel anger? Fear? Shame? Repulsion? If I feel them, shouldn’t I be a physician? But, if I feel, what do I do with my feelings? Should I hide them? Shouldn’t I be me? Can I do it? Who should certificate me as a physician? Do they fit any pattern? Who says so? How do I know if they do? How do they know if they do? Again and always: who am I? Am I the same me all the time? Am I the same me everywhere? Am I one or more than one? Am I who I am or what people see in me? Am I who I am or who I want people to see? Am I who I am or who people need or expect me to be? What has made me be who I am? “Know thyself!” But will I ever really know myself? Is there a “myself” with no other selves? Will I ever find the answers to these questions? Will I always have to pursue the answers to these questions? Does anybody find the answers to these questions? Is there any clue to find the answers to these questions? Well, maybe art can help us to find our identity. Or, at least, it can help us to look for it. Maybe Bob Dylan’s songs can help us to look for our (medical) identity.
How to think about your own death

Menno De Bree, University Medical Center Groningen, Groningen, Netherlands

Summary: You will die, your beloved ones will die, your patients will die – no matter what you do. If there is just one certainty in life, it seems to be this one: we think, so we die.

Death is an immensely powerful creative and cultural force, and it is fair to say that its existence is a driving force behind the development of health care. On an individual level, our views on death shape the way we want or hope to die, how we interact with the dying and how health care professionals see and shape their professional responsibilities.

At the same time, helping medical students how to reflect about death does not seem to be common practice in medical education. At best, students are introduced in practical, juridical, ethical and theoretical issues related to end-of-life care, but this is definitely not the same as thinking about death itself.

For those willing to engage in this kind of reflection, I designed a framework consisting of seven basic questions that one has to think through when developing a systematic view on death, such as (1) do you think that after our current life and death lies non-existence, or is the moment of our death a transformation to another kind of existence?, (2) Is death always a bad thing that should be avoided at all costs?, and (3) Are you allowed to be actively involved in your own death?

The framework is based on the works of various religious and non-religious philosophers, ranging from Socrates to Camus – thinkers who were highly influential in shaping our current views on death. Each of the questions above can only be answered in a limited number of ways, and the framework summarizes all those possible positions, as I will show during this session.

The personal and the political: A hard look at empathy

Caroline Wellbery, Georgetown University School of Medicine, Washington, DC, USA

Summary: Academically, I’ve worked on a project on social empathy, with the resultant paper, “Medical students’ empathy for vulnerable groups: Results from a survey and a reflective writing assignment,” which is now in the final stages of revision for the US journal Academic Medicine. For Fringe, I have written a 10-minute play, “A change of heart,” exploring a conflict between husband and wife. The husband, an anesthesiologist, has just found out that he has a cardiomyopathy requiring transplant. His wife, an arts therapist, has decided that she is in a loveless marriage and wants out. When they come together, they each plan to make their separate announcements. Instead, they argue. The husband has discovered that his wife has broken their marital covenant that neither would ever vote in a public election, as she is a liberal and he is a conservative. A political spat ensues, while ultimately their respective revelations about the serious illness and divorce plans spill out.

Structure of session: 1. Participants will be asked to write down an instance where their empathy for a patient was challenged due to difficult-to-accept behavioral, moral or political views. 2. Medical students at AMEE will be recruited to perform (read) the 10-minute play. 3. The audience will be invited to ‘vote.’ Should the wife stay with her husband to support him in his illness? Or should she leave as their political convictions have hardened? Voters will be invited to justify their decisions. Participants will be invited to submit their written moral dilemmas with emails and permission for possible write-up and dissemination/publication.
**#5D5 (1792)**

**The Wild West Show of Evidence Based Medicine Teaching**

**Paul Brand, Isala Hospital, Zwolle, Netherlands**

**Veerle J Langenhorst**

**Summary:** Although evidence based medicine (EBM) is the accepted standard of applying research evidence in clinical practice, doctors and their trainees struggle with its application. The skills needed to apply EBM in daily practice are complex and include formulating a research question, systematically searching electronic literature databases, selecting relevant studies, appraising the validity of selected studies, assessing the quantitative results and clinical relevance of these results, and assessing their applicability in your clinical population or individual patient. It has been shown that isolated workshops and courses are insufficient to acquire and master these complex EBM skills; it is likely that this requires deliberate practice with repeated practicing these skills and receiving feedback from credible role models. So this is what we’ll do in this session - deliberate practice of EBM skills. And not only that - we’ll do it in an inspiring, engaging, and highly enjoyable way: through community singing. The Wild West Show is a notoriously dirty rugby song, which we have adapted to practice and memorize EBM skills. We will teach you the Wild West Show of EBM, and you’ll learn about the ully-gully bird, the winky-wanky bird, the PICO pecker, the bias beast, and much, much more. After this presentation, you will not only have a soar throat from singing raucously, but also a warmed heart from sharing a song with hundreds of kindred spirits, and - last but not least - a memory aid on EBM skills that you will never forget and will be able to share with your colleagues and trainees back home.

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**#5D6 (2845)**

**Anatomy for the artist, but also art for the anatomist: A novel approach in teaching Surface Anatomy**

**Vasileios Mitrousias, University of Thessaly, Faculty of Medicine, Department of Anatomy, Larissa, Greece**

**Aristeidis Zibis, University of Thessaly, Larissa, Greece**

**Kyriaki Baxevanidou, University of Thessaly, Larissa, Greece**

**Dimitrios Arvanitis, University of Thessaly, Larissa, Greece**

**Summary:** Where can you find an Atlas of Human Anatomy? Of course, in a medical student’s home. But in an artist’s atelier too. The human body has always been a challenge for artists. Its portrayal was a mean of understanding but also questioning the human nature. Similarly, human body is also a challenge for medical students and doctors. For them, understanding and questioning the human body is a cornerstone for treating. What do they have in common? Anatomy knowledge. Throughout the years artists and anatomists shared their experiences and contributed together to the comprehension of human body. Artists always needed to study anatomy, in order to ameliorate their technique and create more realistic paintings and sculptures. But what about using their paintings and sculptures for teaching anatomy? We present our experience in teaching human surface anatomy by using artwork. Students’ attitude towards this new, innovative approach will be discussed and a small, live, anatomy & art workshop will take place. Anatomy is a potent subject, because the subject is us. And art is maybe the tool for revealing such knowledge, free of taboo, more accessible for everyone.
The reflective zombie. Are students actually reflecting or acting reflective?

Anne de la Croix, LEARN! Academy, Department of Behavioural Science, Vrije Universiteit, Amsterdam, The Netherlands
Mario Veen, Erasmus MC, Rotterdam, The Netherlands

Summary: Imagine two third year medical students, Lara and Rashid. They both wrote identical reflective essays, for which they both received an A-. They both have an IQ of 130, are generally liked by teachers, and their GPA is above average. As medical students, they are identical in almost every way, except … one of them has actually reflected in the essay, the other just acted reflective. How do we know which is which? Which one is the reflective zombie? By using thought-provoking metaphors and similes, we will illustrate that the current approach to reflection in medical education is inviting the rise of a zombie apocalypse.
Research Papers: Selection and Prediction

Cathelijn Waaijer, Center for Innovation in Medical Education, Leiden University Medical Center, Leiden, Netherlands
Lambertus J. van der Wurff, Centre for Science and Technology Studies, Faculty of Social and Behavioural Sciences, Leiden University, Leiden, Netherlands
Theo N. van Leeuwen, Centre for Science and Technology Studies, Faculty of Social and Behavioural Sciences, Leiden University, Leiden, Netherlands
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Introduction: Clinicians should be able to critically appraise scientific research in order to practice evidence-based medicine. It is also imperative that a sufficient number of clinicians remains scientifically active in order to advance medical knowledge. However, several studies have noted a decreased interest in research among clinicians in Europe, the USA and Canada (1-2). This decreased interest might be counteracted by early involvement in the scientific process. Therefore, we assess whether early involvement affects the involvement in science of clinicians later in their career. Specifically, we study the following questions: does publishing before graduation (1) increase the likelihood to publish after graduation, (2) does it increase the number of papers published after graduation, and (3) the quality of these papers in terms of citation impact?

Methods: Medical school in Netherlands is comprised of six years of study, of which four are pre-clinical (including a compulsory research project of at least 14 weeks) and two are clinical. From the 2005-2008 M.D. graduates from all eight Dutch university medical centers we selected the graduates with rare last names to ensure accuracy in the assignment of publications to individuals. Rare last names were defined as occurring in fewer than ten last name-initial(s) combinations in the Web of Science (WoS), which resulted in a sample of 2,411 graduates. The names were matched to WoS-indexed articles, reviews and letters published between six years before and six years after graduation. Our used measures are (1) whether an M.D. graduate has published before and after graduation, (2) the number of publications published after graduation, and (3) the mean citation impact of the papers published after graduation, normalized for scientific field.

Results: Of all 2,411 graduates in the selected sample, 887 (37%) had published one or more papers in the six years before and after graduation. Of those, 312 (13% of the selected sample) had published before graduation; 792 (33%) had published after graduation. The "relative risk" of publishing after graduation of graduates who had published before graduation compared to graduates who had not, was 2.54. Graduates who had published before graduation were also more productive after graduation: on average they published 7.03 papers compared to the 1.77 papers published after graduation by graduates without pre-graduation publications. Graduates with pre-graduation publications also had a higher mean normalized citation impact than graduates without pre-graduation publications: 1.36 versus 1.06 (where 1.00 is the world average).

Discussion and Conclusion: In this study, we found that early involvement in science, as measured by having published scientific papers, is a predictor of involvement in science later in the career. M.D. graduates who have published before graduation, (1) are approximately 2.5 times as likely to publish after graduation, (2) publish more papers after graduation, and (3) have a higher citation impact. Therefore, if medical students are involved in science early in medical school, it could have a profound effect on their later careers in (academic) medicine.


Unravelling the mechanism underlying motivation for the medical study: interviews show a negative effect of selection

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Introduction: The medical admissions system in Netherlands has recently moved from a weighted lottery to a qualitative selection procedure. It makes for a good context to study the effects of introduction of a qualitative selection procedure on the motivation of the applicants and how they prepare for the selection. The framework of Self-Determination Theory (SDT) (1) of motivation was used in the current study to answer the following questions: i) What types of motivation do high school students' have for applying to medical school? ii) What are the factors that influence the development of these types of motivation? What are the underlying mechanisms?, and iii) What are the effects of selection on high school students' motivation for the medical study?

Methods: A qualitative study using semi-structured interviews was set up using a constructivist approach. In 2015, study counsellors and 3rd-6th year students from one predominantly White and one multi-ethnicity high school in Amsterdam were purposefully sampled. Interviews with study counsellors yielded inputs for
constructing the interview guide for students. Interviews were audio-recorded and transcribed verbatim. Participants were presented a summary of their interview as a form of member-checking. Data was coded using a template based on the motivation types, autonomous (originating from within the student) and controlled motivation (originating from external reasons) described by SDT, and open coding for factors that influence motivation. The first interview was coded together with UI. Another four interviews were coded independently by AW and UI and compared. Differences were discussed until consensus was reached, resulting in a refined coding scheme. AW coded the remaining interviews. Findings were discussed and finalized within the research team.

Results: Three study counsellors and 24 high school students (18 females) participated in the study. Main reasons for pursuing medical study were related to autonomous motivation (e.g. scientific interest and helping people), but controlled motivation (such as parental influence, prestige) was also reported. Healthcare experience positively influenced students’ autonomous motivation and served as a reality check for expectations. Although students did apply for selection, they perceived inequality in the access to the medical study. While having medical professionals in their network sparked students’ interest and facilitated easier access to healthcare experience, lack of opportunities had the opposite effect. Students from the predominantly White school were more likely to have doctor parents. Moreover, first generation university students received less support in their study choice and selection preparations.

Discussion and Conclusion: Findings showed a complex interplay between healthcare experience, growing up in a medical family, selection and motivation. Healthcare experience, often one of the selection criteria, helps students to form autonomous motivation for the medical study. However, such experiences, as well as support in the selection process, seem unequally accessible to students. As a result, underrepresented students’ motivation decreases, which may cause them to refrain from applying. Thus the diversity of the student population and medical profession may suffer. Medical schools should take this into account when designing their selection procedure and could create possibilities for gaining healthcare experience. High schools could incorporate healthcare internships as part of their study counselling programs and offer tailor-made guidance to individual students.


#5E3 (176) The influence of language, gender and age on Situational Judgement Test Scores (SJT) in first year post-graduate nurses in Australia

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Introduction: The SJT is reported to have less adverse impact on minority groups (Lievens et al., 2008). It is also considered to be fairer than other selection tools, less susceptible to social bias, and equitable with regard to applicant demographic status (Patterson et al., 2016). This study investigated the impact of demographic characteristics (age, gender, language) on SJT scores and test completion time in Australian graduate nurses entering their first year of registered employment. Many nurses come to Australia to train, hence the impact of English as a second language on test scores was of interest.

Methods: Over two half-day workshops, nurses, paramedics, radiation therapists, dieticians and physicians developed a 33 scenario SJT across four domains (empathy, integrity, collaboration, resilience), each with six associated rating statements. Seven items were deleted due to subjectivity of scenario interpretation. Of the 24 remaining items, seven were contextualised for each discipline and 17 were generic in the situation, but contextualised for the depicted character. Here we present results for N=261 first year out nurses (13.8% male; age range 20-54 years) in a large metropolitan hospital. This was the first exposure to an SJT for all participants. Age was categorised as 20 to 24 (n=159) and >25 years (n=99). English as a First Language (EFL n=217) and English as a Second Language (ESL, n=41) were determined. Associations between participants’ total score on the SJT (SJTTS) and their gender, age, ESL, and test completion time (TCT) were explored through correlations and non-parametric tests.

Results: SJTTS didn’t differ by gender or age. Age correlated with TCT (r = .32, p < .001). TCT negatively correlated with SJTTS (r = -.17, p = .004), Empathy (r = -.12, p = .04), Integrity (r = -.22, p < .001), Collaboration (r = -.16, p = .008), but not Resilience. SJTTS for ESL were lower in domains except Resilience. ESL negatively correlated with TCT (r = -.27, p < .001). Difference in median TCT minutes was found between older (MdntCmns = 33.49) and younger (MdntCmns = 26.48) test takers in the ESL (U = 96, Z = -2.860, p < .001) and EFL groups (older Mdnt = 26.02; younger Mdnt = 23.89; U = 4161 Z = -2.506, p = .012). Effect size was medium in the ESL group (r = .42), and small in the EFL group (r = .17).

Discussion and Conclusion: Our findings in first year registered nurses completing an SJT for the first time indicate no relationship between SJT scores, gender and age. Older participants took longer to complete the test, and longer test completion time was associated with lower scores for most domains. Nurses for whom English is a second language scored lower. Since comprehension of scenarios in English depends heavily on language skills, these findings indicate ESL as a potential source of bias in SJT scores. Nurses in the ESL group were older, and took longer to complete the test compared to nurses in EFL group, indicating an age by ESL interaction. SJT may be a useful tool in selection of post-graduate nurses. Caution is required given the potential disadvantage of ESL.

The value of Situational Judgment Test for selection into medical school: evidence from UKCAT validation studies

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Introduction: The UK Clinical Aptitude Test (UKCAT) is a test series used by a consortium of universities for entry into medical and dental education and training, and is completed by over 20,000 candidates annually. In 2013, a Situational Judgment Test (SJT) was developed as part of the UKCAT to assess important non-academic attributes necessary for effective performance as a medical student, e.g. integrity. Preliminary validation studies in 2014 and 2015 provided support for the SJT predicting in-training performance of students one year into the program. To understand the extent to which SJT performance at selection predicts subsequent performance throughout the degree program, it is essential that ongoing validation research examines this relationship at other time points.

Methods: Participants were medical and dental students from participating schools in the UK who entered the program in 2014. During their 2013 selection process, the participants completed the UKCAT SJT, which comprised 66 items designed to measure three domains (Integrity, Team Involvement, and Perspective Taking). Performance on the SJT was correlated against outcome data across the students’ first and second years in the program. Outcome data included peer and tutor performance ratings and end of year exam performance. Peer and tutor ratings were collected using the Relative Percentile Method (RPM), whereby participants were scored in comparison to their cohort across the three domains targeted by the SJT (Integrity, perspective taking, and team involvement). Exam data were collected for performance across three areas (Applied Life Sciences, Clinical Skills & Reasoning, and Health & Society & Professionalism).

Results: Research conducted in 2015 (n=218) found significant positive correlations between SJT performance and tutor ratings (corrected r=.34). Moreover, students identified as ‘likely to struggle’ scored significantly lower on the SJT compared to those who were not identified as likely to struggle. Research conducted in 2016 (N=123) showed a significant positive correlation between the SJT and performance on the Health & Society exam (the most criterion-relevant exam to the SJT domains). When Clinical Skills & Reasoning performance for both years was combined with Health & Society performance, this also presented a significant positive correlation. The SJT also demonstrated consistently good levels of reliability (Cronbach’s alpha = .77). Importantly, the SJT produced smaller group differences compared to cognitive ability tests.

Discussion and Conclusion: This paper strengthens early predictive validity research with new evidence from these students in their second year. The results from these validation studies provide evidence to suggest the SJT has predictive validity across first and second year performance. Taken together, these findings demonstrate encouraging support for the use of this SJT in the UKCAT as a non-academic selection method that predicts later performance, and also has potential to widen access to candidates historically disadvantaged by traditional medical school selection methods.

Introduction: Internationally, work hour restrictions remain the primary solution to the problem of fatigued trainees. Existing research on resident work hour restrictions has focused on proving or disproving whether these restrictions have reduced fatigue, resulting in better-rested, safer trainees and patients. The results are inconsistent across the literature, for reasons that are not entirely understood. One possibility is that most studies consider fatigue from an individualistic, physiological perspective. By approaching the issue of fatigue from a different perspective, as a collective and social phenomenon, further insights await that would not otherwise be appreciated by a purely individualistic stance. Thus, this thesis explores fatigue as a social construct and its relevance to workplace-based strategies for managing fatigue, namely work hour reform.

Methods: This program of research is comprised of four interconnected studies that use a constructivist grounded theory approach to qualitative research. The two main theoretical frameworks that shaped the course of the dissertation were sociocultural learning and social constructivism. The main data were individual semi-structured interviews with postgraduate trainees. The first three studies took place in Canada, where work hour regulations are not legislated and existing rules are inconsistently enforced. The fourth study consisted of interviews with residents across four European countries with established, legislated work hour regulations. Data collection and analysis proceeded in an iterative fashion, in keeping with the chosen methodology. Because the researcher is a central influence over every decision made through the course of research, reflexivity was a critical component of the process. This research was approved by the Health Sciences Research Ethics Board at Western University (REB #102769).

Results: Our findings highlight fatigue as a pervasive and covert social construct within the clinical training environment. Residents generally saw fatigue as a personal challenge to be overcome, rather than a collective hazard to be avoided. Working longer hours held various meanings in different contexts. In the Canadian context it was a sign of commitment, while in the European context it was equated with inefficiency. Our interviews with Canadian trainees also revealed that, without legislated duty hour policies, residents’ decisions about whether to stay or go following a call shift were shaped by cultural norms rather than fatigue. And, when residents chose to recover from their call shifts, they did so in ways that were not always intended to make up for lost sleep.

Discussion and Conclusion: By making the social constructs of fatigue explicit, the barriers to authentically managing fatigue in the clinical workplace become more apparent. For example, fatigue is not a shared problem to be managed across all levels of the healthcare system. This has implications for medical training in jurisdictions at any stage of work hour reform, whether regulations are being contemplated, implemented or revised. Interventions that focus solely on hours of work are insufficient to manage such a multi-dimensional construct. Work hour restrictions can bring awareness to the reality of fatigue in practice, but they do not eliminate fatigue. Over time, interventions that reflect the complexity of medical education and fatigue will hopefully give rise to a more authentic approach to managing fatigue.


#5F2 (18)
The links between organisational, team and individual medical postgraduate workplace learning – An ethnographic and action-based research study

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Introduction: This thesis focuses on the integration of medical doctors’ daily clinical work around patient care with the concurrent need to train future medical specialist. The objective was to investigate the link between work organisation, the group of doctors and the individual learner. It demonstrates the significance of work organisation in relation to adapting and developing workplace learning to the reality of the hospital setting. The thesis comprises three studies aimed at providing a conceptual understanding of beliefs and ways of organising specialist training and illustrate the use of a change intervention framework and action research aligned methods.

Methods: First, an explorative ethnographic case study was conducted, focusing on the organisation of specialist training in three paediatric departments using both observations and focus-group interviews. The sociocultural learning theories of communities of practice and workplace affordances and workplace pedagogy were employed as theoretical frameworks. Secondly, a retrospective analysis of electronic records of junior doctors’ perspectives and initiatives for change from a yearly innovative process (3-hour meetings) from 2006 to 2014 was introduced. The records were thematically analysed with a continued focus on the interrelation between work organisation and training. Cultural-Historical Activity was applied as an analytic tool that helped with the identification and redefinition of the
objects of work and learning in the activity systems. The final and third study combined the Cultural-Historical Activity Theory derived Change Laboratory intervention with the established 3-hour meeting innovative process resulting in a participatory action research aligned intervention study in a paediatric department.

**Results:** The initial study illustrated that junior doctors’ and consultants’ beliefs about workplace learning are of importance when handling the potential conflict and different discourses on service versus training, and it pointed towards both conceptual and contextual factors to take into account when supporting and improving junior doctors’ opportunities for learning. The second study showed that junior doctors were successful and important contributors in initiating change and development by bringing in the instrumental elements of the activity systems. The final study showed how the research team in collaboration with medical doctors restructured and reorganised their educational setting in an outpatient clinic. The Change Laboratory was feasible and resulted in a joint action plan and provided detail descriptions of present tensions and contradictions in the activity system.

**Discussion and Conclusion:** We provided perspectives on organising specialist training in the complex hospital setting, and illustrated how challenges might be addressed and deconstructed when aiming at aligning junior doctors’ workplace training with daily work and an ever changing healthcare organisation. We recommend increased attention to the interrelation and alignment of the curricula of specialist training and the workplace. The paediatric Change Laboratory resulted in a joint action plan with the aim of enhancing learning in the clinical setting. Furthermore, it provided detail descriptions of present tensions and contradictions. Thus, the thesis contributes to activity theoretically inspired action research aimed at overcoming barriers and tensions in order to redesign work and learning. In conclusion, the work contributes to conceiving of and enabling medical learners to become transformative agents.


#5F3 (9)
Engaging patient-centredness in an undergraduate medical curriculum

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**Introduction:** Patient-centredness has been identified by most medical schools as a desired competence. However, there seems to be a focus on biomedical aspects of patients in the practice and theory of teaching and learning in undergraduate medical curricula; therefore, students focus on the disease of patients. The expectation that doctors should be patient-centred has caused medical curriculum planners worldwide to pay attention to aspects such as communication skills training, including subjects from the humanities and placements of students in longitudinal clerkships. Despite some of these initiatives, medical students still display a lack of patient-centredness by graduation.

**Methods:** An explorative programmatic case study design, rooted in an interpretive knowledge paradigm, was considered most appropriate for the study in which final-year medical students and lecturers participated. Interviews with students (n=60) and lecturers (n=5) were held, observations of clinical teaching activities were conducted and curriculum documents of the curriculum were analysed. The three-tiered phases of data analysis (Miles & Huberman, 1994) were followed to structure the data analysis. Elements of an existing model, the Integrated Behaviour Model (IM) (Fishbein, 2000), were used as sensitising concepts in order to organise and report the qualitative data. While a deductive analysis process was followed by making use of the IM’s various elements as themes, there was a constant comparative process between the themes of the IM and the data so that additional aspects that were evident in the data but not in the themes of the IM could be identified as new themes.

**Results:** The findings revealed that the following factors play a role in students’ learning about patient-centredness: background characteristics of students and lecturers, attitudinal factors, acquired skills and knowledge, subjective norms, student self-efficacy, assessment of learning, and the environment or context within which patient-centredness is taught and learnt. Two factors that have proved to have a highly significant effect on the learning of patient-centredness are subjective norms and assessment. Subjective norms refer to the clinical learning environment where the students are exposed to role models, as well as opportunities to practise patient-centredness on real patients. Assessment is recognised as an important factor that drives student learning, and the lack of assessment of patient-centredness in many departments renders a message strongly favouring the biomedical approach to patient care.

**Discussion and Conclusion:** The study provides new insights into the teaching and learning of patient-centredness in an undergraduate medical curriculum by suggesting an adapted version of Fishbein’s IM. With an improved understanding of enablers and disablers it is acknowledged that such learning is about more than the positive attitudes of students and providing them with patient-centred communication skills training; a critical aspect is the clinical learning environment. This environment needs role models that support the development of patient-centredness, thus cultivating a positive hidden curriculum for medical students. This study emphasises a need for a jointly planned and well-coordinated approach to the formal, informal and hidden curriculum spaces within a programme with well-trained
Virtual Patients for Learning of Clinical Reasoning

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Introduction: Clinical reasoning is generally considered a decisive component of nearly everything doctors do in practice. There are indications that clinical reasoning is not well enough taught during medical training as students are exposed to too few supervised learning experiences with real patients. Virtual Patients (VP), online cases, where the learner diagnoses and treats a patient interactively, can foster clinical reasoning (Cook et al. 2010). The aim of this dissertation was to explore how learning with Virtual Patients to foster clinical reasoning in medical students can be improved by addressing the following two main research questions: I: How to improve the design of Virtual Patients to foster learning of clinical reasoning? II: How to improve the implementation of Virtual Patients to foster learning of clinical reasoning?

Methods: Answers to the two main research questions were based on five consecutive studies using multiple methodologies. Using focus groups among clerkships students who were exposed to VP of different design we explored the ideal design features of VP. A modified Delphi study among VP experts was used to establish a VP design typology for improving the reporting and researching on VP. Further we developed and established validity evidence for an instrument to evaluate VP design from the student perspective. Using focus groups among students who were exposed to VP in different curricular integration scenarios we explored features on how to optimally implement VP into a clerkship. In a last study we explored how different exam formats in an assessment of a clinical clerkship which includes learning with VP are perceived by students in respect to their influence on learning (pre-assessment effect) of clinical reasoning and whether their psychometric properties differ.

Results: Based on the first three studies the following three main aspects seem to be especially relevant for optimizing VP design to foster learning of clinical reasoning: (i) Using instructional design criteria such as ensuring an appropriate level of difficulty, authenticity, interactivity, feedback and focusing on relevant learning points, (ii) implementing virtual coaching on clinical reasoning into the VP such as asking for discriminating and confirming features and (iii) providing theory-guided instruments for systematic further improvements such as the developed VP typology and VP design questionnaire. Based on the two last studies the following three main aspects are especially relevant for VP implementation: (iv) Sequencing VP and other educational activities according to complexity and aligning (v) instruction and (vi) assessment with the use of VP.

Discussion and Conclusion: Our results are in line with current theories and insights outside of VP research e.g. on instructional design, on how to foster learning of clinical reasoning (Schmidt & Mamede 2015) and on instructional design theories regarding curriculum development. Our studies demonstrate how VP can be designed, systematically further improved and implemented to foster learning of clinical reasoning. Major strengths of this dissertation are the authentic settings in which studies were performed, the involvement of different stakeholders in the studies and the combination of different research methodologies. Further research is needed to develop a greater understanding of VP design and implementation multi center and in other contexts, including their longitudinal implementation and measuring their impact on patient outcomes. VP should never replace real patient exposure.

#5G Symposium: Do we really need cadavers any more to learn anatomy in undergraduate medicine?

Location: Hall 3f

Paul McMenamin, Monash University, Melbourne, Australia
John McLachlan, Durham, UK
Adam Wilson, Chicago, USA
James Pickering, Leeds, UK
Jennifer McBride, USA
Darrell Evans, Newcastle, Australia
Andreas Winkelmann, Germany

Summary: With the availability of numerous adjuncts or alternatives to learning anatomy other than cadavers (medical imaging, models, body painting, interactive media, virtual reality) and the costs of maintaining cadaver laboratories it may be timely to have a mature debate about the need for cadavers in the teaching of undergraduate medicine. This may be particularly pertinent given the exponential growth in medical knowledge in other disciplines which gives them valid justification for time in already busy medical curricula. In this symposium the pros and cons of cadaver use in modern medical curricula will be debated and audience participation encouraged.
**Background:** Prior research indicates that selection methods to access higher education influence candidates’ self-belief, attitudes towards work, as well as their perceptions of the selecting institution. In the case of studying medicine, it may even deter some students from applying, thereby compromising widening participation. However, this phenomenon is relatively under-researched.

**Summary of work:** A mixed-methods survey was administered to investigate students' perceptions of medical school selection methods. Sampling at open days and a pre-medicine summer school recruited 749 respondents. Group differences for gender and socio-economic background were analysed in Likert-scale responses, and these findings informed thematic analysis of the qualitative data.

**Summary of results:** Students from lower socio-economic backgrounds were less confident about their academic performance, and perceived interviews to be less fair than students from higher socio-economic backgrounds. Females regarded selection methods as more daunting than males. Inductive analysis identified themes about the acceptability of selection criteria and deterrents to studying medicine.

**Discussion:** Themes focusing on face validity and fairness identified issues with selection methods, but factors described as barriers to entering medicine related to the wider context of medical study, such as the cost of medical school; time to complete a course; and lifestyle considerations being a medical student.

**Conclusion:** Views on selection methods vary by socio-economic status and gender. Some prospective applicants view selection methods as unfair due to unequal access to social, educational, and financial resources. Specifically, they challenged the fairness of minimum GCSE requirements, use of traditional interviews and relevance of academic qualifications as barriers to entering medicine related to the wider context of medical study, such as the cost of medical school selection. The AAMC has recommended new screening tools for personal characteristics, adding situational judgment tests (SJT) to address concerns of applicants from lower socio-economic backgrounds.

**Take-home message:** Even selection methods with low acceptability were not seen as deterrents to application. However, this survey does not capture views of those deterred at an earlier stage. Medical stakeholders should address concerns of applicants from lower socio-economic backgrounds, including ensuring fairness and promoting diversity in the applicant pool.

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**#5H 1 (2336)**

**Prospective medical school applicants’ perceptions of various selection methods: Implications for widening participation**

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Sian Morgan, Cambridge Assessment, Cambridge, UK

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**Background:** Changes in systemic and societal demands on healthcare can be partly addressed with changes in medical school selection. The AAMC has recommended new screening tools for personal characteristics, adding situational judgment tests (SJT) to address concerns of applicants from lower socio-economic backgrounds. What is their impact of traditional vs SJT selection tools on promoting diversity?

**Summary of work:** An psychometrically sound online video-based, open-response SJT – CASPer – CASPer administered to NYMC School of Medicine applicants (20% of US medical school applicants). Pearson's correlation coefficients were used to determine impact of GPA, old MCAT, new MCAT, and CASPer upon applicants' AMCAS fields - gender and educational, racial/ethnic, and economic backgrounds.

**Summary of results:** Higher CASPer scores for applicants with paid employment before age of 18 (X=5.16 vs. x=4.96, p < 0.05), and females (x=5.21 vs. x=5.03, p < 0.001), opposite of GPA and MCATs. CASPer - lower impact on URMS than GPA or MCATs, (F= 245.92 vs F =779.81, F= 710.41, F=922.64).

**Discussion:** CASPer’s assessment of personal/professional qualities of applicants at time of selection provides a balance to traditional cognitive measures where applicants from more diverse background are potentially at a disadvantage, including URMS, where the effect of the CASPer test are the opposite of traditional GPA and both MCAT tests.

**Conclusion:** While diversity goals are enhanced through holistic processes, screening tools with predictive validity remain a core component of student selection but at the potential cost of limiting diversity. Of GPA, MCAT and the online SJT - CASPer, the situational judgment test is the most effective in promoting diversity.

**Take-home message:** While psychometric strength is critical in high-stakes selection measures, equal attention must be paid to the impact that selection measures have on social mandates including diversity. CASPer provides a feasible way to screen all applicants on personal/professional qualities.
#5H3 (2894)
The Impact of Selected Markers of Diversity on Success in the Application Process: Results from two Canadian MD Programs

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Background: It is widely accepted that we need to broaden diversity amongst students admitted to medicine. Canadian schools do not, however, ask applicants to self-identify according to race, ethnicity or socio-economic status, so little is known about the impact of these variables on applicants’ success in gaining admission.

Summary of work: We require applicants to identify their birth location and high school graduation location. Using this information, all applicants from 2010-2016 at U of C (n=8816) and UBC (n=12080) were coded as born in an English-speaking country or not, and having graduated high school in an English-speaking country or not.

Summary of results: We calculated success rates at each application stage for each applicants group. T-tests were used to compare the results between groups. Applicants born in non-English-speaking countries were less likely to be admitted (16.1% vs 22.0%), and even less so if they graduated HS in a non-English environment (11.2% vs 20.6%).

Discussion: Analysis of individual application components revealed that the largest contributor to this difference in eventual outcome occurred at the interview stage, where applicants born or educated in a non-English speaking milieu were scored significantly lower. Other application elements (MCAT, GPA, File reviews) showed no between group differences.

Conclusion: Many possible explanations exist for these findings. One such possibility, but by no means the only one, is that despite explicit intent to create an equitable process, unintentional bias exists within the admissions process. More research is required to explore the origin of these differences.

Take-home message: The simple fact of having been born in a non-English speaking environment, and even more so having been educated in one, has a negative effect one’s likelihood of admission at either of the involved medical schools. The exact reason for this observation requires more rigorous study.

#5H4 (2887)
A mission-driven special master’s program helps increase diversity in professional schools

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Background: A diverse population of healthcare providers is important to reduce healthcare disparities and provide culturally-sensitive care in underserved areas. However, strategies to increase enrollment of diverse students in health profession programs should include mechanisms to ensure that these students are prepared to succeed and receive licensure.

Summary of work: The mission of the MS in Medical Sciences is to prepare diverse students whose career goal is one of the health-professions. It is designed to serve as a stepping-stone to professional school for students who show promise but are not competitive for direct admission based on their undergraduate metrics.

Summary of results: The MSMS program has graduated and placed 173 students since its inception in 2011 and a majority of these were considered diverse. MSMS graduates are generally prepared to meet the challenges of professional school, as indicated by rankings in their professional school classes and early data on licensure scores.

Discussion: We will show evidence that data-driven postbaccalaureate programs such as MSMS can make a significant contribution to diversifying health professions schools and, ultimately, the workforce. Preparing students for the intense curriculum in professional school is a key to success and is equally important to supporting their matriculation into the programs.

Conclusion: The MSMS program has increased enrollment of diverse students in health professions schools. We believe this will translate to more culturally competent clinicians entering the workforce. We have also shown that success in the program’s curriculum, rather than incoming metrics, is a good predictor of success in professional school.

Take-home message: In addition to diversifying the professional schools, the MSMS students and graduates have also helped to establish an inclusive campus culture and advanced the social mission of the institution. They play a significant role in campus organizations, outreach activities and fill an essential need as translators in community health clinics.
#5H5 (3282)
Widening Participation and technology: Creating an environment for success

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**Background:** Higher Education should no longer be elitist. Diversifying intake necessitates recognising the needs of heterogeneous populations, addressing social equity and the digital divide. Widening participation students have potential to benefit from technology, yet little is known about their diverse needs; universities appear tentative when deciding how to cater for them.

**Summary of work:** Using survey methodology and open-ended questions, we explored the views of secondary school students (n=750) in North East England using the discrete variable of socioeconomic background; the relationship between socioeconomic factors and digital expectations and capabilities of future students were investigated to inform inclusive practice. Statistical- and thematic-analysis were utilised.

**Summary of results:** Socioeconomic differences between groups were observed. Less advantaged students suggested learning with technology predominantly occurs in traditional school settings where teachers are the dominant influence on technology utilised and choices surrounding online information. They were less likely to be critical when searching for information or to suggest they ‘needed’ technology.

**Discussion:** Prospective WP students must be seen as autonomous shaping forces in their own right. Our research addressed the fundamental lack of understanding on how they use technology.

**Conclusion:** Any research that will inform practice of the future must include a comprehensive view of young people, education and technology. We need to develop research-informed strategies directed towards these stakeholder’s needs and expectations, refraining from promoting undesirable differences between groups.

**Take-home message:** Prospective widening participation higher education students have a unique set of technological needs and expectations, and identifying these needs will ensure we set them up for success. Increasing widening participation student intake into medical schools makes it imperative to know how to support them and create an environment for success.

#5H6 (2915)
Made for medicine? Characteristics of UK first year medical students

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**Background:** The Health Secretary has pledged a 25% increase in medical school places from 2018 under plans to make England ”self-sufficient”. This is on a background of falling applications to UK medical schools, and medicine was advertised through Clearing for the first time in a London medical school in 2016.

**Summary of work:** An online questionnaire survey was administered to pre-clinical and 1st year students at 15 UK medical schools between September 2013 & June 2014 (n=1132). Apart from demographic characteristics, other information collected (not presented here) included psychological variables.

**Summary of results:** The typical medical student was female (57.8%), from a high socioeconomic class (89.9%), spoke English as a first language (87.1%), did not consider themselves spiritual (66.8%) and almost a quarter had a close relative who qualified as a doctor.

**Discussion:** The common arguments for widening participation are social justice and the wider desirability of improving social mobility. This isn’t solely about ensuring those with the potential to become a doctor are given the opportunity, but also ensuring that the NHS is reflective and understanding of the needs of its patients.

**Conclusion:** Despite the policy focus, medicine still has some way to go when it comes to making access fairer. It also remains unclear how best to measure whether the social mix of medical students is changing as the result of widening participation activity. Further longitudinal work is therefore required.

**Take-home message:** A medical profession with access to the widest possible talent pool is essential for producing the best possible doctors. We need to know who is studying medicine to understand which groups are under-represented in medicine, to validate widening access schemes and to better develop programmes for existing students.
#51 Short Communications: Clinical Reasoning 2
Location: Room 101 a/b

#51i (1390)
Self-Explanation to Support Diagnostic Reasoning Development: Perspectives from Third Year Medical Clerks

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Background: Self-explanation (SE), when used as a learning strategy with clinical cases, contributes to medical clerks’ diagnostic performance. However, its contribution to students’ specific knowledge development remains unexplored. We qualitatively investigated the impact of SE on medical clerks’ knowledge development as it related to their diagnostic reasoning skills.

Summary of work: Eleven medical clerks used SE (aloud) and listened to SE models while solving clinical cases. One week later, we interviewed them after they diagnosed new cases. Participants were asked about their perception of SE’s contribution to their knowledge development. Verbatim transcripts were analyzed using a deductive and iterative approach.

Summary of results: We identified two main themes. First, students described cognitive tasks that were facilitated by SE such as making links between pieces of information and monitoring. Second, students described perceived changes in specific knowledge such as more interconnected knowledge and enrichment of illness scripts.

Discussion: Students commented that SE allowed reactivation and elaboration of knowledge. SE forced them to explicitly describe underlying pathophysiological mechanisms. SE allowed them identifying specific gaps. When solving new clinical cases one week later, students reported being able to recognize more easily relevant illness scripts and to better argument their diagnosis.

Conclusion: Learners described SE as making them aware of their specific knowledge, allowing connections between pathophysiological and clinical knowledge, and supporting refinement of illness scripts. The participants’ expertise level and the SE techniques used in the study, e.g., verbalization when self-explaining and listening to SE models, might have influenced our results.

Take-home message: Medical clerks perceive SE, when used as a learning strategy while solving cases, as a useful mean of promoting elaboration of specific knowledge relevant to the cases. Participants also reflected on how SE helped them identify gaps in their specific knowledge.

#51i (2644)
Beyond heuristics and biases: An alternative view on the origin of diagnostic errors

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Background: Diagnostic errors are often accounted for by physicians’ relying (too much) on heuristics or biases. However, numerous studies have been performed and failed to convincingly demonstrate the actual influence of heuristics and biases on diagnostic errors, except in some contrived or hard to generalize cases.

Summary of work: Critical inspection of studies on the origins of diagnostic errors identified significant problems at their very roots, which prevent researchers from drawing clear conclusions about the origin of diagnostic errors. These issues involve major aspects of diagnostic problem solving: biases, errors, diagnostic reasoning, and models of intuitive versus analytical reasoning.

Summary of results: The concept of bias has been seriously distorted by researchers in medical education; studies fail to distinguish problems involving judgments from those involving knowledge application or reasoning; there is no normatively correct model of clinical reasoning; misconceptions of the role of analytical reasoning versus intuition in diagnostic errors prevail.

Discussion: Researchers fail to acknowledge the inherent duality of error in biases: away from one error and towards the opposite error. Diagnostic errors are sometimes viewed as reasoning errors, sometimes as outcome errors. Mechanisms that lead to errors are extensively discussed, whereas the route leading to the correct solution is ignored.

Conclusion: Future studies on diagnostic errors should benefit from the development of: an unbiased view of bias in clinical diagnosis; clear criteria for identifying different types of errors; a normative model of diagnostic reasoning; and conceiving analysis and intuition as lying on a continuum, rather than a dichotomy.

Take-home message: In studying, as well as in teaching diagnostic problem solving, researchers should develop normatively correct solutions for clinical problems and clear standards against which students’ and experts’ performance can be judged in order to provide them with useful feedback to improve their diagnostic problem solving in terms of preventing errors.
Using think aloud to identify the gaps in medical students’ and residents’ clinical reasoning ability. Both content knowledge and clinical experiences are important for CR. The aim of this study was to identify the gaps of CR for different levels of medical trainees and the effects of scheme-inductive learning (SIL) on the CR.

Summary of work: Clinical vignettes were developed for different clinical presentations in neurology. Using the think-aloud method, data were collected from four cohorts of subjects, fourth- and sixth-year medical students, senior residents and attending physicians in neurology. Transcripts of interview recordings were analyzed for the problem representation and patterns of clinical reasoning.

Summary of results: Experts mostly first identified the key clusters from patient data, students and residents mainly relied on clinical feature(s) for reaching the diagnosis. Difference in the diagnostic accuracy and knowledge deficit were noted between students and residents. SIL could improve the hierarchical organization of knowledge and the identification of key clusters.

Discussion: The ability of the medical trainees to identify key clusters from patient data might influence their hierarchical organization of knowledge and reaching the correct diagnosis. Besides, knowing how to take the next step based on what is presented or what can reasonably be formulated from clinical data is also important.

Conclusion: Using cases with complete patient data and increased difficulty help identifying gaps of clinical reasoning and deficit of medical knowledge. These understanding could make the cultivation of CR ability more effective. Teaching content knowledge in a more structured way (as SIL) might be useful to improve medical trainees’ CR ability.

Take-home message: Although it is important to develop medical trainees’ CR ability, there is still a lot to be done. Besides teaching strategies, knowing the weak area in information synthesis and content knowledge make the cultivation of CR ability more effective. It is also important to develop students’ critical thinking ability concurrently.
Fostering clinical reasoning using video- and text-based worked examples

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Background: Fostering clinical reasoning in novice learners who lack clinical experience is a challenge for educators. Text-based worked examples presenting the full written worked-out solution to a problem can foster clinical reasoning in novices. Video-based worked examples combining visual and audio information could be even more effective.

Summary of work: We compared the effects of video- and text-based worked examples on meaningful learning of intervention knowledge. Eighty-seven second-year physiotherapy students had a one-week online access to six video- or text-based worked examples (random allocation) presenting the clinical reasoning for selecting physiotherapy interventions in patients with physical impairments.

Summary of results: Students in the video-based condition showed higher (P= .018) far transfer performance (i.e., ability to solve problems that are different from those studied) than students in the text-based condition. Students in the video-based condition invested less mental effort during the post-test than students in the text-based condition (P= .014).

Discussion: These results suggest that video-based worked example can foster more meaningful learning of intervention knowledge than text-based worked examples. Moreover, it seems that learners in the video-based condition were cognitively more efficient than those in the text-based condition in terms of learning outcomes (higher performance with lower mental effort invested).

Conclusion: The learning strategy involving video-based worked-examples was more effective than written-based worked examples for promoting far transfer of problem-solving skills in novice physiotherapy students. Video-based worked examples combine visual and audio information which reduces cognitive load associated with learning and gives more room for cognitive processes involved in effective learning.

Take-home message: Multimedia learning using video-based worked-examples can foster clinical reasoning skills in novice learners. Video-based worked example can be an interesting and relevant learning strategy for fostering meaningful learning in health professions learners who have little or no clinical experience.
Evaluation of an Interprofessional Education (IPE) Program at the Universidad Europea de Madrid (Spain)

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Background: Interprofessional Education (IPE) occurs when students from two or more professions learn about, from and with each other (WHO, 2010). The core competencies are Values/Ethics, Roles/Responsibilities, Communication and Teams/Teamwork (IPEC, 2016). An ambitious IPE program has been implemented at the Universidad Europea de Madrid (Spain) since the 2015-16 academic year.

Summary of work: In order to assess the acquisition of Communication and Roles competencies, an adapted version of the IPEC self-assessment instrument (Dow et al, 2014) was employed. It was composed of 17 items. Data from a sample of undergraduate nursing students (second year) was collected four times a year and analyzed (Kruskal-Wallis).

Summary of results: 67.4% of the students (29/43) completed the questionnaire. Communication competency improved during the academic year (p=0.001). However, regarding Roles competency there were no significant differences (p=0.090). 3 items scores increased (p<0.05) along the academic year: “Express my knowledge and opinions to team members”, “Listen actively” and “Use appropriate, respectful language”.

Discussion: Few changes in students’ self-assessment were found, all of them linked to the Communication competence. This fact could be related to a limited capacity of individuals to effectively self-assess (Eva & Regehr, 2011). The tool employed could present difficulties to detect changes over time (Dow et al, 2014).

Conclusion: Communication competence scores increased along the academic year, probably due to the IPE Program. However, no differences were found on Roles competence.

Self-assessment instruments (like IPEC Survey Instrument) are easy to use, although their precision and capacity to detect longitudinal changes could be scarce.

Take-home message: Communication competence scores increased along the academic year, probably due to the IPE Program.
Background: Interprofessional learning is commonly assessed by questionnaires. There is a value in using established questionnaires in order to compare measures between settings. However, they should measure relevant aspects and be reliable. The better the measures, the more we can improve IPL activities, and thus improve healthcare.

Summary of work: Two international validated questionnaires are available in Swedish. The RIPLS, and the Jefferson scale of attitudes towards collaboration between physicians and nurses, JSAPNC. These were psychometrically evaluated and an expert panel assessed items in relation to interprofessional competence domains: Values/Ethics for Interprofessional Practice; Roles/Responsibilities; Interprofessional Communication and Teams and Teamwork.

Summary of results: Data from the JSAPNC and the RIPLS (n=88 and 83, respectively) were analysed. Unidimensionalities were low for the whole questionnaires. Reliabilities were low (0.62 and 0.66 respectively). Most of the RIPLS items related to “Teams and Teamwork” whereas JSAPNC items mostly related to “Roles/Responsibilities” in the IPL competence domains.

Discussion: None of the two questionnaires can be considered as measuring one unidimensional construct. This is problematic because results are often interpreted summing all item scores together, implying the same phenomenon. Ambiguous and socially desireable items contribute to weak interpretations. The questionnaires have merits but should be interpreted with caution.

Conclusion: Sum scores from the Swedish translations should be interpreted with caution. The need for internationally validated IPL questionnaires in Swedish is not satisfied with these versions. Revisions of wordings or thorough translation of other measures would benefit Swedish IPL development.

Take-home message: Questionnaires remain an option to measure interprofessional learning. However, wordings and results should be further discussed and psychometric data should be shared. There are also room for improved international IPL questionnaires in Swedish.

Conclusion: There is increasing interest in the role of technology in interprofessional education to address logistical challenges such as geography and timing. In the interprofessional ‘Diabetes Challenge’ students live like a diabetic patient and reflect in an online blog. We explored the learning that resulted and compared ‘virtual’ and face-to-face groups.

Summary of work: Medical, pharmacy and nutrition/dietetics students took part in two groups. Both groups completed an online blog: Group A had face-to-face introductory and final feedback sessions, Group B had ‘virtual’ introductory and feedback sessions using video conferencing. Quantitative (SPICE questionnaire) and qualitative (focus groups) methods were employed to explore this pilot.

Summary of results: There were significant improvements in all ten SPICE statements in the face-to-face group. In the virtual group there was improvement in one statement. A realist evaluation of qualitative data explored CMO (context-mechanism–outcome) configurations that helped conceptualise the students’ learning.

Discussion: Students’ perceptions of IPE and collaborative working improved when they had face-to-face encounters, but not when facilitated remotely. This may be partly due to challenges of video-conferencing; it also potentially highlights the importance of co-location in learning. However students did report benefits from working interprofessionally in this exercise.

Conclusion: Student report benefits from and see the purpose of IPE, however physical co-location of students may be important for synergistic learning to occur. The involvement of technology (video-conferencing, blogs) requires careful attention to timetabling and facilitator training. Logistic factors e.g. timetabling and geography continue to prove challenges in developing IPE.

Take-home message: Facilitators interested in incorporating technology in IPE should be aware of the time and training required. Despite the asynchronous nature of an online blog, like any form of IPE timetabling at an appropriate point in the curriculum for all students is imperative in order to have high participation levels.
#5J5 (3562)
An interprofessional simulation program for medical and midwifery students – a pre-test and post-test evaluation

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**Background:** While simulation based education is used to teach core obstetrics and gynaecology examination skills and knowledge, it is difficult to be assessed. We undertook this study to assess medical and midwifery student learning using a pre-test and post-test design and to evaluate how the groups differed in their learning.

**Summary of work:** The interprofessional simulation program consisted of pre-reading, lecture, video demonstration and hands-on workshop. Over a 24-month period, 405 (new to the specialty) medical and 104 (experienced) midwifery students participated in the study and were assessed before and after the program. Numerical data were analysed using paired t-test and one-way ANOVA.

**Summary of results:** The post-test score were significantly higher than pre-test (P<0.001) with improvements in scores in both groups. The ANOVA showed significant differences between medical and midwifery students' pre-test scores (p < .001), while no significant differences were found between the scores of these two student groups in the post-test scores (p=. 80).

**Discussion:** Although the medical students, being new to obstetrics, scored relatively poorly in the pre-test, both groups scored similarly in the post-test. This reinforces that teaching content was well aligned with the assessment and interprofessional simulation teaching benefits both participant groups, even if they start at different levels of learning.

**Conclusion:** Medical and midwifery students demonstrated significantly improved test scores in the post-test, providing evidence for a positive knowledge gradient in each student group. If assessment is integrated with educational programs feedback can be obtained by objectively measuring participant learning. Interprofessional simulation programs can assist learning in both/multiple groups.

**Take-home message:** A different level of background knowledge/ experience should not be seen as a hindrance to learning in an interprofessional setting, as various groups may still benefit from the teaching. Assessment attached to interprofessional simulation can objectively assess learning and provide feedback to participants regarding their performance.

#5J6 (2432)
Preliminary results from an Interprofessional Study Unit in Psychiatry

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**Background:** Interprofessional collaboration is a skill that many professionals need to develop. Psychiatric patients with complex needs, requires health professionals collaborate effectively. Many medical students have not been trained in an interprofessional environment. The available data suggests interprofessional education can improve collaboration and health outcomes; however, better designed studies are needed.

**Summary of work:** A quasi-experimental study with an intervention and a control group; where 100 students receive interprofessional training in the psychiatric study unit, while 90 students receive training in a standard psychiatric unit. Data on students' interpersonal skills are collected through questionnaires, before and after the two groups have clinical training.

**Summary of results:** A Pilot Study (N=46) showed a significant increase in positive attitude towards other professionals and collaboration after clinical placement in the study unit (p=0.03). The students in the study unit have a 10 percent higher score compared with students in the standard unit using the Readiness for Interprofessional Learning Scale.

**Discussion:** Data collection started October 2016 and will run until April 2018. The results of this quantitative effect evaluation, is of common interest for mental health service and educational institutions. The results could provide national guidelines for interprofessional education and implemented widely, would improve professionals’ competences in the psychiatric wards.

**Conclusion:** The preliminary results show that interprofessional education improved students' attitudes to other health professionals more than traditional clinical training.

**Take-home message:** Interprofessional study units offers a way to improve collaboration and patient care.
Learning path in bronchoscopy simulation before transition to real-life: do trainees maximize their learning?

**Background:** Virtual reality (VR) simulators have been advocated for: similarity to real life, haptic feedback, automatic scoring guiding learning and unrestricted availability. The goal of this study was to describe learning curves of novices in VR bronchoscopy and explore when and how learners decide to transition to performing procedures in real-life.

**Summary of work:** 24 novice learners were included in a bronchoscopy simulation curriculum using VR. An instructor supervised and explained the strategy and goals (speed, dexterity, accuracy) of training. The automatic scores from the VR were plotted to describe learning curves. Trainees were interviewed to explore when/why they decided to stop training.

**Summary of results:** Two of 24 trainees plateaued their performance in one of the components: speed, dexterity or accuracy and none of the trainees reached the goal (an expert’s score in VR). Reasons for stopping simulation training and wanting to transition to real-life: diminishing returns, good-enough score, other demands, bedside practice more effective.

**Discussion:** Learning curves demonstrate the path of learning. An interaction of the task, context and individual produces a learning curve. While mastery learning has been advocated in simulation, learners give up before reaching a plateau or mastery in simulation when they have other demands and time constraints.

**Conclusion:** Few learners will make “the most” of simulation. Juggling many demands, learners quickly make a decision whether simulation training is the most effective training and what competency level is good enough. The discontinuity and non-monotonicity of learning curves may discourage learner’s trials or make them stop with a “high” score.

**Take-home message:** When certain competency level is required in simulation that will need to be mandated. Instructors need to visually explain to learners the random like fluctuation of learning curves to prevent premature ceasing of practice. When there is close supervision and abundant bedside experiences, trainees can effectively continue learning in real-life.
#5K3 (1324)
2-hour in situ trauma team simulation training is effective in improving non-technical skills of hospital trauma teams

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**Background:** Conducting regular multiprofessional trauma team simulation training in a hospital environment requires significant resources and therefore its effects on learning must be explored. The aim of this study was to evaluate the efficacy of a short structured 2-hour in situ trauma team simulation training course on non-technical skills (NTS).

**Summary of work:** This prospective study comprised 90 trauma teams with 430 participants. The structured, 2-hour course consisted of an introductory lecture, and two different simulations with debriefings. We integrated both self-assessment and validated expert rater assessments (T-NOTECHS) to increase validity of the results.

**Summary of results:** Knowledge of the trauma resuscitation guidelines, problem identification, decision-making, situation awareness/coping with stress, communication and interaction, time management, being under authority and confidence in one’s role in a team improved significantly among both medical doctors and nurses. All teamwork skills evaluated in the T-NOTECHS – scale improved statistically significantly.

**Discussion:** According to previous literature, the efficacy of our course may be explained by following factors: training is regular and structured, multiprofessional teams are assembled on an ad hoc basis, and the simulation is conducted in situ in the emergency department.

**Conclusion:** Short structured 2-hour high fidelity in situ multiprofessional trauma team simulation training is effective in improving non-technical skills in hospital trauma teams among both medical doctors and nurses as evaluated by both self-assessment and the two expert raters.

**Take-home message:** The non-technical skills required by a well-functioning trauma team are difficult to obtain in daily practice without regular training. Our study demonstrates that the short structured 2-hour in situ trauma team simulation training course is effective in improving non-technical skills.

#5K4 (779)
Managing emergencies in the community: Taking simulation out of the classroom and into real life environments

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**Background:** General Practitioners (GPs) have a responsibility to provide prompt and effective care in an emergency. However, this is an area where doctors lack confidence. In this highly innovative work, we aimed to upskill GPs in managing emergencies through simulation based teaching with ‘real-life’ scenarios that could occur in community environments.

**Summary of work:** 10 workshops were delivered to 71 primary care staff. Scenarios included meningitis, anaphylaxis, hypoglycaemia, convulsions, choking and cardiac arrest. Doctors had to find and utilise equipment in their surgery and were asked to physically draw up the appropriate medication. Pre and post confidence ratings and qualitative feedback was collected.

**Summary of results:** Participants’ self rated confidence significantly increased after each workshop. Qualitative feedback illustrated the value of realistic simulation based learning: “I hope this can be done regularly, it will make a huge difference to patient care”, “Excellent - life like to make more memorable”, “good to use the actual surgery equipment”.

**Discussion:** Many of the participants knew ‘in theory’ what to do but lacked the practical skills to efficiently manage emergency scenarios (eg turning on oxygen cylinders, drawing up medication).

**Conclusion:** Training doctors through simulation needs to be taken out of the classroom and into real-life environments. This is particularly important for ‘time critical illnesses’ where delays can have a direct impact on morbidity and mortality.

**Take-home message:** There is a need for more realistic simulation based training in medical education. Doctors not only need to know the theory, but also to have the practical skills to quickly and competently manage patients in emergency situations.
In-scenario instruction in healthcare simulation – how should educators fill in the gaps?

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Background: Although mannequins used for simulation-based team training are sophisticated there is a gap between the appearances of a sick patient and a high-fidelity simulator. Facilitators often add information, such as skin color and findings of neurological/abdominal examinations, to bridge this gap and enable understanding of the simulated case.

Summary of work: A multidisciplinary research team performed a collaborative video analysis of simulated scenarios. The aim of the analysis was: 1. To describe various modes in which facilitators from three centers provided in-scenario information. 2. To explore how the modes and other properties of the in-scenario instruction affected the participants’ actions and interactions.

Summary of results: The modes used by facilitators to convey in-scenario information were: 1. As a confederate participating in the scenario. 2. As a bystander in the studio. 3. Informing via loudspeaker. 4. Informing via earphone. The modes as well as tempo, timing and language style of the in-scenario information had effects on participants’ actions and interactions.

Discussion: In our material timing of information was better in mode 1 and 2 when the facilitator had close access to the participants’ actions. Timing maintained workflow and tempo. Un-timed facilitation, on the contrary, could be disruptive to teamwork. This variation in praxis has to our knowledge not been discussed before.

Conclusion: Through collaborative video analysis of filmed scenarios we identified 4 distinct modes of information transfer regarding features not displayed by simulators. We also found visible impact on simulation-participants’ actions and interactions related to the mode used. The material displayed considerable variation regarding language style, tempo and timing of in-scenario information.

Take-home message: When teamwork such as inter-professional communication is trained, inadequate timing, lack of information and lengthy messages from the facilitator can be disruptive for team communication and collaboration. Educators in healthcare simulations can take advantage of the different practices to adjust instruction to the specific learning goals of the training.
Finnish physicians still critical about compulsory recertification - Physician 2003 and Physician 2013 Surveys

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**Background:** In many countries, physicians have to renew their medical licences regularly. Usually the prerequisite for renewal is participating in continuous medical education (CME). In Finland, there is no such system yet. The purpose of this study was to evaluate Finnish doctors' opinions on recertification and potential changes during 2003-2013.

**Summary of work:** Finnish physicians' opinions on recertification were compared between two postal surveys performed in 2003 (RR 65.7%) and 2013 (RR 50.5%). The physicians, licensed during 1977-1991 (n=2750) and 1987-2001 (n=1630) respectively, were asked whether a specialist doctor's licence should be temporary (recertification system) and what prerequisites should potentially be required for recertification.

**Summary of results:** In total, 11.4% and 15.3% of the respondents answered "yes" and 61.9% and 57.2% answered "no" concerning the need of recertification in 2003 and 2013 respectively, male doctors giving more positive responses. Participating in CME (94.5%) and sufficient clinical practice (86.5%) were considered the most important recertification prerequisites in 2013.

**Discussion:** Finnish experienced physicians' attitudes on recertification were still critical but had altered to a more positive direction during 2003-2013. However, the percentage of unsure respondents was notable. Taking part in CME was regarded as a key prerequisite for recertification, and Finnish physicians usually report high CME activity levels.

**Conclusion:** Finnish physicians generally took a negative stance on recertification of specialist doctors. However, the attitudes had altered to a more positive direction during 2003-2013. According to physicians, if the recertification system would be implemented in Finland it should primarily be based on participating in CME and on sufficient clinical practice.

**Take-home message:** Most Finnish physicians were critical or unsure about compulsory recertification, with no major differences between specialties. Participating in CME and sufficient clinical practice were regarded as most important prerequisites for recertification. Written or clinical exams were not considered as suitable methods. Finnish physicians usually report high CME activity levels.
National re-certification systems for medical specialists in Europe – a collective case study

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Background: With increased cross-border movement, ensuring high-quality healthcare has become increasingly important. At a national level, re-certification systems aim to ensure quality of care through periodically attesting medical specialists’ competence. With Europe’s history of recognizing cross-border qualifications, international safeguarding of care, however, can be problematic due to different standards across countries.

Summary of work: This study describes and compares ten different national re-certification approaches within Europe. Semi-structured interviews and document analyses were used to identify and describe key characteristics of each re-certification system. We subsequently compared systems to explore (dis-)similarities regarding incorporation of criteria for good assessment.

Summary of results: Findings indicate significant variability in re-certification procedures, assessment formats and requirements; ranging from voluntary participation in professional development modules to mandatory collection of multiple performance data in a competency-based portfolio. Most countries focus on cognitive expertise, disregarding performance. Furthermore, stakeholders involved range from exclusive self-assessment to multiple stakeholder-assessors, including patients.

Discussion: The use of assessment in re-certification hugely varies across countries, and certainly questions the validity of assessment processes with an over-reliance on self-assessment and limited assessment of practice performance. It can thus be questioned whether systems achieve intended purposes. These findings challenge international quality assurance and medical specialists’ accountability.

Conclusion: European re-certification systems differ substantially in incorporating criteria for assessment of physicians’ competence. They differ in aim, requirements, assessment formats, and stakeholder involvement. Competence-based assessment from multiple perspectives might create a more valid and accountable base for re-certification.

Take-home message: Re-certification should best address lifelong learning and practice of performance, incorporating multiple assessment tools, multiple measurements, and multiple stakeholders. Given professional mobility and increased demands for accountability, practices on competence assessment and re-certification should be shared internationally. This may create more transparency, facilitate cross-border movement, and safeguard high-quality healthcare.

The medical profession’s ambivalence in regards to remediation in practicing physicians

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Pim Teunissen, Maastricht University, Amsterdam, Netherlands
Lara Varpio, Uniformed Services University of the Health Sciences, Bethesda, USA

Background: The remediation of practicing physicians (e.g. those with competence, behavioral, or other issues affecting performance) has implications for education and ongoing professional self-regulation. We explore how explicit and implicit conceptualizations of remediation affect both the perceived ability and the political will of various stakeholder groups to engage in physician remediation.

Summary of work: Semi-structured interviews were conducted using purposive sampling across the range of stakeholders involved in the remediation of practicing physicians, including regulatory authorities, universities, national certifying bodies and medical associations. Using constructivist grounded theory, analysis proceeded apace with data collection in an iterative process, with initial insights guiding subsequent interviews.

Summary of results: Conceptualizations of remediation vary within and between stakeholder groups. There is ambivalence towards those requiring remediation (e.g. “there but for the grace of God go I” vs “they’re not one of us”), and towards the process (e.g. destigmatizing “everyone needs remediation” vs questioning if remediation was worthy of resource expenditures).

Discussion: Our communal ambivalence around remediation is evidenced by simultaneous supportive and distancing attitudes towards remediatees, and positive and negative conceptualizations of the process itself. Perceived personal attributes of remediatees and beliefs regarding their ability to improve may be affecting individual and organizational willingness to get involved with remediation.

Conclusion: While current discussions about remediating practicing physicians focus on educational and practical issues, emotional underpinnings are hidden factors that hinder the profession’s ability to deal with members who fail to meet competency standards. Acknowledging and addressing our ambivalence is essential for the profession to move forward with regards to remediation.

Take-home message: Our community’s ambivalent conceptualizations of remediation for practicing physicians and of those who require remediation may be contributing to the ability and willingness of stakeholders to engage in the process.
The medical education research community has a role to play in helping clarify concepts and the “hidden curriculum” around remediation.

#5L5 (1096)  
‘Nobody likes you and nobody wants to work with you’: unravelling discrimination at work

Sue Kilminster, University of Leeds, Leeds, UK

**Background:** Relevant research shows discrimination at work causes significant problems to many people (up to 90%) living with mental health challenges. Furthermore, presenting biomedical explanations and models of mental health difficulties has been shown to increase stigma and discrimination whereas explanations based on social models are more effective in challenging discrimination.

**Summary of work:** In response to serious problems with discrimination against staff with mental health challenges we developed a programme of workshops and other activities intended to raise awareness and promote a more inclusive environment for everyone. Workshop content was based on an inclusive, social model of mental health, mental distress and confusion.

**Summary of results:** To date 37 workshops have been extremely well received; 90% of participants rated the workshops very useful and 90% would recommend colleagues to attend. Most suggestions for improvement concerned problems with room size, layout and occasional technology failures. Many participants considered attendance should be compulsory; at least for managers.

**Discussion:** Almost all free text comments were positive, particularly about the helpfulness and usefulness of models of mental health presented. Overall, participants found social, rather than medical, models more useful concepts to challenge discrimination and promote inclusion. They also identified a need for both institutional and individual responses to these issues.

**Conclusion:** Workplace training and awareness initiatives generally position the person being discriminated against as the problem; such approaches tend to focus on ‘explaining’ diagnostic labels and how to ‘help’, thus reinforcing perceptions of (ab)normality and consequent expectations and assumptions. In contrast social models provide more empowering alternatives for everyone.

**Take-home message:** 1. Discrimination around mental health challenges includes health professionals and clinical educators. 2. Inclusive, social models of mental distress and confusion are more helpful tools than medical models. 3. Training for individuals is useful alongside institutional level equality and inclusion processes and policies. 4. Everyone has the right to work, free from discrimination.
Evaluate humanity and the six core competencies through written commitments of pre-medical students

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Background: To promote humanity, the Medical College of National Taiwan University launched a camp for pre-medical students. Experiential learning was taught and followed by clinical shadowing of healthcare personnel at hospital. A movie about physicians was filmed. Small-group discussions were held. Students were asked to write a note on their commitments.

Summary of work: The written notes were evaluated, analyzed and categorized repeatedly by a medical doctor expertized in teaching humanity and the six core competencies, namely patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice.

Summary of results: Ninety-one students completed the notes. Sixteen students stated that they wanted to become 'good' doctors and 18 hoped to cultivate humanity. The competencies most desired were 'patient care' and 'professionalism', followed by 'medical knowledge', interpersonal and communication skills, practice-based learning and improvement, and systems-based practice.

Discussion: The camp was successful in teaching humanity. More than half of the students expressed their willingness to become doctors that care for the patients and behaved professionally. These students will be graduated in June, 2017. Follow-up studies on the long-term effects and outcomes of these pre-medical commitments will be performed.

Conclusion: Humanity is important and may be taught by different methods including lectures, clinical shadowing, movies and small-group discussions during a one-day camp. Asking pre-medical students to write down their commitments to medicine is good for the students.

Take-home message: Humanity and the six core competencies can be taught and evaluated by written commitments.
A progressive "skills burst" approach to incorporating collaboration behaviors in pre-clinical interprofessional learning

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Katy Avila, Western University of Health Sciences, Pomona, USA
Sheri Kling, Western University of Health Sciences, Pomona, USA
Phillip Mitchell, Western University of Health Sciences, Pomona, USA

Background: Interprofessional competencies are often defined by specific skills and behaviors that promote collaboration and enhance communication. Curricula are often challenged to provide the context for these behaviors and skills to learners who are in the pre-clinical phases of education, which is when many interprofessional education (IPE) programs begin.

Summary of work: To provide context to learn and practice collaboration skills, a series of "skills bursts" were introduced into the pre-clinical IPE courses delivered to learners from nine health professions. The skills bursts occurred regularly throughout the academic year and incorporated the humanities, personal narrative, and narrative medicine techniques.

Summary of results: A progressive series of skills were practiced and later assessed in learners from 9 health professions. Results indicate a steady progression in integrating the skills at more complex levels while retaining relevance and importance in daily practice with learners in the pre-clinical phases of education.

Discussion: Several modalities from the humanities, narrative medicine and personal narrative provided ongoing opportunities for pre-clinical learners to practice communication and collaboration skills in their daily lives. Reflections from learners demonstrated the utility of incorporating these skills in a pre-clinical context that will translate later to the clinical setting.

Conclusion: Specific techniques from the humanities, personal narrative, and narrative medicine can be incorporated effectively in pre-clinical IPE curricula, providing real-world opportunities for learners to acquire and practice collaboration behaviors, while maintaining the context and importance of these skills.

Take-home message: Incorporating the humanities and narrative medicine into pre-clinical interprofessional education promotes the acquisition and practice of effective communication and collaboration skills across health professions.

How can qualitative evidence synthesis provide an evidence-base for humanism in healthcare?

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Sarah Yardley, Keele University, Keele, UK
Helen Reid, Queen's University Belfast, Belfast, Northern Ireland
Deirdre Bennett, University College Cork, Cork, Ireland
Rachel Ellaway, University of Calgary, Calgary, Canada
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Background: Qualitative research is shedding light on compassion, empathy, and other important aspects of clinical humanism. This evidence is, however, fragmented. Our aim was find how a novel qualitative metasynthesis methodology could bring methodological coherence to it with the aim of helping health professionals learn to care humanely for patients.

Summary of work: The authors developed a working definition of humanism; searched seven databases systematically for Qualitative Evidence Synthesis (QES) research conforming to the definition; worked in pairs to quality-appraise it; and extracted methodological detail and findings. They synthesized methods (meta-method), findings (meta-analysis), and theory (meta-theory).

Summary of results: 49 articles between 1996-2016 examined humanism in childbirth, palliative care, elderly care, and other contexts. Patient-centredness and caring were commonest among a wide range of topics. Searching was often unsystematic. Other weaknesses included lack of specific methodology, critical appraisal, and theory. Articles more often summarized than synthesized findings.

Discussion: This growing corpus of QES research testifies to a will to foster humanistic behaviour among health professionals. Bringing coherence to the field is, however, limited by the low methodological quality of many articles. A dominant focus on subject matter over theory, in particular, prevents the field advancing programmatically.

Conclusion: We propose that researchers could advance education for humanistic practice by making greater use of theory to define humanistic constructs and adopting theoretically richer research approaches. Extending the methodological eclecticism that is now apparent in qualitative primary research to qualitative secondary research could achieve this.

Take-home message: QES methodologies afford new opportunities to build on qualitative research in healthcare. Their application has been hampered, to date, by lack of methodological transparency. Just as systematic review and meta-analysis transformed quantitative research, greater uptake of QES could advance qualitative research. Education for humanistic practice could benefit from this.
#5M5 (449)
A Medical Humanities Course for post graduate physicians: preparing future faculty members to face their challenges in education

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Graziela Moreto, SOBRAMFA- Medical Education and Humanism, São Paulo, Brazil
Marco Aurelio Janaudis, SOBRAMFA- Medical Education and Humanism, São Paulo, Brazil
Marcelo R. Levites, SOBRAMFA- Medical Education and Humanism, São Paulo, Brazil

Background: Humanities portray a tremendous spectrum of attitudes required for building professionalism. They also facilitate communication and to share experiences, which are core issues for educating students and faculty themselves. Making explicit beliefs and values are crucial to job satisfaction, avoiding burn out, developing leadership and rewarding personal and professional development.

Summary of work: The experience consists in a nine-week course about new teaching resources for the humanistic education of doctors. This course is a partnership between the University of São Paulo Medical School and SOBRAMFA- Medical Education and Humanism. The participants are post graduated doctors involved in teaching at different specialties.

Summary of results: Post-graduate physicians attended the course while preparing themselves to become faculty members of 10 different specialties. The results were appraised through their evaluation of the course. They pointed out issues related to be focused on the individual (patients, students), listening people stories and to promote a friendly learning environment.

Discussion: Young faculty face challenges when teaching and have few opportunities to share and reflect with their peers. Instead of nurturing themselves they usually spend most time talking about problematic students. Humanities facilitate peer discussion among faculty, and could be a resource to support their motivation and enrich their teaching skills.

Conclusion: Courses on medical humanities could be incorporated in faculty development strategies. They offer the opportunity for a peer reflection and for sharing challenges in education. Thus, facilitating how to share weaknesses and frustrations, and helping to find resources for keeping up the flame and energy for a better teaching performance.

Take-home message: • Enrich personal culture. • Before fixing the world, we need to fix ourselves. • Role Model: Humanism is not about contents, neither topics. Has more to do with style, attitude. Gets deeply inside the students. • How to put into practice all this humanistic stuff in my personal teaching set? - Personal projects.

#5M6 (1720)
Medical humanities - does the oldfashioned matter?

Rosa Pace, Instituto Universitario Hospital Italiano, Buenos Aires, Argentina
Maria Isabel Zuleta
Susana Bayardo
Andrea Solans
Jose Luis Alvarez
Adolfo Canovi

Background: There is no universally agreed definition of the medical humanities, it is an interdisciplinary field of medicine which includes the humanities (literature, philosophy, ethics, history and religion), social science (anthropology, cultural studies, psychology, sociology) and the arts (literature, theater, film, and visual arts) and their application to medical education and practice.

Summary of work: We have 16 years experience of teaching medical humanities in medicine at the Instituto Universitario Hospital Italiano. Anthropology, Bioethics, Psychology, History, Narrative medicine, Safety patients and error in medicine, Philosophy in special field of Critical Thinking throughout medical career is both about people and practiced by people. This work examines the attitudes of 6° grade students and postgraduate until 10 years, about their high exposure to field of medical humanities and the impact in theirs medical lifes. Students often have minimal exposure to the humanities prior to and in medical school and are frequently unaware of the societal trends that impact their view of medical practice. Familiarity with the humanities is a crucial means to understanding human nature, recognizing personal sociocultural biases, and practicing patient-centered medicine. This gap in knowledge may be due to the increase in medical information and optimistic ideologies related to medical progress. Philosophical paradigms and historical examples are considered to demonstrate the relevance of both fields in the humanities in understanding the role of moral human agents in applying medical knowledge. Educational change in the humanities are proposed as a potential solution to our current deficits. Informal changes include mentorship relationships and shifting the general underpinning attitude in medical culture. Formal changes include specific courses teaching a critical approach to medicine, changes in competency-based education and admissions are also suggested. These amendments are proposed to practice a fuller, truly human medicine.
#5N Short Communications: Management & Leadership - Accreditation  
Location: Room 103b

#5N1 (2591)  
Can a change management approach enhance the accreditation process?  

Taryn Hearn, Memorial University of Newfoundland, St. John’s, Canada  
Heidi Coombs-Thorne, Memorial University of Newfoundland, St. John’s, Canada  
Tanis Adey, Memorial University of Newfoundland, St. John’s, Canada

Background: Accreditation is fundamental to the delivery of medical education in North America. At Memorial University, we have noticed a lack of engagement with the accreditation process among faculty, staff, and students. This project is the first step in addressing this complacency and improving accreditation awareness and engagement.

Summary of work: This project involved the distribution of a survey to approximately 1650 faculty, staff, and students at the Faculty of Medicine, Memorial University, to gauge their knowledge and opinions of the accreditation process and to identify current strengths and limitations. We received 234 responses, with a response-rate of 14.2%.

Summary of results: The majority of respondents (78.6%) stated that they were not involved with the accreditation process. However, when asked if they have participated in specific aspects of the accreditation process, 53% agreed. Approximately half (50.2%) of respondents were not familiar with the MD program accreditation requirements.

Discussion: Respondents identified a lack of communication, lack of faculty engagement, and departmental/divisional silos as barriers to accreditation compliance at Memorial University. In terms of improving the accreditation process, respondents identified communication and increased student engagement as valuable activities.

Conclusion: The fact that the majority of respondents answered that they were not involved with the accreditation process but over half of them agreed that they participated in accreditation-related activities suggests that faculty, staff, and students undervalue their own participation in the process, despite the importance of their contributions.

Take-home message: This presentation will highlight the lack of engagement with accreditation processes and argue for a communication strategy to create a culture of accreditation awareness and continuing quality improvement. The results of this project will have implications for all medical schools endeavouring to increase engagement with their accreditation processes.

#5N2 (2917)  
Standardizing global medical education accreditation? Case studies of “glocalization” from Taiwan, Korea and Japan  

Ming-Jung Ho, Weill Cornell Medicine-Qatar, Doha, Qatar  
Joan Abbas  
Ducksun Ahn  
Chih-Wan Lai  
Nobuo Nara  
Kevin Shaw

Background: In an age of globalized medical education, medical school accreditation has been hailed as an approach to external quality assurance. As the movement towards global accreditation standards gains momentum, it is important to reflect on how national accreditation bodies can develop standards suitable for both local context and international recognition.

Summary of work: Via convenience, purposive sampling, we selected three accreditation bodies in East Asia that developed national standards using international references. Following a qualitative, exploratory approach, we conducted comparative content analysis of national accreditation standards. We also employed participant observation to contextualize the standards development including the underlying rationale behind implementation choices.

Summary of results: Accreditation bodies in each country sought to balance local needs with global demands. We found a trend of using external standards as a template for practical or strategic reasons. National standards departed from external references when accounting for structural, regulatory, developmental, and ideational differences in medical education.

Discussion: The study illustrates the complexity of developing accreditation standards that meet both local and global needs. It identified a wide variety of factors taken into account by accrediting bodies in each context, including structure of medical education, government regulations, historical context of development, and objectives and ideals.

Conclusion: These countries’ experiences with glocalizing medical accreditation standards can serve as examples for others seeking to bring their accreditation practices in line with global standards while ensuring that local values and societal needs are given adequate consideration.

Take-home message: Educators and accreditors may seek to account for structural, regulatory, historical, and aspirational differences in medical education across countries.
#§N3 (527)
Securing the licence to practise: introducing a UK Medical Licensing Assessment

Ben Griffith, General Medical Council, London, UK

Background: There are three routes to UK practice: students pass finals at 32 universities, with different assessments; International Medical Graduates pass the PLAB test or use other ways to register; EEA doctors have their qualifications recognised automatically. A Medical Licensing Assessment would demonstrate that new doctors meet a common threshold.

Summary of work: The GMC has been exploring options through research and work with assessment and legal experts and with medical schools, other educational bodies, the four governments of the UK and organisations currently running medical licensing assessments in other countries. We issued proposals for consultation in early 2017.

Summary of results: In light of the consultation responses, we will develop more detailed proposals for an applied knowledge test and a test of clinical and professional skills, for further technical investigation and testing, a full pilot in 2021 and implementation of the MLA for new entrants to the UK register in 2022.

Discussion: The case for a common threshold for new doctors is widely accepted in the UK. We have been working closely with experts and partners to make sure the MLA is valid and practical and enhances the confidence of doctors’ employers and patients without subjecting students to over-assessment.

Conclusion: Through extensive engagement and evidence-gathering we have developed proposals which comply with contemporary models of validity and mark a step-up in effective, proportionate and focused medical regulation in the UK.

Take-home message: The GMC is developing a Medical Licensing Assessment to be introduced in 2022, on a solid basis of research, evidence-gathering and engagement. The proposals will be thoroughly tested and piloted. The MLA will bring the UK into line with best practice in countries like the USA and Canada.

#§N4 (2076)
A new system for accreditation of medical schools in Brazil: Lessons from the first 23 medical schools evaluated

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Sigisfredo L. Brenelli, School of Medicine of the State University of Campinas, Campinas, Brazil
Fernanda B. Mayer, School of Medicine of the University of Sao Paulo, Sao Paulo, Brazil
Fernanda M. Arantes-Costa, School of Medicine of the University of Sao Paulo, Sao Paulo, Brazil
Carlos R. Silva-Filho, School of Medicine of Marilia, Marilia, Brazil
Patricia Z. Tempski, School of Medicine of the University of Sao Paulo, Sao Paulo, Brazil

Background: Accreditation of medical schools has been a priority for an increasing number of countries. A new system of accreditation of medical schools was created in Brazil by the Brazilian Nacional Medical Council and the Brazilian Association of Medical Education, following the standards of the World Federation of Medical Education (WFME).

Summary of work: We analyzed the results of the first 23 medical schools that were evaluated, including the data collection instrument (DCI) for self-evaluation of medical school, the site visit and the final reports. Our DCI has five domains: educational program, educational environment, faculty affairs, student affairs and medical school governance.

Summary of results: Educational environment and student affairs were the domains with higher percentages of recommendations to improvement. All medical schools had strong programs of teaching and learning in the community and in primary health centers. We created a network of the medical schools accredited to share their best educational experiences.

Discussion: The evaluation of the first 23 medical schools submitted to the accreditation process in Brazil showed good undergraduate medical schools with need of improvement mainly in educational program and student affairs. In addition, Brazilian medical schools are increasing the number and quality of teaching programs of primary and community care.

Conclusion: An accreditation program, according to guidelines of the WFME and the needs of the health system can result an improvement of the quality of the medical training programs.

Take-home message: An accreditation process is a strong incentive to the improvement of medical training programs.
#5N5 (1752)
How changing quality management perspectives influence PGME accreditation: the focus on decentralization and quality improvement

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Kiki Lombarts, Academic Medical Center, Amsterdam, Netherlands
Emma Paternotte, University Medical Center Utrecht, Utrecht, Netherlands
Bas Schreuder, Royal Dutch Medical Association, Utrecht, Netherlands
Fedde Scheele, VU University Amsterdam, Amsterdam, Netherlands

Background: Evaluating quality of postgraduate medical education (PGME) through accreditation is common practice worldwide. An appropriate accreditation system design is important, since accreditation may have substantial consequences. This study aims to map out how changing views on educational quality and quality management have impacted the design of the Dutch PGME accreditation system.

Summary of work: To chart the historical development of the Dutch PGME accreditation system we conducted a document analysis of accreditation documents spanning the past fifty years and a vision document outlining the future system. Template analysis technique was used to identify the main elements of the accreditation system.

Summary of results: Four themes in the Dutch PGME accreditation system were identified: (1) objectives of accreditation, (2) PGME quality domains, (3) quality management approach, and (4) actors’ responsibilities. The major shifts have taken place in decentralization of actors’ responsibilities, self-evaluation, and quality improvement. Formal documents of the past fifty years expanded, which led to increased bureaucracy.

Discussion: There was an increasing number of standards, because of the detailing of the initially more general expressed standards. However research showed that the higher the number of standards is, the less likely all standards are audited. Moreover, an outsized number of standards may also limit discretion and may raise distrust.

Conclusion: The four themes could enhance international comparison and exchange of ideas for the design of accreditation systems. There is an urgent need for international perspectives and evidence about the effectiveness of the distinct elements of accreditation.

Take-home message: The steps between trust and discretion on the one hand, and distrust, enforcement and deterrence on the other hand are a great leap. In the past fifty years the accreditors searched for the right balance between these two polarized ends. Their choices will be reflected on the accreditation strategy.
#5O Short Communications:

**Programmatic Assessment**

Location: Room 201

**#5O1 (2827)**

**Broad Implementation of Best Practices of Programmatic Assessment in Emergency Medicine**

Sally A Santen, University of Michigan Medical School, Ann Arbor, MI, USA  
Marcia Perry, University of Michigan Medical School, Ann Arbor, MI, USA  
Brendan Munzer, University of Michigan Medical School, Ann Arbor, MI, USA  
Laura Hopson, University of Michigan Medical School, Ann Arbor, MI, USA  
Michael Cole, University of Michigan Medical School, Ann Arbor, MI, USA  
Andrew Linn, School of Medicine, University of Adelaide, Adelaide, South Australia

**Background:** A comprehensive multisource assessment program is critical to monitor trainee development and provide opportunity for learning through feedback. The twofold purpose of Programmatic Assessment is first the creation of a system of assessment to identify competency and appropriate progression; and second, assessment for learning to assist residents in their formative development.

**Summary of work:** The purpose of this educational innovation was to demonstrate how residencies can implement a Programmatic Assessment model. Using the 12 tips of Van der Vleuten each step was intentionally implemented. The focus was on multimodal formative and summative assessment and the processes and system to reinforce learning and feedback.

**Summary of results:** Multi-source assessments were mapped onto the competencies milestones for a master programmatic assessment blueprint, using learning management system with intentional feedback and formative and summative assessment by the Clinical Competency Committee. This demonstrates a Programmatic Assessment roadmap with multiple sources and various domains of assessment.

**Discussion:** A number of benefits of implementing a programmatic approach to assessment for the residents are identified. One advantage lies in the focus on learning and feedback, incorporating multiple, varied sources of data to provide a more reliable view of the trainee. Additionally, trustworthy judgments are made based on aggregated data.

**Conclusion:** This paper is a practical demonstration of Programmatic Assessment in the residency context that employs a system of assessment to identify competency and appropriate progression as well as assessment for learning to assist residents in their formative development.

**Take-home message:** Programmatic Assessment provides meaningful summative and formative feedback. Programs should think broadly about sources of data to provide meaningful feedback to trainees for learning and summative assessment.

**#5O2 (1762)**

**Factors influencing learners’ perception of assessment stakes within a programme of assessment - stakes in the eyes of the beholder**

Suzanne Schut, Maastricht University, Maastricht, Netherlands  
Erik Driessen  
Jan van Tartwijk  
Cees van der Vleuten  
Sylvia Heeeman

**Background:** With a programmatic approach to assessment the ambition is to benefit and foster assessment for learning. In practice, results show that learners often perceive feedback or assessments, designed to be low-stake, as summative and high-stake. This multi-institutional study examined how learners perceive low-stake assessments and identified mechanisms influencing these perceptions.

**Summary of work:** In five different international settings of programmatic assessment, ranging from undergraduates to postgraduates, learners were purposefully selected and interviewed about their perceptions of stakes of the assessments used within their programme. A constructivist grounded theory approach was used to analyse data and understand underlying mechanisms influencing these perceptions.

**Summary of results:** A variety of information sources interacted with learners’ perception of assessment stakes; instruction, number of data points, type of judgement and consequences following performance results. The underlying mechanisms that determined learners’ interpretation of these information sources were the relationships with educators, learners’ motivation, sense of agency and previous assessment experiences.

**Discussion:** The results highlight the role of educators and the influence of the existing assessment culture. Furthermore, they confirm the importance of a supportive structure to facilitate assessment for learning. Knowing the factors and understanding the involved mechanisms could help design effective assessment programmes to benefit the learning value of assessment.

**Conclusion:** This study identified factors that influence the stakes learners perceive with feedback and assessment. Technical factors can have a paradoxical effect; both increasing and decreasing the assessment stakes. Mechanisms to explain and mediate these interpretations are; the relationships with educators, their sense of agency and a supportive programme structure.

**Take-home message:** When designing a programme of assessment to enhance the learning potential of feedback and assessment, educators should take the influence of the assessment culture into account. The type of relationships learners engage in with educators, a supportive structure and learners’ opportunities for ownership, are particularly powerful mechanisms.
#5O3 (560)
Progress decisions and 'Assessment for Learning'; it's complicated!

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Jennifer Weller, University of Auckland, Auckland, New Zealand
Elizabeth Molloy, University of Melbourne, Melbourne, Australia
Margaret Bearman, Deakin University, Melbourne, Australia

Background: A fundamental tenet of Programmatic Assessment, implemented in postgraduate anaesthesia training in Australasia, is that individual assessments are 'low stakes' and aimed primarily to foster learning ('Assessment for Learning'); these are then used in aggregate to inform 'high stakes' decisions on progression ('Assessment of Learning').

Summary of work: This study aimed to investigate how supervisors made decisions on progression through postgraduate anaesthesia training in Australia and New Zealand. We conducted semi-structured telephone interviews of approximately 60 minutes duration with a purposively selected sample of 19 supervisors. We used thematic analysis with concurrent analysis informing subsequent data collection.

Summary of results: Decisions on trainee progress involved integrating and evaluating disparate information sources against idiosyncratic performance expectations. Supervisor factors, anticipated consequences, and contextual factors influenced the decision. Difficult decisions required careful balancing of the need to protect the community with the anticipated harmful consequences for the trainee (particularly, stigma associated with failure).

Discussion: Supervisors made little use of aggregate workplace-based assessments to inform decisions on trainee progression. Rather, supervisors used both formal and informal information sources, privileging their own observation and personal judgements of respected colleagues. Supervisors personally determined the salience of aspects of performance and their desired level in making their judgements.

Conclusion: There was little evidence that 'Assessment for Learning' processes informed 'Assessment of Learning' decisions within Australian and New Zealand postgraduate anaesthesia training. The shame and stigma attendant upon adverse judgements and their consequent threat to trainee self-perception were prominent influences on trainee engagement with 'Assessment for Learning' in supervisor accounts.

Take-home message: The judgement of performance is complex and supervisors would benefit from improvements in support and training aimed at avoiding isolation and developing expertise in making and communicating evaluative judgements. The relationship between Assessment for Learning and Assessment of Learning is more complex than the descriptions of programmatic assessment indicate.

#5O4 (116)
Predicting junior doctors' performance in workplace based assessment

Sandra Carr, The University of Western Australia, Perth, Australia

Background: This study explored the effect of demographic variables, selection scores for entry into a medical course, a measure of emotional intelligence and undergraduate academic performance to determine intellectual abilities and other factors as predictors of workplace based performance in junior doctors during the first postgraduate year.

Summary of work: Two cohorts of medical graduates from one university (n= 200) in Western Australia participated in the study. Summary statistics were compared, Pearson correlation coefficients calculated and multivariate analyses utilised linear regression to assess the relationships of the Junior Doctor Assessment Tool (JDAT) and each sub-component with potential predictor variables.

Summary of results: Increased age was found to be a predictor on the JDAT Clinical management subscale and understanding emotion was a predictor for the JDAT Communication subscale with Grade Point Average (GPA) a predictor on overall JDAT and each subscale. Tertiary Entry Rank on entry to medical school score predicted GPA.

Discussion: This study supports the movement towards programmatic assessment for medical education.

Conclusion: The GPA as a composite measure of ability and performance in medical school can be predicted by selection scores and predictive of junior doctor assessment.

Take-home message: The challenge for implementing programmatic assessment is to determine how performance on assessments can be aggregated for higher stakes, pass/fail and remediation decisions.
Implementing Programmatic Assessment: the role of Faculty Development

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Katherine Wisener, University of British Columbia, Vancouver, Canada
Sharon Doucet, University of British Columbia, Vancouver, Canada

Background: Alongside curriculum-renewal, assessment frameworks are increasingly adopting a programmatic platform where individual assessment components are purposefully chosen for curricular alignment. With a longitudinal developmental view, the focus is on regular feedback and mentoring and high stakes decisions are based on multiple low stakes assessments. Faculty development is an implicit requirement.

Summary of work: At our medical school, the implementation of programmatic assessment was progressive starting with year 1, in 2015. Faculty development conducted regular and iterative needs assessments to identify priorities, modalities, and formats for instruction. Online modules, in-person workshops, and other innovative resources were created in response to perceived needs.

Summary of results: Faculty members were supported through a combination of approaches with a longitudinal and developmental perspective: 1) Orientation (informing faculty about programmatic changes and implications to their roles); 2) Skill Development (supporting faculty to provide meaningful assessments); 3) Communities of Practice (providing spaces for faculty with similar roles to share expertise).

Discussion: The challenges for faculty development reflected the magnitude of change in ‘assessment’, the iterative need for improvement or change within assessment components, over time and the impact of new understanding of faculty roles after their initial enactment. Remaining responsive required longitudinal collaboration with the assessment team and engagement with faculty.

Conclusion: To successfully support faculty in a standardized and consistent way, faculty development resources need to be responsive to the needs and capacity of faculty, embrace innovative approaches to ensure buy-in, and be ongoing. If this is achieved, faculty development enables the successful implementation and alignment of programmatic assessments.

Take-home message: Planning for purposefully designed, iterative faculty development is essential for successful implementation of programmatic assessment. Multi-pronged approaches and formats are required to promote acceptance of change, train for new roles and skills, orientate toward new assessment modalities. Timely innovative solutions are often required to address challenges as they emerge.
Virtual Patient-Based Decision-Making Simulations Implemented in the Veterans Health Administration (VHA)

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Uche S. Uchendu
Manny Dominguez

**Background:** Virtual patient (VP) technologies were first introduced to VHA in 2011 as the development of VHA’s national simulation program, SimLEARN, was underway. VHA adopted the technology and initiated author training for educators and clinicians. Although initial efforts centered on traditional design, more novel strategies and targeted learners have evolved.

**Summary of work:** Targeted learners include patients, educators, clinical and nonclinical staff. Cases are used to teach communication skills to be applied in a subsequent patient safety outcomes. Our study shows that VP conditioning on the medical students perceived self-efficacy: An experimental study

Marcel Scully, Lee Kong Chian School of Medicine, Singapore
Luke Woodham, St. George’s University of London, London, UK
Nabil Zary, Lee Kong Chian School of Medicine, Singapore

**Background:** Self-efficacy influences motivation, learning and achievement. Virtual patients (VP) have been reported as effective in providing mastery experiences, a key aspect for developing a strong sense of efficacy. Knowledge about the impact of these two design approaches on the medical student’s perceived self-efficacy is lacking.

**Summary of work:** 36 undergraduate medical students were divided in two groups using simple randomization, (control group n=16; experiment group n=20). Control group was instructed to solve two VP and experiment group to keep the two VP alive. A five Likert scale questionnaire about learning experience and Bandura’s perceived self-efficacy instrument was given.

**Summary of results:** Both groups were positive to the VP learning experience. The experiment group reported one point mean score higher on most questionnaire items. Both groups reported an improvement in perceived self-efficacy with non-significant differences in the mean scores. We noted a larger variation in the experiment group with higher max values.

**Discussion:** The learning experience seems positive in both groups. The higher means value among the experiment group indicates the need to further explore the patient safety based VP design. Both VP designs led to an improvement of perceived self-efficacy with a spread of the results among the experiment group.

**Conclusion:** VP designed from a patient safety perspective should be considered. The way the VP learning activity is introduced may impact the learners’ self-efficacy and thereby their learning outcomes. The spread of results among the experiment group could indicate a different dynamic in the learning process and subgroups among the participants.

**Take-home message:** VP are generally designed as a simulation session fostering positive deliberate practice but an alternative growing design is inspired by patient safety outcomes. Our study shows that VP conditioning and design may influence the learners’ self-efficacy.

**Summary of work:** Targeted learners include patients, as well as other medical education and military healthcare staff have been applied for all VA employees, and beyond the enterprise. Successful strategies for developing a strong sense of efficacy. Knowledge about the impact of these two design approaches on the medical student’s perceived self-efficacy is lacking.

**Summary of results:** Both groups were positive to the VP learning experience. The experiment group reported one point mean score higher on most questionnaire items. Both groups reported an improvement in perceived self-efficacy with non-significant differences in the mean scores. We noted a larger variation in the experiment group with higher max values.

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**Take-home message:** VP are generally designed as a simulation session fostering positive deliberate practice but an alternative growing design is inspired by patient safety outcomes. Our study shows that VP conditioning and design may influence the learners’ self-efficacy.
Enabling multi-institutional implementation of new interactive learning technologies across multicultural contexts: Holistic train-the-trainer approach

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Nabil Zary, Nanyang Technological University, Lee Kong Chian School of Medicine, Singapore
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Background: The EC-funded project, Training Against Medical Error (TAME), is exploring the feasibility of training 4th and 5th year medical students from six universities in South East Asia, Central Asia and Eastern Europe against medical error, using interactive Virtual patients to authentically reproduce and learn from errors regularly made in practice.

Summary of work: A key challenge was how to train the tutors from universities with didactic curricula in Vietnam, Kazakhstan and Ukraine to engage with interactive Virtual patient cases (eVPs), then facilitate the cases in a Decision making Problem based learning setting (D-PBL), and secure sustainability by training new trainers in each university.

Summary of results: The study explored the challenges of implementing innovative technologies and learning activities in partner universities, identified issues, and addressed those. Feedback, questionnaires and interviews confirmed the success of the multicultural approach for training, the strengthening of intercultural awareness, diminishing of stereotypes, and the fostering of critical thinking among the participants.

Discussion: The holistic train-the-trainer experiences developed in previous projects, was critical to rapidly dealing with complex challenges faced in implementing new curriculum activities and technologies in diverse multicultural groups. In turn, these new experiences will guide the development of positive relationships, making the search for possible solutions more rapid and effective.

Conclusion: The simultaneous implementation of new interactive learning technologies in largely didactic but distinct cultures is a challenging process. Sharing experiences between different educational and health care systems, provided a unique opportunity for each university to learn from similar issues, discuss individual challenges, and collaboratively create strategies for overcoming them.

Take-home message: The challenge of simultaneously implementing new learning methods in separate healthcare and social cultures can be turned to advantage by using the opportunity to share issues and collaboratively reduce the burden of change. This approach will allow the sharing of experience of leading multi-institutional projects and facilitating similar group challenges.

Virtual patient simulations for undergraduate medical students improve their knowledge of communication skills

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Vincent Wade, Trinity College Dublin, Dublin, Ireland
Keith Johnston, Trinity College Dublin, Dublin, Ireland
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Background: Communication skills are a key competence for clinical practice and an essential component of a patient-centred consultation. Virtual patients simulations were developed to provide medical students with an unlimited opportunity for repeated practice with feedback. This research explored whether virtual patient simulations improve students knowledge of communication skills.

Summary of work: Six virtual patient simulations were designed through GP consensus on the Calgary-Cambridge model in the domain of cardiovascular and respiratory systems using an Adaptive Role-play Simulations Games platform (SkillSimTM) for first-year students. Student knowledge of performance of communication skills was assessed using a validated instrument (van Dalen 2002).

Summary of results: Students completed the instrument both before and after using the virtual patient simulations to evaluate and practice their patient-centred communication skills. Engagement had a positive effect, increasing students’ knowledge of communication skills (p<0.01).

Discussion: The value of the virtual patient simulation resource was as an optional, self-directed component that provided unlimited access (anytime, anywhere, any device) to flexible learning opportunities for mastery of communication skills. Students used the intervention for repeated practice, formative self-assessment with automated scoring and feedback, based on their individual performance.

Conclusion: Performance before and after an educational intervention was compared and students’ knowledge of communication skills increased.

Take-home message: Virtual patient simulations provide a useful way of introducing training of patient communication skills to novice students anytime, anywhere at no extra cost. The findings indicate that this approach to VP simulations has potential as a teaching and assessment tool for the medical consultation, which requires further development and research.
**#5P5 (392)**

**WAVES: What the end-users want from Scenario-Based Learning and Free Online Courses**

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SUPRIYA KRISHNAN, St. George’s, University of London, London, UK
LUKE WOODHAM, St. George's, University of London, London, UK
DANIEL SCHWARZ, MU, Brno, Czech Republic
TERRY POULTON, St. George’s, University of London, London, UK

**Background:** The WAVES project, funded by the EC Erasmus+ programme, seeks to widen access to virtual educational scenarios. The project aims to make virtual scenarios (referred to Virtual Patients within the medicine discipline) more accessible to teachers and trainers by providing useful resources, guidance and exemplar implementations of virtual scenarios.

**Summary of work:** Now in its second year, the first year of the project concentrated on gathering feedback through a needs analysis of end-users, collected using an online survey, interviews and focus groups. Participants were asked to complete questions depending on their role(s) (Learner, Educator, Technologist).

**Summary of results:** Learners and educators expressed similar opinions as to what makes a good online learning resource, with a particular focus on scenario-based learning and MOOCs. Technologist responses provided a good insight into the current use of technical standards and the importance of system integration.

**Discussion:** The need for support and guidance when using SBL and MOOCs is similar regardless of the industry or discipline in which training is being provided. Despite technical advances resulting in more sophisticated systems, the adoption rate for such advances is relatively low.

**Conclusion:** The results of the analysis show there is still need for support to implement virtual scenarios into the educational and work-based training field in many disciplines. Work is required to integrate systems through technical standards and provide further support for virtual scenario authors to create good effective scenarios.

**Take-home message:** Virtual scenarios are well-established in medical education, yet educators are often reluctant to implement them in their own teaching due to technical and pedagogical barriers. The WAVES project aims to provide solutions to make the process easier.

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**#5P6 (2389)**

**Evaluating the Training Against Medical Error project – Measuring the impact on learners across multiple countries**

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**Background:** Medical error is a significant cause of preventable adverse events in healthcare. The EC Erasmus+ funded Training Against Medical Error (TAME) project aims to use Virtual Patient (VP) scenarios to drive improved education and awareness of errors in practice.

**Summary of work:** 6 VPs have been designed to introduce error training to undergraduate medical students at 6 institutions across Kazakhstan, Ukraine and Vietnam. A randomised study comparing two variants of VP (linear and branching) is running with the aim of evaluating the impact on learner self-efficacy and motivation relating to error.

**Summary of results:** Survey instruments using primarily structured responses have been translated into 3 languages (Russian, Ukrainian and Vietnamese) and provided to learners. Data collection is ongoing, but emerging results and previous studies provide evidence to support the positive impact of introducing decision-making into the learning experience.

**Discussion:** Branched VPs can deliver educational scenarios that allow learners to make errors without risk of harming patients. Existing literature identifies that educational experiences can provide valuable opportunities to develop a no-blame culture in which learners can reflect upon and develop an awareness of common causes of error.

**Conclusion:** Improved educational approaches that use sophisticated pedagogy to provide targeted training against medical error, such as Virtual Patients, can potentially contribute to improved awareness of error and support the practical application of scenario-based learning as a tool to reduce preventable adverse events in patient treatment.

**Take-home message:** Medical error is a significant, but unavoidable, threat to patient safety. By providing targeted educational experiences to train against medical error, learners can feel better equipped to minimise the incidence of error in practice.
Background: Academic dishonesty (cheating) in university students is reported to be increasing (McCabe, 2006), with a number of studies noting a link with gender (Witmer & Johansson, 2015). This study aimed to explore understanding of academic dishonesty, factors in, and concerns about this among medical and biomedical undergraduates.

Summary of work: A mixed methods study was conducted. Medical and biomedical undergraduate students were invited to complete an online survey to explore their understanding of, attitudes towards, and experiences of academic dishonesty. Semi-structured interviews with volunteers explored factors which might deliberately, or inadvertently, lead students to engage in academic dishonesty. Semi-structured interviews with volunteers explored factors which might deliberately, or inadvertently, lead students to engage in academic dishonesty.

Summary of results: 259 students completed the online survey, 25% of whom believed academic dishonesty was prevalent, but less than 2% admitted to engaging in it. Only 8.5% of participants made links with gender. Analysis of interviews identified academic workload, high expectations and inadvertent plagiarism as factors likely to lead to academic dishonesty.

Discussion: Actual cases as well as self-reported cases of academic dishonesty institutionally are low. However, some may go undetected. Academic pressures and high expectations of performance may tempt students to engage in academic dishonesty, but concerns over inadvertent plagiarism, fear of consequences and morale code seem to mitigate against this.

Conclusion: Rates of self-reported academic dishonesty among medical and biomedical undergraduate are low, partly due to fear of consequences and on moral grounds. Concerns over committing inadvertent plagiarism were high; appropriate use of online sources exacerbates this. More sophisticated intervention is needed to give students greater confidence in avoiding academic dishonesty.

Take-home message: This study identified academic workload, high expectations of performance and inadvertent plagiarism as the factors of most concern to medical and biomedical students. Students need more targeted strategies to increase confidence in developing their skills in using references sources, particularly online sources, effectively to avoid academic dishonesty.
Supporting students referred for serious difficulty in language, professionalism and communication; an 8 year audit of referral triggers

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Connie Wiskin, University of Birmingham, Birmingham, UK
John Skelton, University of Birmingham, Birmingham, UK

Background: This study centres on remedial support for healthcare students, presenting an audit of 250 individuals identified as ‘poorly-performing’. We work intensively (1-to-1) with students of medicine/pharmacy/dentistry/nursing perceived as needing remediation in non-clinical areas. The research scrutinises referral triggers (the means by which the problem was identified and the referral justified).

Summary of work: Files were analysed and referral triggers evaluated. Students are referred from multiple written sources. The process began with language analysis. Students were then coded, anonymized and categorized using a previously validated typology. Statistical analysis was undertaken to elucidate themes present in the data that could illuminate relationships between fields.

Summary of results: Of the sample to date, triggers (by frequency) are exam failure, some form of diagnosed mental illness, dyslexia, ‘confidence’ problems, ‘performance anxiety’ and ‘generalised anxiety’. 71% had multiple issues. Of the 29% with one trigger, common themes were ‘communication with patients or colleagues’, ‘confidence’ and ‘performance anxiety’.

Discussion: There is no real consensus about when/how remedial support should be accessed, and what it should comprise. One way forward involves a mix of peer-assessment, and formal assessment. The difficulty of using exams to measure non-clinical areas is well-understood. There is paucity of evidence, and uncertainty, about tackling remediation.

Conclusion: Referrals range from students in serious difficulty e.g. Fitness to Practice, to those in need of some extra support, e.g. with motivation. A significant feature of these problems is their intensely personal nature. Issues are typically multi-factorial and often difficult for those making the referral to accurately describe.

Take-home message: The humanistic element of ongoing support is central. The output of this research – a typology we will present at AMEE - should help others in practical ways to identify, describe and manage poor performance.

Norwegian medical students’ intention to leave medical school: Reasons and personal, environmental and curricular factors

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Reidar Tyssen, University of Oslo, Oslo, Norway
Lise Tevik Løvseth, St. Olavs University Hospital, Trondheim, Norway

Background: Intention to leave (ITL) medical education not only threatens the future functioning of the health care sector, it also affects student’s satisfaction, health and productivity. However, knowledge on the prevalence of ITL and its correlates is scarce. This knowledge is important to provide high quality medical education.

Summary of work: Baseline survey data from all students at two Norwegian medical faculties with different curriculum, participating in a project about the effects of study curriculum and conditions on stress and health (STUDMED 2015). Main outcome is self-reported ITL, reasons to leave and correlates within the curriculum, study environment and personal variables.

Summary of results: Response rate 63.9% (N= 1044/1634). Preliminary analyses indicate that 28% report ITL. ITL varied according to age of admission to medical school(OR= 1.47), study years, faculty, study curriculum and study environment(p< 0.001). Reasons for ITL varied according to faculty.

Discussion: A relatively high proportion of students have considered leaving medical school. The results indicates that curriculum study environment affects ITL.

Conclusion: The relatively high occurrence of ITL warrants further examination of study conditions or curriculum factors that may be related to this phenomenon. In addition, it is relevant to conduct longitudinal studies to gain knowledge on the long-term effects of ITL on their work as medical professionals.

Take-home message: Students who feel stressed are at risk for considering leaving medical education, especially those of young age at study start. The faculties should implement study models that reduce the students stress levels.
#5Q5 (918)
Exploring and improving a programme of Workplace Based Assessments (WBA) using personalised ‘nudges’

**Jennifer Hallam,** University of Leeds, Leeds, UK  
**Richard Fuller,** University of Leeds, Leeds, UK

**Background:** WBA’s are widely used as part of a programmatic assessment model to encourage feedback and reflection. In order to understand a complex programme of assessment for learning, can we use the workplace model to identify students who are ‘at risk’ of future failures in order to develop differential, personalised support?

**Summary of work:** We investigated longitudinal relationships between WBA engagement and success in high stakes performance assessments (OSCEs), revealing differing profiles of engagement that correlated strongly with OSCE success ($R = 0.44, p<0.001$). Consequently we developed a personalised, digital ‘nudge’ for students deemed to be ‘at risk’ of future failure.

**Summary of results:** Students who showed poor engagement with WBA performed significantly worse in the OSCE examination compared to engaged students ($R = -0.602, p<0.01$). Analysis of this ‘at risk’ group showed that as a result of the ‘nudges’, students planned for future success and showed increased engagement and motivation after reflection.

**Discussion:** Our initial profiling work, of 4th and 5th year medical student cohorts from 2011-2016, identified a strong and significant relationship between two important assessment tools. As a result, we were able to identify ‘at risk’ students who showed poor engagement and success within assessment for learning and assessment for progression.

**Conclusion:** The development of an innovative and personalised assessment tool allowed the identified ‘at risk’ students to recognise their need for increased engagement, with both assessment and feedback. This has allowed us to explore the complex programme of assessment for learning in WBA to develop differential, personalised support for learners.

**Take-home message:** The use of personalised ‘nudges’ within the programme of WBA has many benefits, including a greater understanding of student need, and importantly, the increased engagement and forward planning of previously poorly engaging students.
#5R Round Table: Teaching about Research and EBM
Location: Room 210

#5R1 (1962)
Knowledge, Attitudes, and Practice of Evidence-based Medicine among physicians: A Systematic Review

Farzaneh Barzkar, Iran University of Medical Sciences, Tehran, Iran
Hamidreza Baradaran, Iran University of Medical Sciences, Tehran, Iran

Background: Evidence-based medicine (EBM) has been the subject of attention in numerous medical education programs since its introduction in 1991. We conducted a systematic review to evaluate the condition of physicians' knowledge, attitude, and practice towards EBM worldwide which indirectly reflects the educational needs for the promotion of EBM.

Summary of work: Related databases were searched with appropriate and predetermined search terms. Search results were screened and 57 articles were finally included based on their titles and abstracts. The studies were appraised and the results were recorded in a data table where the data was summarized. A meta-analysis could not be conducted.

Summary of results: The overall quality of the studies was acceptable. The physicians have a generally positive attitude towards EBM and most of them believe that its implementation improves patient care. However, their self-reported awareness and knowledge regarding common terms used in EBM and the main databases is relatively poor.

Discussion: Both knowledge and attitude have improved through years after the introduction of EBM. Specialists generally have a more positive attitude and better knowledge towards EBM than primary care physicians. Common reported barriers included lack of time and skills with only a minority of physicians citing lack of facilities as a barrier.

Conclusion: Findings from our review indicate that although doctors have a generally positive attitude towards the promotion of EBM, their knowledge and skills as well as their actual practice remain sub-optimal. This reflects that educational programs in the field of EBM need to be optimized.

Take-home message: The results reflect the need for incorporation of EBM promoting programs into CME programs and medical school curricula. Such programs would be of greater benefit if they focus on increasing awareness about more time-saving resources such as the Cochrane library of systematic reviews.

#5R2 (3336)
Becoming a doctor: the influence of exposure to research and its sociopolitics

Jane Saffell, St George’s, University of London, London, UK

Background: The influence of the medical school environment and the qualities and values that it engenders may play a large part in the lifelong process of becoming a doctor. Two approaches that I have experienced as an educator are an emphasis on research or on professionalism.

Summary of work: Students in a research-intensive university who had had experience of research practice or exposure to learning environments that emphasised research sociopolitics were interviewed to determine the value they ascribed to these environments, and again when they were junior doctors training elsewhere. Transcripts were coded and themes identified.

Summary of results: Students ascribed great value to their exposure to research and its sociopolitics, including a sense of belonging, but cited stress of more junior peers about the pressure to "do research". As junior doctors they recognised that peers trained elsewhere were better prepared for the realities of life on the wards.

Discussion: Interviews with junior doctors who trained in Schools with different emphases recognised the influence of this on their readiness for practice. An emphasis on professionalism is seen as giving an advantage in this regard, which an emphasis on research gives greater insight into diagnosis.

Conclusion: Insight into the sociopolitics of research has many-faceted value for medical students in the process of becoming doctors. It gives insight into how knowledge is constructed and emphasises qualities such as rigor and scepticism. Curricula that emphasise professionalism tend to better prepare graduates for their role as junior doctors.

Take-home message: The character of a medical school and the activities and identities it promotes (e.g. research vs professionalism) greatly influence the values and strengths of its graduates, and this is readily recognised by junior doctors.
Background: Our goal was to assess quantitatively the impact of the medical curriculum reform on student learning outcomes in Evidence-Based Medicine. Medical students who participated in the pre-reform and post-reform course on Evidence Based Medicine completed the same written exam. Their competence was measured by comparing their exam scores.

Summary of work: The pre-reform course in Evidence-Based Medicine (N=124) consisted of five lectures and four written assignments; the post-reform course (N=65) consisted of four lectures, three small group sessions, and three written assignments. Participants of both courses took the same written exam, scored by the head teacher using the same grading rubric.

Summary of results: The maximum score in the exam was 20. The mean exam score among pre-reform course participants was 15.5 (95% confidence interval 15.0-16.0). Post-reform, the mean score was 16.9 (95% confidence interval 16.4-17.4). The difference in scores was statistically significant (Student’s t-test p=0.0004), corresponding to a medium effect size (Cohen’s d=0.57).

Discussion: The head teacher, course materials, exam, grading rubric, and grader stayed constant before and after curriculum reform. However, it is possible that the observed difference in exam scores is due, totally or in part, to the effects of differences between the study groups other than the curriculum reform under investigation.

Conclusion: We assessed how learning outcomes were met using exam scores from an exam that the pre- and post-reform groups took on the same day. Compared to pre-reform students, students who took part in post-reform instruction showed statistically significantly superior competence in solving written problems requiring skills in Evidence-Based Medicine.

Take-home message: The curriculum reform in Evidence-Based Medicine increased hours of instruction and shifted the focus from lecturing to active small group learning. When pre-reform and post-reform students were compared, the changes in curriculum were associated with statistically significant, medium effect size gains in student mastery of Evidence-Based Medicine competencies.
#5S Workshop: Advancing Social Accountability Worldwide

Location: Room 203a

Henry Campos  
Samridhi Mittal  
Elzie Kiguli-Malwadde  
Charles Boelen  
Bob Woollard

Background: The World Summit on Social Accountability (www.worldsummitonsocialaccountability.com) was held in Tunisia from 8th to 11th April 2017. A Tunis Declaration (http://www.worldsummitonsocialaccountability.com/working-group-position-papers) was forged, supported by 450 delegates and oriented towards action and positive systems change to foster the impact of health professional schools and their graduates on the health of people. Four strategic axes were identified as priority areas for influence (Advocacy, leadership, Accreditation and Partnership). International student organizations played a key role in defining the world they want to see in their futures. The Summit framed its intentions as a collective search for social justice as a prime determinant of the health of populations. As always, the challenge will be to translate intention into action. This workshop builds upon a belief that the most effective force for positive change can be achieved using an approach of appreciative inquiry while simultaneously engaging all five of the social accountability “pentagram partners” (policy makers, communities, health professionals, system managers and the academies) at various scales within the health systems.

Who Should Attend: Anyone involved in health professions education around the world.

Structure of Workshop: This workshop will draw upon the insight and experiences of participants to explore how their institutions, their nations and they themselves can contribute to advancing social accountability worldwide. An approach of appreciative inquiry will lead this dialogue.

Preparation: Participants should come prepared to share initiatives they have been involved with or observed that had a positive impact in advancing social accountability. Initiatives that have engaged several of the “pentagram partners” (communities, academies, professionals managers, policy makers) will be of greatest use. No power points etc. are needed—a simple 2 minute “elevator speech” to describe the initiative will be used to initiate the dialogue. Be prepared to address the following questions: Tell me about a time – a highpoint in your project - when you felt that it was working really well? What made that possible? What were the roots of that success? How would you build upon those to further the success your life/project?

Level: All

#5T Workshop: Making the Transition from Clinical Practitioner to Health Professions Educator (781)

Location: Room 203b

Dario Torre, Uniformed Services University of Health Sciences, Bethesda, MD, USA  
Carrie Chen, Georgetown University, Washington DC, USA  
Pim Teunissen, Maastricht University, Netherlands  
Steven Durning, Uniformed Services University of Health Sciences, Bethesda, MD, USA  
Ronald Cervero, Uniformed Services University of Health Sciences, Bethesda, MD, USA

Background: HPE programs have resulted in educational leaders who have received advanced degrees in both a clinical field and in education. Graduates of these programs must balance the roles and responsibilities of being a clinical practitioner with those of being a health professions educator and researcher. This session is structured to identify the opportunities and challenges for individuals interested in making this transition and potential implications for designing HPE programs to better enable this transition.

Who Should Attend: The primary audience for the workshop are clinical practitioners who are considering or are currently making the transition to health professions educator. A secondary audience are faculty in HPE programs who want to better understand their learners and ways to organize programs to intentionally enable learners to successfully negotiate this transition.

Structure of Workshop: The panel of clinical practitioners who made the transition to health professions educators will each reflect on their HPE program experiences. Next, participants will divide into small groups and be led in discussion by one of the panel members to discuss their own experiences in HPE or related programs. The workshop will conclude with a facilitated discussion where participants share lessons learned from the panel and small group discussion, with implications for HPE program design.

Intended Outcomes: After participating in this session, participants should be able to understand: 1) the significant identity and organizational context issues that affect and are affected by the transition from clinical practitioner to health professions educator; 2) the pivotal experiences in HPE programs that propelled the clinical practitioners through the transition process; and 3) the types of learning experiences should be provided in an HPE program that would enable students successfully negotiate the transition.

Level: Introductory/Intermediate
**#5U Workshop: The Impact of Developmental Milestones for Learning, Assessment and Feedback (2909)**

**Location:** Room 204

**Speakers:**
- Eric Holmboe
- Stanley Hamstra
- Laura Edgar

**Background:** Graduate medical education programs in multiple countries are now engaged in using Milestones for curricular change and assessment. Milestones were created to provide a useful narrative, developmental framework, or rubric, to assist medical education programs translate and implement competency frameworks. As with most major educational changes, implementation can be a challenging and messy process. This interactive workshop will also explore lessons learned from mixed-methods research conducted around Milestones implementation across the globe.

**Who Should Attend:**
- Undergraduate medical education clinical clerkship directors;
- Graduate medical education leaders and directors (e.g. residency and fellowship directors, post-graduate deans, etc.);
- Educational leaders with responsibility for curricular changes and assessment programs;
- Clinician-educators interested in implementing competency-based medical education models.

**Structure of Workshop:** Interactive session with multiple small group exercises. Outline of workshop:
1. Overview of history of Milestones and their role in a competency-based system.
2. Small group: how to create developmental assessments.
3. Theories supporting learning curves and group process.
4. Small group: applying group process to assessment.
5. Validity and implementation issues of Milestones.
7. Large group debrief and participant personal action plans.

**Intended Outcomes:**
- At the end of this session, participants will be able to:
  1. Discuss how Milestones can facilitate a systematic approach to outcomes-based education via competency frameworks in the participant’s own context.
  2. Review and discuss how Milestone data from the early years of implementation in three global regions can guide educational change.
  4. Discuss and apply key success factors from implementation science for CBME.

**Level:** Intermediate

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**#5V Workshop: Student Development for EPAs: How Do We Prepare Students to Fully Engage in This Evolving Educational Paradigm? (1313)**

**Location:** Room 205

**Speakers:**
- Maryellen E. Gusic, University of Virginia School of Medicine, Charlottesville, USA
- Elizabeth B. Bradley, University of Virginia School of Medicine, Charlottesville, USA
- Harm Peters, Charite-Universitatsmedizin Berlin, Berlin, Germany
- Olle ten Cate, University Medical Center Utrecht, Utrecht, Netherlands

**Background:** As medical schools implement Entrustable Professional Activities (EPAs) as a framework for teaching and assessment, there is much discussion about developing the curricula, assessment systems, and faculty. Student development for learning and assessment is vital, but has not yet been thoroughly addressed in the literature. In this highly interactive workshop, we will explore how best to prepare students to learn and actively engage in an environment with increased observation and assessment of their performance.

**Who Should Attend:**
- Educators with interest/expertise in competency-based education and EPAs, curriculum development and learner assessment, the professional development of students, and faculty whose roles include coaching, advising and mentoring learners;
- Educational leaders and administrative staff with responsibility for the educational and assessment program and those who work in academic and student affairs units; and students who wish to better understand how to learn in a competency-based curriculum are encouraged to attend.

**Structure of Workshop:** Using the constructs of Self Determination Theory (SDT), participants will establish guiding principles for a student development program. In facilitated small group discussions, the group will share strategies that allow learners to define their learning path (autonomy); approaches to provide performance data with learners (competence); and processes to connect learners with faculty partners to ensure success in achieving learning goals (relatedness). Attendees will use lessons learned to create action plans for their home institutions.

**Intended Outcomes:** Participants will:
- Review medical student EPAs being used as a longitudinal framework for curriculum and assessment in the US, Germany and Netherlands;
- Apply the constructs of self-determination theory to analyze critical elements of a program to prepare students to learn in an EPA-based curriculum and foster teacher-learner trust; and advance an action plan for their home institutions that will foster intrinsic motivation and prepare students for graduated responsibility as they progress in their training.

**Level:** Intermediate
**#4/5W Workshop: BarCamp - a space to think - set the agenda yourself, discuss and explore recent work and topics emerging from the conference (continued from 4W)**

Location: Room 209

Tamsin Treasure-Jones, Leeds Institute of Medical Education, UK  
John Bibby, Bradford Districts Clinical Commissioning Group, UK  
Sebastian Dennerlein, Graz University of Technology, Austria  
Raymond Elferink, RayCom, Netherlands  
Natalie Lafferty, University of Dundee, UK  
David Topps, University of Calgary, Canada

**Background:** Following the successful, inaugural BarCamp at AMEE 2016, we are returning with another chance for you to set the agenda, explore new ideas and have space to think & create with others. BarCamp is an exciting, informal format; with the overall theme and BarCamp rules set in advance, but the agenda and activities democratically decided on the day. Organised by experienced BarCamp facilitators, our theme this year will be technology enhanced learning and practice.

**Who Should Attend:** Everyone is welcome to attend the BarCamp and to propose a session or activity to run within it. The only prerequisite is that you participate – bring your ideas, your experience, your questions and be prepared to explain and discuss these with others, in the friendly and supportive BarCamp way. Have you heard/seen something thought-provoking at the conference that you would like to explore further – bring it to the BarCamp!

**Structure of Workshop:** The BarCamp will run over two separate workshop time slots. You can attend either one or indeed both BarCamp. The structure of each BarCamp will be:

* Introduction to the format (15 minutes)
* Participants propose and vote on sessions and activities to run (15 minutes)
* First chosen sessions run in parallel format (30 minutes)
* Second chosen sessions run in parallel format (30 minutes)
* Summary and feedback (10 minutes)

**Intended Outcomes:** BarCamp is a space to share and discuss emerging topics from the conference and/or recent research results or current projects on which you are working. Following the approach used in 2016, we will be using technology (The Learning Toolbox) within the BarCamp to capture and share reflective notes and reports from the sessions in real-time. You’ll leave with these shared reflective notes, links and personal connections but best of all, “feeling inspired!” (BarCamp 2016 participant).

**Level:** All

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**#5X Workshop: Student engagement at its finest - A coachability curriculum for (and by) medical students**

Location: Room 215

Debra Klamen, Southern Illinois University School of Medicine, Springfield, Illinois, USA  
Allen Ghareeb, Southern Illinois University School of Medicine, Springfield, Illinois, USA  
Max Crouse, Southern Illinois University School of Medicine, Springfield, Illinois, USA  
Anna Cianciolo, Southern Illinois University School of Medicine, Springfield, Illinois, USA

**Background:** Medical schools are becoming increasingly interested in a coaching philosophy as it occurs with teachers and their students in clinical settings. There are numerous articles surrounding what coaching skills work best. However, no previous work has been done teaching coachability (the ability to use coaching techniques effectively as a learner). A medical education student interest group researched, designed, and implemented a successful coachability curriculum at SIUSOM, now in its second year.

**Who Should Attend:** Medical trainees (medical students, residents and fellows) interested in medical education and curriculum reform. Faculty involved with curricular reform and/or design in undergraduate medical education. Anyone interested in improving student engagement at their institution.

**Structure of Workshop:**

1. Introduction of the topic (student engagement in curriculum design & implementation).  
2. Working with medical students on a curriculum project.  
3. Audience participation as two medical students lead participants through several aspects of the coachability curriculum.  
4. Open time for discussion, and questions.  
5. Wrap up and lessons learned.

**Intended Outcomes:** By the end of this workshop participants will be able to: 1) Understand how active engagement with medical students in curricular design & implementation may benefit the curriculum as a whole. 2) Work with a group of interested students to help them design and implement new medical school curricula. 3) Adopt the use of the student-led coachability curriculum for use at their own institutions.

**Level:** Introductory/Intermediate
**#5Y Workshop: The Excellent Medical Teacher**  
**Location:** Room 216

**Alison Whelan,** AAMC, USA  
**David Acosta,** AAMC, USA  
**Ronald Harden,** AMEE, UK  
**Madalena Patricio,** AMEE, Portugal

**Background:** Teachers have an important influence on the student’s experience of an education programme, their achievement of the expected learning outcomes and competencies and the sort of doctor they become. With changes in the healthcare system, advances in medicine and significant developments in medical education there are increasing demands on the medical teacher. The workshop will look at the characteristics and attributes of an excellent teacher, the teacher as a self-regulated lifelong learner, the culturally aware teacher and the civic and socially responsible teacher. Following introductory presentations the participants in the workshop will be invited to contribute their own views on the subject. The session will conclude with an attempt to define what is “an excellent medical teacher”.

**Who Should Attend:** Educators who want to engage their students, support self-regulated learning, and facilitate life-long learning of clinical skills. It is particularly important that educators be comfortable allowing their trainees to struggle during practice, without intervening frequently.  
Education researchers interested in understanding the theory and principles of DSRL, and in conducting studies that expand this area of inquiry beyond technical skills training.  
Education program developers interested in creating opportunities for effective self-regulated learning in curricula using simulation.

**Structure of Workshop:** We will teach how to apply the principles of DSRL to design curricula, using simulation-based training as the base example. After a brief introductory activity, participants will experience a DSRL curriculum designed to teach them the theory and principles of DSRL. Participants will then draw upon their own experiences and goals to re-design a course or curriculum, deciding on the level of supervision and the types of educational supports provided to learners.

**Intended Outcomes:** After the workshop, participants will: (i) understand DSRL in a way that is memorable and meaningful to them as a learner, and (ii) develop self-regulatory skills they will use to refine their course or curriculum using the principles of DSRL. That is, while they will develop a preliminary evidence-based course or curriculum, they will need to use the skills discussed and developed in the workshop to complete that re-design when they return to their institution.  
**Level:** Intermediate

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**#5Z Workshop: Should I trust my learners to train independently? Designing and optimizing healthcare simulation training for self-regulated learning (2017)**  
**Location:** Room 217

**Ebbe Thinggaard,** Copenhagen Academy for Medical Education and Simulation, Denmark and Dept. of Gynaecology and Obstetrics, Hvidovre University Hospital, Denmark  
**Ryan Brydges,** Department of Medicine, University of Toronto and The Wilson Centre, UHN, Canada  
**Jeffrey J.H. Cheung,** Institute of Medical Science, University of Toronto, The Wilson Centre, UHN, Canada  
**Andrea Kirou-Mauro,** McMaster University, The Wilson Centre, UHN, Canada  
**Steven A. W. Andersen,** Copenhagen Academy for Medical Education and Simulation, Denmark and Dept. of Otorhinolaryngology — Head & Neck Surgery, Rigshospitalet, Copenhagen, Denmark  
**Lars Konge,** University of Copenhagen and Head of the Simulationcenter at Rigshospitalet, Copenhagen Academy for Medical Education and Simulation, Denmark

**Background:** In Directed Self-Regulated Learning (DSRL), instructors design learning conditions in which trainees self-regulate their learning using educational supports aimed at optimizing their autonomy and learning outcomes. Instructors design these supports to ensure trainees are active learners - motivationally, behaviourally, and metacognitively. Thus, a DSRL curriculum has two primary aims: to teach the target material and to teach self-regulation skills trainees can use to effectively refine their clinical skills throughout their careers.

**Who Should Attend:** Educators who want to engage their students, support self-regulated learning, and facilitate life-long learning of clinical skills. It is particularly important that educators be comfortable allowing their trainees to struggle during practice, without intervening frequently.  
Education researchers interested in understanding the theory and principles of DSRL, and in conducting studies that expand this area of inquiry beyond technical skills training.  
Education program developers interested in creating opportunities for effective self-regulated learning in curricula using simulation.

**Structure of Workshop:** We will teach how to apply the principles of DSRL to design curricula, using simulation-based training as the base example. After a brief introductory activity, participants will experience a DSRL curriculum designed to teach them the theory and principles of DSRL. Participants will then draw upon their own experiences and goals to re-design a course or curriculum, deciding on the level of supervision and the types of educational supports provided to learners.

**Intended Outcomes:** After the workshop, participants will: (i) understand DSRL in a way that is memorable and meaningful to them as a learner, and (ii) develop self-regulatory skills they will use to refine their course or curriculum using the principles of DSRL. That is, while they will develop a preliminary evidence-based course or curriculum, they will need to use the skills discussed and developed in the workshop to complete that re-design when they return to their institution.  
**Level:** Intermediate
#5AA Workshop: What counts cannot always be measured: Qualitative methods for health professions educators (20)
Location: Room 218

Subha Ramani, Brigham and Women’s Hospital, Harvard Medical School, Boston, USA
James Kwan, Tan Tock Seng Hospital, Singapore and School of Medicine, Western Sydney University, Australia

Background: This workshop aims to provide an in-depth understanding of principles and application of qualitative study design in health professions education. We will discuss approaches such as ethnography, phenomenology, and grounded theory; sampling strategies; steps involved in study design, emphasizing the fit between principles and participants’ own projects. Small group exercises will emphasize formulating study questions and coding a sample transcript. We will conclude with a discussion of techniques to ensure the rigor of qualitative research.

Who Should Attend: All health professions educators interested in application of qualitative methodology to their own educational projects; wish to advance their skills in analysis of narrative data in educational research, curriculum development or assessment; and design faculty development initiatives on this topic at their own institutions.

Structure of Workshop: Introductions; Session goals and Learning goals from participants; Icebreaker. The 3 major approaches - definition, purpose, example of study questions: Ethnography; Phenomenology; Grounded theory. Exercise 1- formulate study question for sample case; Interactive discussion about sources of data and data collection methods; Exercise 2- Sample transcript coding; Ensuring rigor in qualitative studies; Revisit learning goals; Evaluation

Intended Outcomes: Through this workshop, participants will learn: 1. To make informed decisions when choosing qualitative methods in educational research, assessment and program evaluation. 2. The three major approaches to qualitative research: ethnography, phenomenology, and grounded theory and their applications. 3. How to formulate questions appropriate for qualitative studies. 4. The key steps involved in qualitative study design. 5. How to conduct basic coding of a sample transcript. 6. How to enhance rigour of qualitative projects

Level: Intermediate/Advanced

#5BB Workshop: Putting your CPD on the map: a practical workshop on curricular mapping for Faculty Development and CPD programming (2056)
Location: Room 306

Heather Lochnan, University of Ottawa, Ottawa, Canada
Anna Byszewski, University of Ottawa, Ottawa, Canada
Robert Parson
Deborah Danoff, McGill University, Montreal, Canada
Paul Hendry

Background: Construction of a faculty development or continuing professional development program should begin with a framework that incorporates descriptions of instructional methods, needs assessment, competencies, target audience, level of difficulty, method of evaluation and impact. Curriculum mapping, can be adapted for use for any educational programing and can be used to demonstrate adherence to accreditation standards. Online mapping tools can be adapted for local context and enable the creation of a searchable database of course information.

Who Should Attend: This workshop is geared to those involved in Continuing Professional Development in the broadest sense including faculty development, and those involved in curriculum design at all levels. Specifically, directors, assistant deans, undergraduate curriculum design leads can benefit. Programs that undergo accreditation can incorporate curriculum maps as evidence of a programmatic approach to planning. Faculty development programs intending to apply for ASPIRE Awards will need evidence of framework for planning the curriculum.

Structure of Workshop: A brief introduction will underscore the benefits of curriculum mapping. Participants will complete a curriculum mapping grid based on courses they are familiar with. Sample course “grids” will be added to a large scale map and used to demonstrate gaps or redundancies and how mapping can inform planning. Attention to evaluation strategies and learning outcomes will be highlighted with suggestions of how mapping can help elevate the level of evaluation outcomes.

Intended Outcomes: At the completion of the workshop participants will be able to: 1. Describe the use of curricular maps in the curriculum design process. 2. Construct a curriculum map for their unique program. 3. Identify gaps in their programming by utilizing their curricular map. Finally, the participants will have the opportunity to score using accreditation criteria, the program (meta-evaluation). The exercises will be transferable for use in their own work environments.

Level: Intermediate/Advanced
Correlation between nonverbal communication and OSCE score in medical students

Kyung Hye Park, Departments of Medical Education, Yonsei University Wonju College of Medicine, Wonju, Korea
Seung Guk Park

Background: Appropriate nonverbal communication (NVC) leads to patient’s satisfaction, and the same in Objective Structured Clinical Examination (OSCE) of medical students. However, NVC has less frequently been studied. The aim of this study is to analyze NVC in OSCE in medical students, and correlation between Patient-Physician Interaction (PPI) and NVC.

Summary of Work: A total of 68 video recordings of routine check-up OSCE were included. Checklist for NVC was developed including 8 nonverbal factors (NVFs) and 4 paraverbal factors (PVFs). The scores of history taking, PPI, NVFs, and PVFs were compared between two groups in each item. Correlations of each score were evaluated.

Summary of Results: Students with adequate facial expression, accorded speech rate and voice volume, adequately matched voice tone, and few or no unnecessary silence had better PPI score. Students with adequate facial expression, and affirmative gesture showed better PVFs score. PPI score was correlated with history taking and PVFs score, not NVFs score.

Discussion: Students with better PVFs had better history taking and PPI score, which could mean they have better clinical reasoning skills. Further study is needed for correlation between PPI score and history taking score. Since our study divided NVC into NVFs and PVFs, it has a significance from the previous studies.

Conclusion: Better PPI score was correlated with better PVFs score. Especially, students with accorded speech rate and voice volume, adequately matched voice tone, and few or no unnecessary silence had better PPI scores. Facial expression is the only significant factor for good PPI.

Take-home Message: Students with better PPI score had better PVFs score, not NVF score. Especially, speech rate and voice volume, voice tone, and few or no unnecessary silence were important. Among NVFs, facial expression is the only significant factor for good PPI.

Workplace-based assessment: balance between concepts and management in medical education

Nonglak Boonchooduang, Chiang Mai University, Chiang Mai, Thailand
Orawan Louthrenoo, Chiang Mai University, Chiang Mai, Thailand
Sopha Panyacharoen, Chiang Mai University, Chiang Mai, Thailand
Nuthapong Ukarapol, Chiang Mai University, Chiang Mai, Thailand

Background: Professionalism is one of the most important outcome for MD. graduates, in which it has been practically and subjectively assessed in the domain of attitude during various contexts of workplace-based learning experiences. Therefore, we hypothesized that the more valid workplace-based assessment, the more differentiated power of the test.

Summary of Work: We re-organized the workplace-based assessment questionnaires of the 4th year medical students studying in Pediatrics. Items principally intended to evaluate knowledge and skills were separated to be graded in different domains, called knowledge and skill-subjective domain. We hypothesized that the more valid workplace-based assessment, the more differentiated power of the test.

Summary of Results: The study showed decrease in power of differentiation of the newly refined assessment method compared to the old one (p=0.048 vs p=0.086). However, if weight-graded final scores were plotted against past performances, we still found good significant correlation (p<0.001) in both methods with the R² of 0.597 and 0.606, respectively.

Discussion: Although the newly refined assessment method is more compatible with the concept of medical education. Our cross-sectional study could not demonstrate its additional benefit. Concerning over processing and risks of human error while grading the medical students, it should be carefully balanced, particularly in terms of educational management.

Conclusion: We did not find additional benefits of refining our workplace-based assessment method. Balance between concepts and management in medical education should also be considered to minimized any possible adverse effects.

Take-home Message: With more complexity and more effort requirement to evaluate with risk of errors, the newly refined assessment method might not have a clear benefit to use.
#5CC03 (833)
From start to goal with background knowledge probe - positive experiences from a formative assessment at the Medical Education Programme in Gothenburg, Sweden

Erik Hulegårdh, Institution of Medicine at Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden
Ninni Carlsson, Department of Social Work, Faculty of Social sciences, University of Gothenburg, Gothenburg, Sweden
Kerstin Landin-Wilhelmsen, Institution of Medicine at Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

**Background:** With a Background Knowledge Probe it is possible to assess students’ prior learning and adjust pedagogic tools in order to teach a planned curriculum. This was tested at an internal medicine course within the Programme in Medicine, using a digital tool for formative course evaluation and feedback on site.

**Summary of Work:** A questionnaire was introduced and used via students’ cellular phones at the course introduction and at the end of the course. The questions were based on the curriculum, including eight multiple choice and two yes/no questions. The results were immediately shown on a large screen and discussed with the lecturers.

**Summary of Results:** At the course introduction, participation rate was 98%. The correct answers varied between 16 to 90%. Students claimed to have seen a person with a heart attack (24%) or someone dying (72%). At the end of the course the corresponding results were 81-100%, and 89% respectively, p<0.0001 (chi-square).

**Discussion:** With cellular phones, it was possible to evaluate the students’ background skills and later, what they have learned during the course, in a quick, simple and positive manner with a good compliance. As opposed to traditional summative evaluation, formative evaluation enables continuous adaptation of our ongoing course.

**Conclusion:** The immediate and visual response for all was a bilateral pedagogic concept that we recommend. The results were reported to the large teaching staff of physicians for discussion, reflection, inspiration, and immediate adaptation of the course, and can be used as a complement to the traditional summative course evaluation.

**Take-home Message:** With the cellular phone, using the university learning platform, it was possible to evaluate the students’ prior knowledge and what they had learned during the course, in a simple manner with good compliance. This provided excellent feedback for students as well as teachers in adjusting teaching and learning tools.

#5CC04 (1253)
Improving simulation in OSCE with feedback

Maarat Raukola, University of Helsinki, Faculty of Medicine, Clinicum, Helsinki, Finland
Teemu Masalin, University of Helsinki, Faculty of Medicine, Clinicum, Helsinki, Finland
Taru Suppula, University of Helsinki, Faculty of Medicine, Clinicum, Helsinki, Finland
Johanna Hästbacka, University of Helsinki, Faculty of Medicine, Clinicum and HUCH Hospital, Helsinki, Finland

**Background:** Obstructive Structured Clinical Examinations (OSCE) has been organized from the year 2000 at the University of Helsinki. Students attend the exam during the final year of their six-year-studies. OSCE consists of 6-8 different clinical patient cases from different specialties. During the exam students’ clinical skills, problem-solving and interactions are assessed.

**Summary of Work:** The object of this study are acute internal medicine patient cases with patient simulator mannequin SimMan3G. Students have 12 minutes to solve the case. After the OSCE, feedback is provided verbally and later via a web-based system. Additional feedback was also collected after a seminar with Socrative exam.

**Summary of Results:** In 2016 103 students attended OSCE and 50,49 % provided voluntary feedback (Likert scale). OSCE received positive feedback (3,48). Patient simulation feedback was collected with Socrative exam. All students provided voluntary feedback (n = 108). The main result was that students value the feedback after OSCE (4,02, n = 108).

**Discussion:** Medical students appreciate the challenges of the demanding simulation cases that reflect their own experiences with real patients. Students would like more simulation teaching and they find it important and educational (4,9, n = 108). With integrating feedback to course exam, it is possible to activate students for more feedback.

**Conclusion:** With the feedback, simulation teaching has been expanded with peer-tutors. Five students from final years has been trained for patient simulator and simulation teaching basics. Simulation center has been expanded and simulation teaching is continuously developed. Simulation teaching is one of the main strategies in the faculty.

**Take-home Message:** Simulation teaching is important, versatile and appreciated. Feedback is essential for learning and developing in general. “OSCE was similar learning situation as the time I met the first real patients as a doctor. More importantly, with OSCE I received feedback. So, I learned even more!” (student from OSCE 2016).
#5CC05 (1295)

Students’ confidence and skills required for well child clinic

Nawarat Aroonyadech, Sapprasitthiprasong Hospital, Ubonratchathani, Thailand
Parinya chamnan

**Background:** In Sanpasitthiprasong Hospital’s pediatric clerkship, students were assigned to attend two sessions of well child clinic under supervision of pediatric consultants, with emphasis on identifying parental concerns and delivering prioritized anticipatory guidance. The study was aimed to assess students’ confidence in performing skills required for the well child clinic.

**Summary of Work:** 59 medical students after completing the pediatric clerkship, took child health supervision exam and asked to report their confidence for different aspects of child health supervision. Total perceived confidence scores were described, and each aspect of child health supervision was ranked according to student’s confidence. Statistic using t-test and Pearson’s correlation.

**Summary of Results:** Mean (SD) scores of student’s confidence was 14.0 (2.0) out of 20. The top three aspects that students were confident were history taking, vaccination, and nutrition/anticipatory guidance (69.6, 13.0 and 6.5 % respectively). Low correlation between the total perceived confidence scores and written exam results ($r = -0.04, p=0.77$).

**Discussion:** The confidence was not correlated well with written exam. This might be because written exam mainly tested student knowledge which may not reflect skills required in child health clinic. Validity of self-reported student confidence in performing skills may be questionable, as compared to workplace-based assessment.

**Conclusion:** Clinical year students had fairly high confidence in their ability to perform child health supervision, however the confidence was not correlated well with written exam. 62.7%, 67.8% and 62.7% of students reported they were confident in doing well child visit, using open-ended questions on history taking and addressing parental concerns.

**Take-home Message:** Clinical year students had fairly high confidence in their ability to perform child health supervision, however the confidence was not correlated well with written exam. Most students confident in history taking while other skills such as nutrition, anticipatory guidance and vaccination need to be improve.

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#5CC06 (1335)

Use of Computer-based Clinical Examination for Assessment of Medical Students in Surgery

Gamal El Shallaly, Alzaiem Alazhari University, Khartoum, Sudan
Abdelrahman Mekki, Alzaiem Alazhari University, Khartoum, Sudan

**Background:** To improve the viewing of the Video-projected Structured Clinical Examination (ViPSCE), we developed a computerized version; the compute-based clinical examination (CCE). This was used to assess medical students’ higher knowledge and problem solving skills in surgery. We present how we did this, test score descriptive statistics, and the students’ evaluation.

**Summary of Work:** A CCE in surgery was administered to assess 43 students at the end of their surgical clerkship. The exam was delivered using a ‘PowerPoint’ computer program. It consisted of 20 slides containing still photos, or short video clips of clinical situations in surgery. Test score descriptive statistics, and correlations calculated.

**Summary of Results:** Administration of the CCE was straightforward. The test scores were normally distributed. They correlated significantly with the scores obtained by the students in the other exam modalities in surgery ($r=0.68$). Acceptability of the CCE to the students was high and they recommended its in other departments.

**Discussion:** CCE is feasible and popular with students. It inherits the validity and reliability of the ViPSCE with the added advantage of improving the viewing of the slides.

**Conclusion:** The CCE is a useful and valid exam

**Take-home Message:** Computer based exam is the way forward in assessment in medical schools
**#5CC07 (1466)**  
**Peer review for multiple-choice questions: a follow-up study**

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Regina Pose, Universidade Municipal de São Caetano do Sul, São Caetano do Sul, Brazil  
Ricardo Cavalli, Ribeirão Preto Medical School (University of São Paulo), Ribeirão Preto, Brazil  
Elaine Moises, Ribeirão Preto Medical School (University of São Paulo), Ribeirão Preto, Brazil  
Cristina Del-Ben, Ribeirão Preto Medical School (University of São Paulo), Ribeirão Preto, Brazil

**Background:** Multiple-choice question (MCQ) is frequently used in “high-stakes exams” for undergraduate, graduate and continuing medical education examinations. Item writing can be done based on faculty individual contributions or on a peer-review basis. Although challenging, peer-review process could improve psychometric characteristics of items and faculty development.

**Summary of Work:** A 100-item exam on the main five areas: Internal Medicine (IM), Surgery, Pediatrics, Obstetrics & Gynecology and Public Health, selects residents, in a program with 1,500 applicants. In 2011, IM team developed and implemented a peer-review process for item writing. Five years later, psychometric analyses of IM MCQs were performed.

**Summary of Results:** All items from IM had good quality, according to NBME recommendations, and only 32% of items from the other four areas were considered “completely acceptable”. Comparing to other areas, IM items had similar difficulty and discrimination (Point-Biserial correlation) indices, however internal-consistency reliability (Cronbach’s alpha) was significantly greater for IM items.

**Discussion:** A structured peer-review process improves the item psychometric quality for “high-stakes exams”. Moreover, it offers the opportunity for faculty development in item writing and may also contribute to the improvement of the learning assessment inside the medical school.

**Conclusion:** Item writing peer-review process contributes both to the quality assurance and student assessment process.

**Take-home Message:** The implementation of a peer-review process for item writing leads to better MCQs, create Faculty development opportunities and, at the end, results in more reliable exams.

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**#5CC08 (1505)**  
**Mock Examination Helped Improve Nation Medical License OSCE Pass Rate**

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Peerapat Pengnim  
Rungrut Rayakaew

**Background:** Buddachinaraj Phitsanulok Hospital has been a teaching hospital for 23 years. In 2008, the Thai Medical Council had implemented Thai National Medical License Examination to be mandatory for all medical school graduates. Passing the examination is therefore of immensely importance for all medical students and teaching institutions alike.

**Summary of Work:** Within the first three years, students had an overall pass rate of 85%. Many struggled in the OSCE part. In order to help students gain familiarity to the examination format and to improve their clinical problem-solving skills, we arranged a yearly simulated mock exam (OSCE part) for our senior medical students.

**Summary of Results:** During three time periods, year 2010 (no mock exam), year 2011 (one mock exam) and year 2015 (two mock exam). There were 79% (2010), 87% (2011) and 93% (2015) of medical student who passed the OSCE. The average GPA of medical students before the exam during three periods were 2.99, 2.90 and 3.11.

**Discussion:** After introduction of the mock exam, more medical students passed OSCE. The result of the mock exam also improved. In 2011, there was only 8% who passed the mock exam compare with year 2015 in which there was 25% and 60% who passed the first and second mock exam.

**Conclusion:** It is likely that the mock exam had improved the result of OSCE exam though there might be other factors such as improvement of teaching process and quality of medical student. The mock exam helped improve the pass rate of OSCE part in national license exam.

**Take-home Message:** This exam not only give the opportunity to the students to experience the stressful simulation of the exam atmosphere under time limitation but also stimulate student to apply their cognitive and skill for clinical problem solving. We recommended it as part of the teaching curriculum.
#5CC09 (1991)
Video-assisted self-assessment in communication skill for Oriental culture students

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Gloyjai Kumkong, Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand
Piyaporn Kongnuan, Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand
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Background: Communication skill is one of a core competency for 21st century learning. Cultural factor may affect learning outcomes. Self-assessment using video-assisted could help improve the skills. We, therefore, evaluated the content of students’ assessment of their own communication skills and the satisfactions of using this method to improve their performance.

Summary of Work: Video-recorded was performed during the communication skill examination for the first clinical-year medical students rotated at surgical department during the year 2014. The students viewed their own video clips and performed self-assessment using standard questionnaires. Likert scale satisfaction questionnaires as well as the close and open-ended contents were evaluated.

Summary of Results: Forty-one students participated in the study. The most frequently observed strengths were: listening/attentiveness (82.8%); eye contact (78%); appropriate wording (78%). The most frequently noted weakness were: check/clarify (78%); own comfort/preparation (68.3%); show care/empathy (63.4%). All students strongly agree with using this method for continuous improvement of their communication skill learning.

Discussion: Video-based, close and open-ended approaches to self-assessment can help identify strengths and weakness of Oriental culture students’ communication skills. As expected, the strengths express characteristics of oriental culture people. The weakness identified by individuals could be directly correct on their own practice or any suggestions from their mentors.

Conclusion: Video-assisted self-assessment in communication skills is feasible, practical and informative. Application of this method together with direct feedback from mentors can help students improve their performance.

Take-home Message: Video-assisted self-assessment can serve as one important evaluation tool for the 21st century learning.

#5CC10 (2114)
Low cost assessment of basic clinical skills in oversized groups of undergraduate students using internet video platforms

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Fernando Azcoitia, Facultad de Ciencias de la Salud - Universidad Anáhuac México, Mexico

Background: There is a need to assess the advances in clinical skills in oversized groups of undergraduate students, however this requires a lot of time for the evaluation and feedback during class. On the other hand, students request a reference to objectively verify their progress in these skills.

Summary of Work: Undergraduate students recorded videos of their advances in clinical skills performance using peers and relatives as patients. They uploaded this videos to Youtube platform and sent the link as a task on the blackboard platform. Using standardized rubrics, Medicine school faculty reviewed and offered a constructive feedback of their performance.

Summary of Results: We perform a linear regression comparing the performance in the summative evaluation of the students who participated with their videos against those who did not, and comparing the number of videos reviewed with their performance. We found a a positive correlation, with no significant difference.

Discussion: With the use of this modality we gained greater teaching time in the classroom, and this was related with a better performance in the summative evaluation. The students had a tool to follow up their performance throughout the course, nevertheless it required after hours work by the faculty.

Conclusion: There have been evaluated and feedback more than 300 students (over 100 hours of video). These hours had been used in teaching time, and a database was compiled with the results of these formative assessments, so students can verify their progress and find areas for improvement of their performance.

Take-home Message: The use of technology helps to improve the formative and summative assessment of clinical skills, although it requires an extra effort from the teacher. These tools allow to generate evidence of students performance and motivate them to continuous improvement through self-assessment and faculty constructive feedback.
#5CC11 (2751)
The Effects of Portfolio Use on Achievement of Competence in Medical Education: A Review of Studies

Alanna J Propst, McGill University, Montreal, Canada
Ruth C. Russell, McGill University / Montreal Children's Hospital - McGill University Health Centre, Montreal, Canada
Andrea R Fleiszer, McGill University, Montreal, Canada

Background: Portfolios are flexible, multifaceted compilations of evidence of knowledge, skills, and attitudes. Portfolios, used increasingly at all levels of medical education, are touted as valuable tools for documenting and evaluating competence. Further understanding of the effects of portfolio-use on objective learning measures, and thus on achievement of competence, is required.

Summary of Work: An examination of studies about effects of portfolio-use on learning outcomes in medical education was conducted. Database searches sought randomized controlled studies focused on the intersection of the topics of portfolios and medical education. Results were screened to ensure the presence of objective learning measures as an outcome of portfolio-use.

Summary of Results: Few quantitative studies specifically addressing this important topic exist. These studies described mixed results, demonstrating positive effects of portfolio-use on some (but not all) objective learning outcomes and for some (but not all) types of learners.

Discussion: Characteristics of the context (e.g., type of learner, educational situation, setting) appear to influence learning outcomes. The impacts of these characteristics on competence achievement requires further exploration and understanding, as significant effort and time commitments are required by learners and teachers for portfolio compilation and assessment.

Conclusion: Studies suggest that portfolio use has the potential to positively impact some learning outcomes in medical education. Given the effort and time required to compile and evaluate portfolios, the specific nature and extent of effects on learning and on competence achievement require further elaboration and study.

Take-home Message: Portfolio-use as a documentation/assessment tool in medical education is widespread; objective data about effects of portfolio-use on learning and competence is lacking; while benefits exist, pitfalls include significant effort/time consumption; further study of effects of portfolio-use is needed to elucidate the balance of benefits versus drawbacks.
#5DD Posters: Professionalism

Location: Hall 6

#5DD01 (2259)
Professionalism in Healthcare: Developing your own teaching & faculty development modules to suit your multicultural context

Amal Khidir, Weill Cornell Medicine in Qatar, Doha, Qatar
Magda Wagdy
Khalid Alyafei
Abdel-Naser Elzouki
Ahmed Alhammadi

Background: Perceptions and interpretations of professionalism constructs vary depending on healthcare providers’ and learners’ cultural and educational background. Hamad Medical Corporation is a highly dense multi-cultural and ACGME-I accredited Academic Health Center, Qatar. Variations in perceptions mandated alignment of workplace members through a faculty development program that suits the targeted audience. Summary of Work: We conducted needs assessment of four disciplines to develop 6-hour course for trainees, and 3-hour workshop for healthcare providers. Modules contained didactic, locally made videos, case discussions and role-play addressing lapses with patients, healthcare providers, feedback and remediation. 1-5 Likert scale evaluation with commitment to change in behavior was used. Summary of Results: 26 Courses (1053 trainees) and 42 workshops (1595 health providers) were conducted, 2012-2017. Overall evaluations were 4.0-4.5. Trainees committed to maintain altruism, teamwork and respect to colleagues and patients. Faculty committed to refine skills in giving feedback and become role model. Curriculum received awards locally and presented in international conferences. Discussion: Qatar recruits international healthcare professionals and trainees, and ACGME-I requires assessment of professionalism. Creating safe environment for discussions and role-play with feedback using locally made modules engaged attendees and gave them opportunity to reflect on their own behavior. Gathered evaluations showed that attendees enjoyed it and expressed interest to change. Conclusion: Designing your own professionalism curriculum and modules are feasible. Moreover, it can lead to better engagement, alignment of perceptions and commitment to change in multicultural healthcare contexts. Involving healthcare professionals and trainees in the process is a strategy that can help increasing interest, buy-in and more involvement in faculty development. Take-home Message: Needs assessment is required to inform the curriculum. Knowing your target attendees helps in designing the modules and delivery methods. Involving members from the target professions strengthens the sessions and increases the engagement of the attendees. Creative use of local resources augments the content and may overcome budget issues.

#5DD02 (687)
Teacher as a professionalism Architect: the residents’ lived experience of clinical teachers’ role in teaching professionalism

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Ahmad Kachoie, Qom University of Medical Sciences, Qom, Iran
Sara Mortaz Hejri, Education Development Center, Tehran University of Medical Sciences, Tehran, Iran
Mandana Shirazi, Education Development Center, Tehran University of Medical Sciences, Tehran, Iran
Boshra Ahmari Tehran, Islamic Azad University of Robat Karim, Tehran, Iran

Background: The aim of professionalism education to medical students is to promote their professional values in order to fulfill the professional responsibilities. The teachers play a significant role in teaching professionalism. The main objective of this study is to explain the residents’ lived experience of clinical teachers’ role in teaching professionalism. Summary of Work: In this qualitative study, 12 residents in their last year of residency were selected purposively. Still data saturation. The interviews were recorded, transcribed and analyzed by a PhD in nursing education. Data analysis was performed using seven-step Colaiazzi method. The data accuracy was guaranteed through asking colleagues and members’ check. Summary of Results: Two main themes and seven sub-themes were obtained. The main themes were the positive experiences (professional communication, professional accountability, responsiveness to human dignity) and the negative experiences (unorganized professionalism teaching, teachers’ different perceptions of professionalism, lack of attention to evaluation of professionalism by students, contradiction between words and deeds). Discussion: The positive and negative experiences emphasize on the important role of teachers in professionalism training. The participants stated that besides being academic role models, the teachers have an important role in presenting the professionalism education concepts in an integrated way from the beginning to the end of education process. Conclusion: The teachers play a significant role in organizing and establishing the professional values of students. The teacher is in fact an architect in professionalism education that needs to be aware of the exact place and timing of teaching the required principles to the students. Take-home Message: The role of teachers and trainers is to transmit moral values, provide cultural experiences, and shape the students’ behavior and attitudes. In addition to being role models, the teachers need to pay more attention to the configuration of the educational content. They need to avoid unorganized and ill-planned education.
**#5DD03 (2612)**
Why should we pay attention to hidden curriculum in teaching professionalism in Medical Universities of Iran? A mixed method study

Nikoo Yamani, Isfahan University of Medical Sciences, Iran
Tahereh Changiz, Isfahan University of Medical Sciences, Iran
Mohammad Javad Llaghatdar, University of Isfahan, Iran
Peyman Adibi, Isfahan University of Medical Sciences, Iran

**Background:** Medical universities have to pay attention to developing professional values in their medical students. Literature shows hidden curriculum plays an important role in teaching and learning professionalism. The goal of this research was to study the role of hidden curriculum in developing professional behaviors in medical education.

**Summary of Work:** In a mixed method study, 10 faculties and 10 interns were interviewed about hidden curriculum. Then in a descriptive study on 183 interns, a valid and reliable questionnaire based on the results of qualitative study was used. Residents completed the questionnaires by observing the behavior of interns during 3 weeks.

**Summary of Results:** The main themes were "professionalism learnt through hidden curriculum", "professionalism pathology", "role modeling in professionalism", and "facilitators of professionalism promotion". The mean score of interns' professionalism behavior was 2.84±.44 out of 4. Interns in their first 9 month of internship had a higher professionalism score.

**Discussion:** The results showed the role of hidden curriculum in learning professionalism as literature confirms that. The difference between scores of interns spending their first and second half of internship, revealed confronting unprofessional behaviors towards the end of internship which confirms the role of hidden curriculum in shaping professional character.

**Conclusion:** some strategies such as making aware faculty members about professionalism, paying attention to the role of hidden curriculum, learning norms, values and behaviors from appropriate role models, and implementing appropriate supervision for faculty members' and students' professional behavior are recommended for the promoting professional behaviors.

**Take-home Message:** Hidden curriculum is more powerful in developing professionalism comparing to the formal curriculum. Medical universities have to pay attention to their educational environment, structure, rules and regulation in order to provide such climate that supports development of professional values. Role models play a very important role in this regard.

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**#5DD04 (117)**
Implementation of medical professional education utilizing social networking service with an evidence-based checklist

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Gen Kobayashi
Akiko Sugawara
Kazunobu Ishikawa

**Background:** We have revealed the recent status of unprofessional behaviors in the use of social media in Japan for these ten years (amee2016). The unprofessional behaviors were classified into three categories "Handling of medical information", "Confidentiality/Privacy protection" and "Practical jokes/Professionalism".

**Summary of Work:** Based on this research, we implemented new checklist for healthcare professionals into the 5th-grade medical students' class. We utilized audience response system, and asked 100 students about (1) IT devices with them, (2) posting experience on social networking service (SNS) and (3) anxious unprofessional behavior caused by medical students.

**Summary of Results:** Students had smartphone (93.8%), notebook computer (91.8%), and tablet computer (61.2%) with them. Ninety eight percentage of students had posting experience on SNS. Anxious unprofessional behaviors were patient privacy violations (56.1%), practical jokes (29.6%) and profanities (13.3%). Only 1 % students does not have any anxiety.

**Discussion:** The unprofessional behaviors that medical students felt anxious were consistent with the incidence of the affairs on the internet within ten years. Professional education regarding patient privacy seems to have priority. We have developed a novel ten checklist based on the past affairs.

**Conclusion:** Since almost all of medical students are utilizing IT device and SNS, it is essential to implement professional education such as proper handling of medical information, keeping confidentiality and respect for privacy.

**Take-home Message:** The development of ethical education programs regarding the use of social media is essential for both students and healthcare professionals, in order to prevent a variety of future acts of unprofessional behavior.
#5DD05 (3335)
Professionalism in Practice: An innovative approach to developing professionalism and improving patient safety at the grassroots level

Amelia van Manen, Milton Keynes University Hospital Foundation Trust, UK
Laura Vincent, Oxford University Hospitals NHS Foundation Trust, UK

Background: Junior doctors remain reluctant to report patient safety concerns, attributing lack of empowerment, dysfunctional teams, unawareness of human factors, conflict between service provision and box-ticking training demands and reduced accountability for patients. Promoting the integrity of ‘Professionalism’ in patient safety, outcome and experience we devised a multidisciplinary cross-specialty inter-hospital workshop.

Summary of Work: ‘Professionalism in Practice’ was delivered to X Foundation doctors and nurses from 5 hospitals. 4 interactive sessions (Patient Safety in Perspective; Clinical Risk Management; Teamwork and Communication; and Difficult Conversations), mapped to the Foundation Curriculum, incorporated small group exercises, role-plays, simulated scenarios and video, with accompanying workbooks to upload to e-portfolios.

Summary of Results: Pre-course analysis demonstrated significant gaps in postgraduate education. 50% had no HF training, 55% no complaint handling, and 78% did not understand duty of candour (a legal requirement). Post-intervention, 90-100% were more likely to report safety concerns, along with increased confidence in communication with patients and colleagues in difficult circumstances.

Discussion: The course was popular - rated universally as “high quality”. Participants reported the course challenging yet engaging, filling gaps ignored by postgraduate training. They particularly valued the multidisciplinary and interactive scenarios. It remains challenging to evaluate impact by behavioural change beyond self-reporting due to the diverse, relatively small cohort.

Conclusion: This successful workshop encompassed innovative curriculum design, varied, interactive teaching tools and targeted nationally prioritised targets: patient safety and professionalism. Minimising participant costs, releasing staff from multiple sites and securing faculty to repeat the workshop are ongoing challenges. We acknowledge support from Health Education Thames Valley and Patient Safety Academy.

Take-home Message: The “Professionalism in Practice” Workshop: tackled current national priorities in patient safety, human factors and professional development not currently offered elsewhere; utilized diverse teaching methodology, bringing together a multidisciplinary cohort from multiple specialities and organisations, fostering open and engaging communication which was well received and enhanced learning opportunities.

#5DD06 (3206)
The social contract and medical learners: negotiation with or within society?

Lynette Reid, Department of Bioethics, Dalhousie University, Halifax NS, Canada

Background: The definition of the Professional Role in the influential CanMEDS physician competency profile frames the relation of medicine and society as a “social contract,” drawn from the work of Richard and Sylvia Cruess. This conception takes us beyond “dress and decorum” to the social accountability of the profession.

Summary of Work: Social contract theory has roots in philosophy and sociology. In a previous analysis, I described four limitations of the framework in the context of its application in professional ethics. I now discuss these limitations in the context of medical education and describe the desiderata for an alternative framework.

Summary of Results: Social contract theory 1) engenders blind spots about privilege; 2) presupposes that social obligation and self interest coincide; 3) construes prima facie duties as conditional and reciprocal; and 4) dresses up the status quo in mythical agreements, foreclosing on genuine social negotiation.

Discussion: In the context of professional identity formation, contract theory may focus attention on the appearance of virtue and on a quid pro quo of social status rather than the substance of moral commitment. It may also encourage complacency about the status quo and misconstrue voluntarism as the source of obligation.

Conclusion: The idea of a “social contract” risks communicating the wrong message to medical learners: that they should appear to behave well in order to maintain professional privileges. Medicine does not bargain ethics with society from the outside; rather, medicine is where society articulates its response to basic human needs.

Take-home Message: We must clearly differentiate the interests of the profession in maintaining power and privilege against the supposed encroachment of society from the project of delineating the joint but role-differentiated interests of professionals together with their patients and society in safe, sustainable, and ethical care.
#5DD07 (661) Virtues of the King: Which virtues of the king are applicable to the medical profession?

Pimpet Sukumalpaiboon, Sawanpracharak Medical Education Center, Nakhon Sawan, Thailand
Chawaphon Iittiphanitphong
Taweesak Sutpassanon
Darika Thanbuasawan

Background: Late King Bhumibol Adulyade life work inspires millions of people in Thailand. Ten virtues the King practices are "Ten Duties of the King" (dasa-raja-dhamma): Dana (charity), Sila (high moral character), Paricca (self-sacrifice), Ajjava (honesty), Maddava (kindness, gentleness), Tapa (diligent), Akkodha (non-anger), Avihimsa (non-violence), Khanti (tolerance), and Avirodhana (conformity in law).

Summary of Work: The objective of this qualitative research is to analyze the medical students perception of Royal Virtues that applicable to medical profession. Review of royal virtues is provided prior to administration of opened end questionnaire and followed by focus group discussion. Data is primarily analyzed using content analysis and descriptive statistics.

Summary of Results: Of the medical students who participate: age 21-24 year old, 67.9% female, 67.9% fifth year medical student. The three most common virtues that the students thought applicable to their future professions are Khanti (39.7%), Sila (32.1%) and Tapa (32.1%). The least common virtues are Akkodha and Avihimsa.

Discussion: Khanti: able to tolerate hardships, difficulties and pressure at work. Tapa: being able to endure all the hardships in life and diligently work and study as a lifelong learner. Sila: five principle of human. People respect and have faith in physician with good deed, good clinical knowledge and skills.

Conclusion: Most of the virtues that the medical students selected are on the "self" side; true benefit of practice is for oneself. While "other" virtues side, e.g., Dana, Paricca, or Akkodha, are less likely perceive as applicable to their future profession.

Take-home Message: As a teacher, we would like to nurture our medical students altruistic trait. The existing teaching methodology might not be sufficed to bring out this desire core value of medical profession. Understanding and encourage royal virtues regularly might uphold the respectable position of medical profession in the society.

#5DD08 (1580) Students’ Transformative Theaters: Learning to Inspire the Institution Intention

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Prapa Ratanachai, Hatyai Medical Education Center, Songkhla, Thailand
Nuttha Leawchawalit, Buddhhasothorn Medical Education Center, Chachoengsao, Thailand
Sirilak Pongchitsiri, Buddhhasothorn Medical Education Center, Chachoengsao, Thailand
Unyarat Tanrattananon, Buddhhasothorn Medical Education Center, Chachoengsao, Thailand

Background: The identity ‘CPIRD DNA’ has been transformed by rural medical education centers to be the performance of medical students. These ‘C-P-I-R-D’ were defined as C..community bonded, P..passion to learn, I..integrity, R..responsibility and D..dignity. This study aims to inspire our students’ attitude as acronyms stand for by applying transformative theaters (TT).

Summary of Work: We provided the contemplative learning via mindfulness, ‘Hand-Head-Heart’ games and ‘Dialogue’ for the 4th year medical students to help them realize themselves and understand others in order to work better together. They were divided into five groups according to the acronyms, brainstormed the meaning and transformed ‘CPIRD’ into five-minute showtime.

Summary of Results: Most students appreciated the activities as stated... “I know myself more”, “I feel more empathy to others”. They could imply five acronyms to short meaningful stories. They comprehended C-P-I-R-D intention easily and remindfully. Many impressive stories had been created, able to inspire and empower them.

Discussion: The production of desired rural doctors as our identity needs specific learning methods. Therefore, using contemplative learning followed by TT could translate difficult abstract into understandable concrete. Example for ‘C’, telling about one graduated doctor still retained working happily at her hometown after a bad situation nearly bleaching her promise.

Conclusion: We believed that this technique which could drag the students’ understanding out and create stories by themselves would help them more fun and comprehensible. This study convinced that transformative theater was an effective learning method for professionalism especially our institution intention.

Take-home Message: To inspire institution identity to the students, interesting, effective and diversified methods should be implied early and repeated regularly through the curriculum.
Clinical teachers’ dilemma of teaching professionalism

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Chang-Chyi Jenq, Chang Gung Memorial Hospital, Taoyuan, Taiwan
Ren-Huei Fu, Chang Gung Memorial Hospital, Taoyuan, Taiwan
Ching-Yi Lee, Chang Gung Memorial Hospital, Taoyuan, Taiwan
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Background: Professionalism is an essential aspect for the development of becoming a doctor, but remains a difficult aspect for clinical educators to teach. Previous research has examined students’ perspectives of their educators’ professionalism teaching abilities. This study aims to examine Taiwanese clinical teachers’ experiences of teaching professionalism.

Summary of Work: A qualitative interview study comprising one focus group (n=6) and six in-depth semi-structured interviews with clinical teachers was undertaken. All participants comprised clinical teachers in a Taiwanese paediatric department whose professionalism performance had been assessed by students were invited to participate. Data were analysed thematically: three key ‘dilemmas’ were identified.

Summary of Results: (1) The authoritarian education they experienced no longer meets society’s expectations; no teacher-training renders them unconfident teachers; (2) Teachers commonly attribute poor student behaviour to passive learning attitudes, avoiding remediation to evade feeling incapable; (3) Teachers want feedback, but hierarchical relationships means trainees rarely provide corrections/suggestions; teachers doubt positive feedback.

Discussion: Our findings suggest that after becoming an attending physician, clinical teachers gradually discovered how important professionalism is to becoming a doctor, and how role modelling can be influential. Culturally speaking, due to hierarchy, it is not easy to change students’ reluctance to feedback to teachers, nor teachers’ mentality towards students.

Conclusion: Teachers who never receive training for teaching professionalism might struggle to help students’ learning. Although role modelling is important, feedback is equally key to ensure that teachers understand how to develop their teaching to meet expectations. Presently, many teachers learn to teach through their own experiences; rarely receiving formal training.

Take-home Message: Clinical teachers experience many dilemmas, including dilemmas around students’ professional behaviours and how to deal with them effectively; and in terms of hierarchy in a Taiwanese culture, around students’ feedback to teachers and about teachers’ attitude towards students. Teaching the teachers could be a way forward to resolve these dilemmas.

Assessing and Addressing the Learning Environment for Professionalism

John Spollen, University of Arkansas for Medical Sciences, USA
Carol Thrush, University of Arkansas for Medical Sciences, USA
James Graham, University of Arkansas for Medical Sciences, USA
Sara Tariq, University of Arkansas for Medical Sciences, USA
Molly Gathright, University of Arkansas for Medical Sciences, USA
Jan Shorey, University of Arkansas for Medical Sciences, USA

Background: Current conceptualizations of medical professionalism recognize it is a systems issue in which physicians’ behaviors are profoundly influenced by contextual and environmental factors. Accordingly, many academic medical centers (AMC) are responding with institutional initiatives tailored to their unique environments to promote professionalism and to address unprofessional behaviors within their institutions.

Summary of Work: In 2008, a work group was formed at our AMC to focus on evaluating and improving the learning environment for professionalism across the continuum from undergraduate medical education to graduate medical education to faculty. Interventions have included routine assessment and feedback and a systematic approach to managing individual professionalism lapses.

Summary of Results: Scores on the Learning Environment for Professionalism survey have steadily and significantly improved from 2008-2016. Results from our AAMC Graduation Survey have shown medical student mistreatment rates consistently below the national average. Data from the initial learning environment assessment in 2016 indicate unprofessional behaviors also are below the national average.

Discussion: While we did not have baseline national comparison data prior to our implementing the Learning Environment for Professionalism and implementing the system for identifying, measuring and correcting unprofessional behaviors, internally collected data has shown improvement over time and recent national comparative data is consistent with effectiveness of the program.

Conclusion: Our experience indicates that professionalism exhibited by graduate medical trainees and faculty of a medical school can be routinely monitored with feedback provided to departmental and educational leaders and that professionalism lapses can be effectively addressed through a systematic approach that is associated with an improved learning environment for professionalism.

Take-home Message: Professionalism is a competency that can be defined and measured and a structured, multilevel programmatic system for evaluating professionalism, providing feedback and addressing
unprofessional behaviors is associated with a learning environment for professionalism that is consistently positively evaluated by medical students.

Self-Assessments of Medical Professionalism Standard in Postgraduate Physicians

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Sineenart Kontun
Orawan Chaiyamahapurk

Background: Patients, medical societies and accrediting organizations expect physicians to be professional. It’s a core competency of physicians. Practicing physicians should be taught and assessed for professionalism. We incorporated self-assessments of medical professionalism standard and group discussion in postgraduate physicians that refer to the criteria of the Medical Council of Thailand. 

Summary of Work: Cross-sectional descriptive study was performed among postgraduates to professionalism self-assessments (closed-ended questionnaire comprising 6 characteristics, 52 questions, Likert 5 levels). 40 participants divided into 4 groups reflected ideas about professionalism in aspects of patients and physicians. Then, they assessed themselves (open-ended questionnaire) about good physician’s attributes and attributes to be improved. 

Summary of Results: Participants studied professionalism from lectures(35.42%) and role models of physicians(31.25%). In competency of professionalism, Likert scores in every characteristic are good levels(3.70-4.20, 50.8-75%). 2.5-7.5% of participants wanted to improve their characteristics. After group discussion, 60% wanted to improve physician’s attributes, especially knowledge of medicines, confidentiality and communication(35.29%, 11.76% and 11.76%). 

Discussion: Professionalism is difficult to be assessed. Close-ended questionnaire is easy to answer but may get wrong answers. The group discussion under health care leaders supporting motivates participants to reflect professionalism. After realizing the importance of professionalism, they answered open-ended questionnaire and showed more about the physician’s attributes to be improved. 

Conclusion: Teaching professionalism and role models of physicians are important for medical students and postgraduates. Multiple tools should be used for assessing professionalism. Group discussion is motivation reflecting their ideas. Not only good physician’s attributes but unpleasant attributes educate participants. Data from these assessments can improve medical performances and practicing professionalism.

Take-home Message: Teaching professionalism and role models of physicians are important for medical students and postgraduates. Multiple tools should be used for assessing professionalism. Group discussion is motivation reflecting their ideas. Not only good physician’s attributes but unpleasant attributes educate participants. Data from these assessments can improve medical performances and practicing professionalism.

Assessing professionalism of medical students: correlations between self-assessment and teachers’ or peers’ assessment in an Emergency Medicine rotation

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Tatiana Mirabetti Ozahata, Unicamp, Campinas, Brazil
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Background: Assessment of professionalism is an evolving field in medical education. Nowadays, we have seen the development of different methods to measure competence and professionalism. Multi-dimensional assessment is a tool that may help students to reflect about these topics and to develop their competences, attitudes and behaviors. 

Summary of Work: There are three settings in our Hospital: Emergency Room (ER), Emergency Ward (EW) and Intensive Care Unit (ICU). Medical students are submitted to a multi-dimensional assessment, which includes a cognitive test, an OSCE and an assessment of professionalism through a scale of Attitudes and Behaviors (AAB). 

Summary of Results: Medical students of four consecutive undergraduate classes (n=419) were submitted to multi-dimensional assessment. The AAB scale was used for assessment by professors (PROF), students’ self-assessment (SA) and peer-assessment (PAIR). The following correlations(r) for AAB scale were found: ER: PROFxSA=-0.01, PROFxPAIR=0.05, PAIRxSA=0.06; EW: PROFxSA=0.11, PROFxPAIR=0.33, PAIRxSA=0.26; ICU: PROFxSA=0.19, PROFxPAIR=0.07, PAIRxSA=0.48. 

Discussion: Through the AAB scale students could reflect about attitudes and behaviors of themselves and their peers, including topics on relationship with patients and family, and medical or multi-professional team. Noteworthy, grades provided by professors were not correlated to students’ perceptions about themselves and their peers. 

Conclusion: Students must reflect on their professionalism in every clinical rotation, and discuss this fundamental topic with their professors. Our results suggest that it is essential to provide feedback to students about their attitudes and behaviors. It may be an opportunity for them to pursue improvement in professionalism issues. 

Take-home Message: Students’ perceptions on their own performances regarding professional attitudes and behaviors are not correlated with their teachers’ perceptions. Feedback may be the best choice to address it.
**#5DD13 (1988)**
The acceptability and suitability of simulated GP consultations as a teaching method of professionalism

**Neelam Parmar, King's College London, London, UK**  
**Russell Hearn, King's College London, London, UK**  
**Shaine Mehta, King's College London, London, UK**  
**Patrick White, King's College London, London, UK**

**Background:** Research into teaching professionalism in primary care is limited despite 18% of the undergraduate curriculum being taught in primary care. A well-established, simulated primary care teaching programme for third-year medical students exists at King's College London. In this study, we explore use of this simulation programme to teach professionalism.

**Summary of Work:** Professionalism prompts were embedded into three medically focused scenarios for medical students, lasting 30 minutes. Fifteen simulations were observed. Two focus groups were held to evaluate students' views of learning professionalism in the simulated consultations. Focus groups were recorded and transcribed, thematically coded and sense checked by a second researcher.

**Summary of Results:** Students found learning about professionalism in a simulated setting was useful. They noted that the safety provided by simulation and the triangulation of feedback from patients, peers and tutors improved their learning. The experience contributed to professional development and learning by highlighting gaps in students’ understanding.

**Discussion:** Students found the simulations to be high fidelity overall. Some students felt professionalism prompts were not adequately embedded in scenarios. We plan to develop these scenarios further. The scenarios are detailed and reproducible and could be used by other medical schools.

**Conclusion:** Students felt simulated consultations contributed to a safe, positive learning experience and that they promoted the experience of 'doing' rather than just watching. Students identified a translational benefit to this learning citing how it would help them in clinical practice.

**Take-home Message:** Professional development can occur in a number of ways; simulated primary care consultations provide a novel approach to students' professional development and are an effective method for supporting teaching professionalism to medical students. Aspects of professionalism can be embedded in simulated clinical scenarios to enable holistic learning for undergraduates.

**#5DD14 (2176)**
Spiral Transformative teaching model to develop professional doctor in 21st century

**Chaowaphon Ittiphanitphong, Sawanpracharak Hospital, Mahidol University, Nakhonsawan, Thailand**

**Background:** In 21st century, knowledge is coming up just by touch but attitudes are not followed by growth of information technology. Nevertheless, it is an absolute necessity for medical students to learn about professionalism. The Spiral transformative teaching model simplifies learning process of students reflect on their experiences and construct their attitudes.

**Summary of Work:** In the beginning of 4th, 5th and 6th year, the medical students attended in session of dialogue. Each session comprised of introduce yourself, check yourself, working sheets, deep listening and sharing, reflection, meditation and reflective writing. Reflective writing and Watson self assessment were used to evaluate change in professional development.

**Summary of Results:** Reflective writing show change in attitude, beliefs, humanity value and inner joyful spirit of medical students. From Watson self assessment student reported change in behavior; 1) self awareness and self actualization (80.6%) 2) awareness and more conscious of work and life (71.0%) 3) developing and sustaining better helping-trusting-caring relationship (83.9%) 4) practice with kindness for others (87.1%)

**Discussion:** The experience of new ideas and feeling will slowly transform in student mind by using this spiral transformative model. In 4th year, self awareness and self actualization were produced first. In 5th year, voice dialogue promoted change in understanding of the self and beliefs. In 6th year, students built humanity values.

**Conclusion:** This Spiral transformative teaching model could build the inner learning process of medical students through trust, deep listening, open their heart to share, and welcome stories of happiness, sufferance and inspiration. This method promoted professional development as shown by good results in reflective writing and Watson self assessment student report.

**Take-home Message:** This spiral transformative teaching model applying student own experience, reflection, deep listening and sharing by seven steps approach and repeating in the beginning of each year is simple yet effective method to develop self awareness, conscious of work and life, better relationship and kindness for professional doctor in 21st century.
#5EE Posters: Feedback and Self-Assessment

Location: Hall 6

#5EE01 (1775)
Implementation of Oral Feedback in ORL-Education

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Hannah Metzger, Centre of Competence for Evaluation of Teaching in Medicine – Baden-Wuerttemberg, Faculty of Medicine, University of Freiburg, Germany
Peter Brüstle, Centre of Competence for Evaluation of Teaching in Medicine – Baden-Wuerttemberg, Faculty of Medicine, University of Freiburg, Germany
Marianne Giesler, Centre of Competence for Evaluation of Teaching in Medicine – Baden-Wuerttemberg, Faculty of Medicine, University of Freiburg, Germany

Background: Feedback is known to be one of the cornerstones in medical education. The evaluation of our courses showed that students were not satisfied with the feedback procedures in ORL (Otorhinolaryngology). After further analyzing the situation we decided to implement feedback intervals into the objective structured clinical examination (OSCE).

Summary of Work: A 3-station OSCE was conducted. We implemented a one minute oral feedback after each three-minute station to half of the students; the other half received a written feedback later. All participants evaluated the assessment the next day. T-tests were used for analyzing group differences. Cohen’s d was computed to determine effect-sizes.

Summary of Results: 67 students participated. 39 received oral feedback immediately after completing a station and 28 received written feedback a few days after the OSCE. Significant differences were found in favor of oral feedback: oral feedback was perceived as fairer (d=1.47), more transparent (d=1.99), more helpful (d=1.82) and more adequate (d=2.24).

Discussion: Psychological theories of learning suggest that immediate feedback positively influences satisfaction and learning. It reduces the possible interference that might result if the interval between response and feedback is of longer duration. Our results are in accordance with this principle.

Conclusion: Oral feedback improves students’ satisfaction of the ORL-OSCE. Written feedback given later is perceived as e.g. less transparent and less helpful. Further research should focus on the perception of the quality of oral and written feedback given at the same time.

Take-home Message: Feedback is relevant for students’ satisfaction and learning. They will most likely benefit from feedback that is given before they move on to their next assignment.

#5EE02 (2163)
An AMEE 2016 Image as a Faculty Development Tool for Feedback

Mia Lang, University of Alberta, Edmonton, Canada
Fred Janke

Background: Providing quality feedback is an essential skill for all educators, and has increasing urgency in Canadian post-graduate medical education programs transitioning to competency based medical education. We set out to design a faculty development strategy for feedback skills that could be delivered efficiently to a broad audience.

Summary of Work: Participants registering at a local conference were asked to provide written feedback on a photograph from AMEE 2016. Consecutive consenting participants were given either Question A: “Please provide some feedback on this photograph”, or Question B: “Using one of the following 6 feedback phrases, please provide feedback on this photograph”.

Summary of Results: The feedback from the group without the prompt contained minimal helpful information, e.g. “good photo” (n=5), while the feedback from the group that received the prompt had helpful feedback (n=10). These results informed a faculty development intervention that assisted the faculty with their feedback skills in less than 10 minutes.

Discussion: The 6 feedback phrases (Because, Next time, Try, Recommend, Consider, I suggest) quickly transformed the quality of feedback on the photograph. Time is a common barrier to faculty development activities. Using 10 minutes at the end of the conference, to discuss these results facilitated an effective faculty development activity.

Conclusion: Feedback prompts can improve the quality of feedback. Furthermore, this faculty development exercise could be used easily at any meeting as a means of 1) engaging the group, and 2) delivering a helpful feedback tool in a brief time period.

Take-home Message: Faculty development needs to be flexible and efficient to assist the busy academic and clinician. This faculty development exercise was easy to implement and positively impacted feedback skills.
**Background:** Narrative feedback is very commonly used for both formative and summative evaluation of medical students on clinical services. Typically, faculty and housestaff prepare a narrative documenting their impression of the student’s clinical performance. Thus, students on clinical clerkships receive multiple narratives as they rotate through their required clerkships.

**Summary of Work:** The purpose of this study was to compare the amount of narrative feedback students receive on required clinical clerkships stratified by junior year class rank quartile. Faculty narrative feedback from one class of 159 students who had completed all clerkships at the University of Arkansas College of Medicine were studied.

**Summary of Results:** 159 students received 7846 evaluations total. Word count was obtained for each evaluation. Total word count was divided by the number of evaluations for each student. Mean words/evaluation: Top quartile: 34.07, 2nd quartile: 32.03, 3rd quartile: 31.08, bottom quartile: 29.92. The difference between top and bottom quartiles is significant (p<0.006).

**Discussion:** An important purpose of narrative feedback is to improve performance. In this study, students in the lowest quartile of the class received less narrative feedback than students in the top quartile. Assuming that students in the lowest quartile would have the most need for improvement, this finding is important.

**Conclusion:** Students in the lowest clinical clerkship quartile receive less narrative feedback on faculty and housestaff evaluations than higher ranking students. These results indicate that professional development is required to support faculty in providing meaningful feedback to students across all performance levels.

**Take-home Message:** Provision of meaningful feedback, which identifies learner strengths and makes recommendations for improvement, is a key tool in clinical teaching. This study demonstrates that struggling students receive less total feedback. Though providing feedback to struggling learners is difficult, improving narrative feedback should be a key target for faculty development.
#5EE05 (2217)
Providing Video Feedback on a Medical School Community Based Assessment Item: From Performance to Perceptions – ‘Skippy’ to Goldilocks

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Background: Improving student engagement with assessment feedback enhances student motivation, learning and future performance. Written feedback has traditionally been provided to students on a summative community-based creative-piece assessment task. We trialed the use of individualised video feedback. Student perceptions of this type of feedback was then elicited and analysed.

Summary of Work: 86 first-year students in a graduate-entry medical program based in rural Australia were provided individualised video feedback on assignments and encouraged to complete an online survey. This presentation is underscored by Goffman’s theory of performativity and posits that video feedback can be well-received, easy to create and timely to produce.

Summary of Results: While the trial of video feedback was somewhat experimental, the student feedback was overwhelmingly positive. Student comments included that the video feedback was novel, personal and also rather remarkable for its utility and surprise value.

Discussion: Individualised video feedback is innovative, effective and adheres to university requirements in that “emphasis will be made on providing students with meaningful feedback to facilitate their subsequent approach to learning and enable them to reach their learning goals” (Monash University Better Teaching Better Teaching Agenda)

Conclusion: Video feedback on a summative-assessment task is valued by students. We found that video feedback could be provided at a small rural teaching facility without any marked loss of time or demonstrable inconvenience for academics. Indeed, we argue that ‘performing feedback’ for the camera can benefit both students and staff.

Take-home Message: The effort taken in producing video feedback is particularly rewarding; the act of performing for assessment both appreciated and gratifying, and that in terms of the ‘Goldilocks principle’, it can be ‘just right’.

#5EE06 (228)
Do milestone-based assessments improve faculty feedback?

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Jeremy Timm
Jorie Colbert-Getz

Background: Feedback is a critical step in assessment. In 2015, US Internal Medicine residency programs implemented outcomes-based milestones, which define areas of competency at specific training levels. Milestones provide a descriptive framework that may allow improved faculty feedback. However, little is known about residents' perception of feedback quality since milestone implementation.

Summary of Work: University of Utah Internal Medicine residents indicated how often narrative and verbal feedback met 6-8 elements of quality pre- (2015) and post- (2016) milestones implementation on a 0 (never) to 5 (81%-100% of the time) scale. Pre- and post-ratings were summed across items and compared with paired samples t-tests.

Summary of Results: The response rate was 86% (N = 60). There were no differences between total pre- and post-ratings for narrative feedback (Pre: 20(SD = 4), Post: 19(SD = 5)), P= 0.562 or verbal feedback (Pre: 27(SD = 7), Post: 26(SD = 7)), P= 0.840.

Discussion: The Accreditation Council for Graduate Medical Education adopted outcomes-based, specialty-specific milestones as the framework for their assessment of residents in 2015. For residents, the milestones hope to provide more explicit and transparent expectations of performance, support better self-directed assessment and learning, and facilitate better feedback for professional development.

Conclusion: We studied residents' perception of the quality of the feedback they received before and after the implementation of the milestones. Milestones should provide improved opportunities for faculty to offer specific feedback on performance based on the descriptive, developmental framework. Our study did not show any resident perceived improvement in feedback.

Take-home Message: This study was conducted the year after milestone implementation. The milestone framework is very specific and descriptive and should lead to improved feedback that is specific and actionable; residents didn't perceive an improvement. Faculty development is needed to improve the quality and accuracy of assessment and feedback using the milestones.
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#5EE07 (3359)  
Feedback on Examinations – Students’ Perspective

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Background: Alfaisal University provides the students post results the breakdown of their grades, yet it has a policy that no detailed feedback about the exam can be given. The aim of our study is to seek the students’ perspective on the policy.

Summary of Work: A questionnaire was distributed among 112 medical students of Alfaisal University. It determined the number of students who would prefer to get a detailed feedback on their examination. In addition, it assessed whether the feedback would help them focus their efforts and track their progress or not.

Summary of Results: The results show that 89% of the pupils agreed that a comprehensive feedback is required after the results. Additionally, 87% of the students thought feedback would aid them to concentrate their effort and stay on the right track.

Discussion: Most pupils want extensive feedback on their exams. It motivates them as it elucidates any misunderstandings. In addition, feedback gives the students a sense of relief that their answers were clearly understood and the results are equitable.

Conclusion: The clear majority of students prefer obtaining a comprehensive feedback about their exams. They believe it allows them to make sure they’re on the right path. Not only that, but it also prevents them from repeating the same mistakes.

Take-home Message: Feedback on examinations is desired by students. It allows them to know where they stand, clarifies any misconceptions, and finally, it eliminates any doubts that the results may be unfair.

#5EE08 (2599)  
FEEDBK to the future: Technology in medical education feedback

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Background: Mobile/tablet devices are being increasingly recognised as a valuable educational tool. Feedback is considered the foundation of effective clinical teaching. We aim to evaluate structured feedback delivery to medical students using the FEEDBK (Focus, Evaluate, Encounter, Do, Better, Key take-home message) model on a tablet device.

Summary of Work: A survey exploring students’ views on feedback was conducted. A feedback form using audio recording, voice-to-text recognition and typing to log feedback was created on iPad. Each student had access to the form via their iPads for the second clinical attachment. A second evaluation survey will be conducted.

Summary of Results: Thematic analysis identified student needs (feedback that was personalised, written/logged, structured and specific) and limiting factors (time constraints and tutor awareness of learning objectives prior to feedback). Second survey results to follow.

Discussion: Initial survey results show students want structured and personal feedback that is written/logged and specific with a clear learning objective. Feedback delivered needs to be efficient without compromising quantity or quality. The iPad form created allows feedback delivery in the format requested using the FEEDBK model in under 5 minutes.

Conclusion: Second survey results are pending. The iPad form using audio recording, voice-to-text recognition and typing features may improve the quality and quantity of feedback in busy clinical environments.

Take-home Message: Structured feedback can be delivered efficiently in busy clinical environments using the FEEDBK model via tablet device. This will enable students to log their feedback and refer to it to enhance their learning. Moreover, this will be cost-effective and easily reproducible across a variety of busy clinical settings.
Implementation of a Multisource Feedback System in a College of Chiropractic – A Cross-sectional Survey

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Background: Multisource Feedback (MSF) is an extended tool aimed towards enhancing professional development. It has moved from industry into many other contexts, like the healthcare field. The Barcelona College of Chiropractic evaluates whether chiropractic clinic interns find MSF useful in developing their professionalism, as well as their reflective practice skills.

Summary of Work: A paper-based questionnaire with a list of health practitioner competencies was developed. Assessors were asked to rate the clinic interns in relation to each competency using a Likert scale. Ten assessments were collected for each clinic intern, who were then asked to complete an evaluation of the tool.

Summary of Results: More than 50% of students reported they would recommend using this tool to a colleague, see value in repeating this feedback and think the feedback received was important. Similar percentages agreed and disagreed (35% and 35%) with the thought that their professionalism had improved as a result of receiving MSF.

Discussion: The results confirmed the MSF as a useful tool to develop clinic interns' reflective practice. It was not perceived as having an effect in their professionalism. Students appreciated receiving feedback via the MSF system, and produced positive results, not in their clinical skills, but in their reflective practice.

Conclusion: This study suggests the MSF can be helpful for students in coordination with other teaching of reflective practice. The institution plans to modify how it is introduced to clinic interns and to include a follow-up interview with the students in order to guide the reflection upon the feedback received.

Take-home Message: MSF is a tool worth considering for implementation in health care teaching institutions, since it can be of great interest for the college life and future professional life of the students.

Formative evaluation enhances clinical skill of interpretation of peripheral blood smear in medical students

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Background: Many medical students had learning problems in using light microscopy for diagnosis hematologic disease and interpretation of peripheral blood smear (PBS) even if previous learning in preclinical year. This skill required repetitive and frequent training in interpretation. Formative evaluation (FE) may enhance skill and inspire active learning.

Summary of Work: FE and PBS flashcards were applied in twelve of 5th year students in medicine rotation (group B) compare to control (group A) in traditional learning. The OSCE PBS examinations at the end and pre-national license (pre-NL) one month later were performed. The scores and improvement were analyzed with paired t-test.

Summary of Results: Each group had no different in GPA in clinical year. After FE, the OSCE scores were higher in group B (74.5±19.5 vs 53.8±17.6, p=0.49). In subgroup, the significant result was only RBC interpretation (77.9±16.5 vs 60.4±20.7, p=0.02). The pre-NL scores were not significant in both groups (62.2±12.7 vs 53.8±17.6, p=0.19).

Discussion: The FE outcome was only in RBC interpretation because of RBC easily seen in PBS and common than WBC and malignant cells. To classify WBC or malignant cells required more skill and experience. The FE was not significant in pre-NL scores consequence of a brief period and skill not regularly practice.

Conclusion: FE improved final OSCE scores in PBS interpretation but not improve pre-NL OSCE scores in 5th year medical students. The outcome of FE had short term effect but continuous repetitive FE may be maintain and enhance long term clinical knowledge in their practical skills.

Take-home Message: Clinical skills of hematology interpretation required both knowledge and continuous training.
# Student preferences between summative and formative assessment

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**Background:** When courses are based on final exams, some students seem content with the assessment whereas others seem not. Formative assessment can lead to better learning outcomes but may be challenging to students accustomed to summative assessment. Additional data about students' preferences and motivations could be useful for more individualized teaching.

**Summary of Work:** Medical students were allowed to complete a course in clinical genetics by a final exam or by continuous assessment (online mini-exams and learning diary) and a peer-assessed course work. The reasons for preference, time spent learning, and other data were collected by online questionnaires and analyzed by inductive content analysis.

**Summary of Results:** 123 (82 %) students chose to complete the course by CA and a peer-assessed course work. Content analysis suggested that the most common reason for choosing CA was the belief that learning outcomes would be better with CA. Other reasons included the avoidance of the stressful final exam, and curiosity.

**Discussion:** Most students with years of experience on final exams are well aware of their shortcomings, and willing to try alternatives for better learning outcomes and more evenly distributed workload. Minimization of work was not as important; many students in the CA group studied more than expected by the ECTS credits.

**Conclusion:** When given a free choice, and without prior exposure to CA and peer review as main assessment methods of a course, most - but not all - 5th year medical students seemed to prefer such formative assessment over a summative final exam.

**Take-home Message:** Students have different expectations and attitudes toward assessment. Alternative paths to complete a course, or assessment including both formative and summative elements, could perhaps help students to best achieve their individual learning goals.

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# Self-perceived Confidence and OSCE Performance in Senior Medical Students

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**Carlos Brailovsky, College of Family Physicians of Canada, Toronto, Canada**

**Background:** OSCEs have been used in the Northern Catholic University since 2008. Students claim that their performance doesn’t reflect their confidence or preparation for these evaluations. This study’s purpose is to determine the relationship between students’ levels of confidence and preparedness for an OSCE and their performance on the exam.

**Summary of Work:** Students during their last year of medical school undergo two OSCEs, one assessing their Internal Medicine/Surgery Clerkship and another assessing their Ob-Gyn/Paedics clerkship. Prior to the OSCE, students completed a survey which included 27 items sampling confidence in performing various clinical skills and 7 items assessing preparedness for the OSCE.

**Summary of Results:** A total of fifty-four medical students completed the survey. Of these, 93% showed complete confidence in their performance while 7% showed moderate confidence. The students prepared for the OSCE an average of 75 hours.

**Discussion:** Spearman coefficient was used to determine the relationship between perception of self-confidence and OSCE performance and preparedness and OSCE performance. The results showed that there was no direct relationship between perception of self-confidence and preparedness with OSCE performance.

**Conclusion:** Literature shows few studies and contradictory results related to self confidence and preparedness in OSCEs. This study confirmed that although students had a moderate to high degree of confidence this did not reflect on the OSCE outcome, as with preparedness.

**Take-home Message:** More studies need to be undertaken nationally and internationally to see what factors influence self confidence and preparedness with OSCE performance; investigations to elucidate why in some studies, students with high levels of confidence do well in OSCEs and others do not.
Self-assessment and self-efficacy in medical students' communication skills in Taiwan

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Background: Self-efficacy is widely used for self-assessing the outcome of communication skills training in western countries. However, the research about self-efficacy in eastern countries is still lacking. The main aim of the study is to investigate medical students' self-assessment in communication skills in eastern culture.

Summary of Work: Medical students who signed up for an Objective Structured Clinical Examination (OSCE) were included. As a part of the OSCE, their performance in the communication skills was evaluated by a rater at one of the stations. After the examination, the students were asked to assess themselves by the same rating scales.

Summary of Results: Ninety-five students completed the self-assessment, including 72 male and 23 female students. When compared to the rater's assessment, the checklist rating scores were lower in 7 of 10 items in self-assessment. Both overall checklist rating scores and global rating scores were lower in self-assessment than rater's assessment (p<0.001).

Discussion: Medical students scored lower in being polite to the family, explaining clearly the patient's condition to the family, being attentive to the family, answering the family's questions, and explaining the critical condition of the patient. Educators can provide training to support staff in handling emergencies. The low score in the Medical Emergencies domain may reflect a diminished confidence in handling emergencies. Educators can provide training to support staff in managing emergencies for the future.

Conclusion: This study provided insights for educators to develop and implement training programs to support RN in delivering competent, confident, ethical, and safe care to their patients.

Take-home Message: Both male and female medical students in Taiwan scored their communication skills lower than raters. In addition to teaching communication skills, teachers in Taiwan should also encourage their students to be more confident.

Registered Nurses' self-evaluation on their professional competencies at Khoo Teck Puat Hospital, Singapore

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Background: One's perception on his/her ability to perform a clinical skill as part of delivering nursing care can be studied as part of formative assessment. This study looks at registered nurses (RN) in an inpatient setting of a 590-bedded Khoo Teck Puat Hospital (KTPH), Singapore.

Summary of Work: RN completed an online survey to self-evaluate their perceived staged competencies using Patricia Benner's model (Benner, 1982). A 5-points-Likert scale was used in the survey that looked at 8 core nursing competencies that were adopted and modified from Singapore Nursing Board's Core Competencies for RN.

Summary of Results: The response rate was 62% (419/678). Self-assessment scores revealed: 1. General Clinical, Mean 3.21, SD 0.63; 2. Clinical Skills specific to Discipline, 3.34 (0.70); 3. Medical Emergencies, 3.06 (0.75); 4. Infection Control, 3.39 (0.69); 5. Health Teaching and Education, 3.18 (0.69); 6. Human Relations and Communication, 3.2 (0.69); 7. Management, 3.2 (0.69); and 8. Professional & Ethical Conduct & Practice, 3.45 (0.70).

Discussion: The findings suggested that the hospital's training for RN is effective in delivering confident, professional, and ethical skills. The low score in the Medical Emergencies domain may reflect a diminished confidence in handling emergencies. Educators can provide training to support staff in the confident management of emergencies for the future.

Conclusion: This study provided insights for educators to develop and implement training programs to support RN in delivering competent, confident, ethical, and safe care to their patients.

Take-home Message: The RN ability to manage clinical issues is paramount in addressing healthcare gaps. To achieve this objective, a longitudinal work focusing on the assessment on actual performance that incorporates staff self-perceived data are needed. Tracking the changes and development of staff core competencies is paramount in supporting their professional growth.
Evaluation of continuous assessment as guidance for students’ learning progress

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Background: Continuous assessment is considered as guidance for learning. It is a feedback process, in which learners are able to evaluate their performance in light of the information received. This study is seeking continuous assessment student’s perception and evaluation in terms of frequency, percentage and types compared with the curriculum document.

Summary of Work: This poster reports a cross sectional survey with quantitative and qualitative components, done in AL-Neelain University, faculty of medicine in February 2016. Methods used were close ended questionnaire to final year students (n=129) and structured interview to the head of paediatric department.

Summary of Results: Only 29.5% of the students were aware about the percentage of the continuous assessment from the final exam, which was 10%. The results were disclosed to half of the students. They were assessed twice during their academic year through MCQs and OSCE. There were no method of formative assessment used.

Discussion: Students’ ignorance about continuous assessment as part of their final grades and not receiving feedback, seems likely due to miscommunication between students and faculty
Percentage allocated for continuous assessment was low and didn’t match the curriculum document. Furthermore, only two exams of summative assessment are insufficient to monitor their progress

Conclusion: Poor student’s knowledge regrading percentage of continuous assessment from final exam and negligence of results disclosure highlights staff-student communication issues.
In-efficient frequency, percentage and varieties of continuous assessment; give hints about problem related to curriculum itself.

Take-home Message: Improving the quantity and quality of continuous assessment cannot be over-emphasized. So building the capacity of the faculty to communicate and use various method of assessment is mandatory as well as curriculum review.
Background: The transition between pre-clinical and clinical medicine remains a stressful time for students. A number of curriculum initiatives have been implemented with the aim of easing this changeover; including the use of problem based learning (PBL), transition courses, integrated curricula and early clinical and communication skills teaching.

Summary of Work: This comparison study took place at both Barts and The London, and Bristol Medical Schools, with the former having PBL and early clinical and communication skills, and the latter a four-week transition course - LiTHE (Learning in The Hospital Environment). Focus groups were conducted with clinical students at both sites.

Summary of Results: Preliminary data suggests that transitioning students still face challenges. In both medical schools, students expressed anxiety in the initial months of clinical placements; there were particular difficulties around identifying and availing of learning opportunities, time management, and application of theoretical knowledge in the practical context.

Discussion: LiTHE had some success in helping students understand their developing role as a professional. PBL helps foster self-directed learning. Both institutions could benefit from adopting areas of the other curricula, as both have benefits and shortfalls. However, cost and time available must be considered when implementing novel curricula.

Conclusion: This study has demonstrated that although curriculum changes are helping to ease the transition from classroom based to clinical teaching, it is still a stressful time for students. Transition courses have a valuable role in the curriculum, however are insufficient alone to bridge the gap to workplace learning.

Take-home Message: Students desire more mentoring in the early stages of clinical placements. Stress and anxiety when transitioning from classroom to clinical learning are expected, however can be mitigated by curricula strategies e.g. transition courses and PBL.

Stress and anxiety when transitioning from classroom to clinical learning are expected, however can be mitigated by curricula strategies e.g. transition courses and PBL. Time and expense required to deliver these strategies may be a barrier to implementation.

Take-home Message: Students desire more mentoring in the early stages of clinical placements. Stress and anxiety when transitioning from classroom to clinical learning are expected, however can be mitigated by curricula strategies e.g. transition courses and PBL.

Discussion: Numerical evaluation shows clear improvements in leadership and management skills following the course, which impacted on patient care. Candidates also described additional benefits including the value of peer-mentoring and peer-support on their morale. The course is of particular value given the current difficulties facing junior doctors in the NHS.

Conclusion: The transition to a role with increased leadership requirements is a common source of anxiety in medical careers and little specific training exists to resolve this. We have evaluated a novel course which addresses this unmet need and demonstrated statistically significant improvements in trainee confidence in leadership and management skills.

Take-home Message: This is a registrar-led course designed to support transition of junior doctors to leadership roles. The course utilises peer-learning in its approach, with particular focus on non-technical skills and human factors. We show improvements in trainee confidence and motivation with resultant positive impact on patient care and on doctor morale.
The burdensome but rewarding work-life of early-career veterinarians

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Background: The transition from student to practicing veterinarian is demanding. The early-career veterinarians are expected to be able to apply skills and knowledge in varying contexts and must adapt to new challenges quickly. Research on how early-career veterinarians perceive their work helps to prepare students for their future work challenges.

Summary of Work: An online questionnaire targeted early-career veterinarians, which produced responses from 134 veterinarians having graduated within five years and 57 answers from students with a temporary license to practice veterinary medicine. The questionnaire included open-ended questions where the participants were asked to describe the rewarding and burdensome aspects of their work.

Summary of Results: Many aspects of the work were perceived as both rewarding and burdensome. Interaction with clients was mentioned as rewarding by 63% and burdensome by 42% of the participants. Professional achievements and performing challenging tasks were commonly mentioned as rewarding (74%), whereas insecurity (27%) and professional failures (15%) were burdensome.

Discussion: Early-career veterinarians with limited clinical experience focus on managing the veterinary tasks, but must pay attention to client communication at the same time. Students should get training in non-clinical challenges of work-life and gain good people skills. The newly-graduated veterinarians need to be challenged to excel and develop themselves.

Conclusion: Early-career veterinarians need support from colleagues and professional mentoring could be useful in giving tools for turning some of the burdensome aspects of their work into more positive challenges. Enhancing the students’ and early-career veterinarians’ ability to cope with inevitably difficult situations and failures would increase their well-being at work.

Take-home Message: As early-career veterinarians commonly find communication with clients and professional achievements to be a rewarding aspect of their work, their well-being would benefit from gaining good people skills and tools to cope with difficult situations. Chances of succeeding in increasingly challenging situations are needed for rewarding personal development.

The benefits of simulating an on-call for final year medical students

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Background: Simulation training has become an integral aspect of modern undergraduate medical education in the UK. As final year medical students make the transition into foundation doctors, one area where they receive little formal training or exposure is concerned with being on-call, and subsequently many feel unprepared for these shifts.

Summary of Work: Final year students from Bristol Medical School who were on placement at Yeovil District Hospital took part in an on-call simulation exercise with the emphasis on prioritisation and improving their confidence. They were split into groups of 2-3 and given tasks commonly encountered during an on-call shift at various intervals.

Summary of Results: The students completed a pre- & post-simulation questionnaire on the two areas we were looking at (prioritisation/confidence working on-call). 79% (from 35%) of the students agreed/strongly agreed that the exercise helped with their prioritisation and 71% (from 0%) agreed that it increased their confidence in working as an on-call doctor.

Discussion: Our results show that we achieved our objective as the students felt an improvement in their confidence about working on-call and being able to prioritise tasks during a typical on-call shift. There is little published material in this area and this could be a springboard for a larger scale study.

Conclusion: In this small-scale exercise, we showed that giving students exposure to an on-call simulation they felt an improvement in their ability at prioritising tasks and feeling more confident about the role of on-call doctor. This can be trialled across other local academies to see if the results can be replicated.

Take-home Message: The role of an on-call doctor creates anxiety among newly qualified doctors, but this can be lessened and minimised by using simulation. This creates a safe environment for students to learn about the role and expectations of working a typical on-call shift.
Simulation On Call Sessions – A Valuable Teaching Method in Preparing Medical Students for Life as a Foundation Doctor?

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Background: Simulation-based training has recognised benefits in medical education and is becoming an increasingly popular teaching tool. We explored its use in preparing final year medical students for their first on call shifts as foundation year 1 (FY1) doctors, in particular in relation to improvement of time management and prioritisation skills.

Summary of Work: We ran four 1.5 hour sessions for 14 students in total. They were expected to carry the FY1 on call bleep covering 8 surgical and medical wards. Each student was allocated to one doctor who bleeped them with typical FY1 tasks, provided advice if needed and gave personalised feedback afterwards.

Summary of Results: Pre- and post-session questionnaires showed an increase in the percentage of students reporting at least 4/5 confidence levels with regards to taking adequate handovers (7% to 73%), time management (7% to 55%) and task prioritisation (29% to 91%). 100% would recommend simulation on call teaching sessions to other students.

Discussion: The sessions provided a unique opportunity to reproduce the stress of an on call shift, allowing the students to improve skills such as time management and prioritisation which can be difficult to acquire during their placements. One-to-one feedback in a safe learning environment was appreciated, but requires substantial resources.

Conclusion: A single simulation on call session considerably improved final year medical students’ confidence in taking handovers, managing their time and prioritising tasks. The sessions are an effective and enjoyable teaching adjunct in preparing students for their FY1 on call shifts.

Take-home Message: Simulation on call sessions are a valuable complementary teaching method in preparing final year medical students for their first on call shifts as a foundation doctor.

Managing the acutely ill patient upon graduation: A novel, interactive, case-based teaching programme aimed at improving confidence in acute care for final year medical students

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Background: Managing acute illness is a known weakness in newly qualified doctors, who often lack confidence in all aspects of acute care; recognised by individuals themselves and senior colleagues. We delivered a novel, interactive, case-based teaching programme for final year medical students, assessing how this changed their confidence in acute care.

Summary of Work: Twenty final year medical students were asked to complete a questionnaire on their confidence in assessing, diagnosing, and treating, common acute illnesses. We then provided four, two hour long, small group sessions of interactive, challenging, case-based teaching on acute illness, before participants completed the same confidence questionnaire and gave feedback.

Summary of Results: Participation in the course significantly increased confidence in all domains of acute illness management, with confidence in overall management of acutely ill patients increasing from 2.6/5.0 (N=20, SD=0.5), to 4.1 (n=18 SD=0.4), p<0.001. In feedback, students highly scored the case-based approach: 5/5, (n=19 SD=0), and teaching style: 4.8/5 (n=19, SD=0.4).

Discussion: Literature shows newly qualified doctors have low confidence in delivering acute care, however we demonstrate focused, small-group teaching can improve confidence in this important area, as participants’ confidence managing all aspects of acute illness improved significantly over the course. Participants feedback also highly praised the interactive, challenging, small group sessions.

Conclusion: The newly qualified doctor can be the first person to treat the acutely ill patient. We demonstrate that confidence in delivering this acute care improves significantly with an interactive, case-based course. This presents a novel method in providing acute care education, which could improve confidence in acute care upon graduation.

Take-home Message: Dedicated undergraduate teaching in acute care is often limited. Despite this, the recognition and management of acutely ill patients is one of the key competences expected of newly qualified medical graduates. We present that a focused, interactive, challenging, case-based teaching programme can contribute to improving confidence in acute illness management.
Transition with Simulation

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Background: A report by the GMC in 2014 revealed that 1 in 10 new medical graduates feel poorly prepared as an F1 doctor. Simulation allows trainees to learn in a safe environment. Our training course aimed to build emotional stamina and for students to remain focused in a stressful situation.

Summary of Work: We facilitated the transition from medical student to doctor via mainly low-fidelity simulated scenarios: acute asthma, hyperkalaemia sepsis and UGI bleed. Delegates were provided with venepuncture arm, ABG arm kit and clinical equipment. Delegates had to fully complete all tasks, such as repeating an ABG after a failed first attempt.

Summary of Results: 21 post-finals doctors attended the course – 3 outside and 18 inside the UK. Comparing before and after the course, delegates were 40% more confident in starting their first day on the ward, managing acutely unwell patients, escalating to a senior and knowing where to find further guidance.

Discussion: Learners retain only 10% of what they read compared to 90% of what they do. Simulation provides greater contextualisation, hence reinforcing learning. Continuous reflection and repeated experimentation are key elements of learning. Andragogy, as opposed to pedagogy, permits learners to take an active role in their learning.

Conclusion: • Low fidelity simulation improves confidence and helps prepare medical students for work. • Low cost to run and easy to replicate, create stressful scenarios “on demand”. • Improve trainers’ teaching, communication and debrief skills. • Should be considered as an adjunct to the formal curriculum, as part of near-peer teaching.

Take-home Message: Low fidelity simulation provides a low cost, effective and accessible platform for psychological and physical training for learners and teachers. This can be integrated into both undergraduate and postgraduate training.

Virtual On-Call: Scenario based teaching for final year medical students

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Background: On-call shifts, are cited by medical students, as an aspect of becoming a newly qualified doctor they are most nervous about. To help students prepare for being a junior doctor a simulation-based teaching program was developed, allowing students to experience an on-call shift in a safe, supported environment.

Summary of Work: Foundation doctors were surveyed to elicit their most common on call tasks. Simulated tasks were created based on this data, and mapped to curriculum objectives. Small simulation sessions were arranged with students role-playing a doctor on call. Pre and post session feedback was collected to aid course development and improvement.

Summary of Results: Pre-session surveys showed students to be apprehensive and unprepared for on-call working. Post-session data demonstrated consistently positive feedback, showing students to feel more confident in knowing what to expect when on call and also on how to manage and prioritise the most commonly faced tasks.

Discussion: The sessions provided students with first hand experience of a junior doctor’s on-call. After, students were more positive and confident in managing common on call tasks, as well as feeling more prepared to become a junior doctor. The students found the session to be in line with their curriculum objectives.

Conclusion: The “Virtual On Call” enabled students to put learning into practice and provided an experiential approach to learning. It enabled students to experience a stimulated on call in a safe and supported environment. Students found the sessions informative and felt more prepared to handle their first on call.

Take-home Message: 1) A stimulation-based teaching programme improves student’s confidence in on-call work as a junior doctor. 2) Students felt more prepared to handle commonly encountered out of hours tasks. 3) Simulation based teaching provides a safe, experiential, evidence based method to ease the transition from student to junior doctor.
**#5FF09 (1053)**
**Peer Group delivered training on ‘How to be a FY1 doctor’ Course for Final Year Medical Students - an experience**

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**Background:** On Saturday 21st January 2017, we hosted our first ‘How to be a FY1 Doctor’ Course. It was for final year medical students focusing on topics not normally taught at medical school. The majority of tutors were Year 1 and 2 doctors and provided real-life guidance and knowledge.

**Summary of Work:** Pre-course material was provided. Initially, there was an interactive ABCDE demonstration. Students were then split into groups and rotated around ten teaching stations, each 40 minutes long. The stations included:

1. **Mock Ward-round:** A mock-ward was created with an emphasis on note-taking.
2. **Sim on-call:** Students participated in a simulated on-call.

**Summary of Results:** Overall the feedback was very positive - Feedback scale: 4=very good; 3=Good; 2=Average; 1=Poor. All averages given below are mean averages:

- Overall Quality: 3.93/4
- Overall Delivery: 3.91/4
- Overall Timekeeping: 3.97/4

100% of students would recommend the course to a colleague.

**Discussion:** This course was initially created because of gaps in knowledge in newly qualified doctors. It provided an interactive practical way of dealing with these deficiencies and was greatly appreciated by the students. We believe that this is a course that would greatly benefit medical students of all nations and backgrounds.

**Conclusion:** After discussion in the Medical Education Committee meeting, we are planning to run the course again during the induction program for the incoming FY1s. We are hoping for this to become an annual course, with the outgoing FY1 doctors teaching and providing guidance for the incoming FY1 doctors.

**Take-home Message:** Other educational institutions should consider organising similar courses aimed at the practical aspects of being a newly qualified doctor. There remains a large step-up between final year student and year 1 doctor and such courses can help to reduce the gap. Peer group teaching provided a real-life educational input.

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**#5FF10 (2041)**
**Mind the gap: Facilitating the transition between medical student and foundation doctor**

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**Background:** In 2015 the General Medical Council reported that only 69.9% of foundation doctors (FY1's) felt adequately prepared to start work. Managing medical emergencies was identified as a key area where FY1’s felt under-prepared. We aimed to introduce a teaching program to help prepare medical students for the transition to FY1.

**Summary of Work:** We designed and implemented a junior doctor led teaching programme, ‘Bleep the F1’ for final year students at a London teaching hospital. We held interactive, case-based tutorials covering acute medical scenarios and task prioritisation. Feedback was collected after each tutorial and a follow-up questionnaire four months following commencement of FY1.

**Summary of Results:** 22 tutorials were held throughout one academic year. Average attendance was 12 students (range 4-16). 89% of students reported an increase in confidence in managing acutely unwell patients. The follow up questionnaire demonstrated that 95% felt that the teaching had helped to prepare them for starting FY1.

**Discussion:** This teaching gave students an opportunity to discuss scenarios and task prioritisation with junior doctors, who are familiar with the challenges faced during FY1. This may improve students’ confidence by developing familiarity with challenging situations. It also benefits junior doctors, allowing development of teaching and management skills.

**Conclusion:** The positive feedback from this teaching programme suggests that junior doctor led teaching can help to prepare students for the situations they may encounter in FY1, by developing strategies to task management and improving their confidence in the treatment of acutely unwell patients.

**Take-home Message:** The transition from medical student to foundation doctor is challenging and is associated with a rise in responsibility. Work is being done nationally to improve this transition. Junior doctor led teaching is a useful adjunct to final year undergraduate education and may improve the link between students and junior doctors.
Before Taking the Plunge: Preparing our Junior Doctors for the Chaotic Clinical Environment with the Integrated Resuscitation Drill (IRD)

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Penelope Casipit
Ranjana Acharya

Background: How do we prepare our incoming junior doctors to practice in our hospitals? Institutions may provide front-loading lectures on approach to medical emergencies, hospital protocols and patient safety practices orientation, or shadowing with an existing junior doctor. Perceptions by learners on the educational value of these teaching activities may vary.

Summary of Work: The Integrated Resuscitation Drill (IRD) allowed our doctors for hands-on activity in reviving a "collapsed" high-fidelity manikin while working with nurses. This activity focused on applying acute medicine knowledge with teamwork and communication skills. Students were then surveyed to rank the IRD with other orientation educational activities of the hospital.

Summary of Results: Forty newly-joined doctors were surveyed. The IRD scored the best educational activity for being the most informative, adequately-covered and overall useful in clinical practice; ranking higher than that of front-loading lectures, tutorials and job-shadowing. The IRD was valued for its partnership with nurses, and for hands-on experience with medical emergencies.

Discussion: We can observe that doctors that are starting clinical practice appreciate active participation in learning - as what the IRD can offer. This activity provides a safe learning environment without compromising patient safety, with first-hand experience in collaborative practice and teamwork.

Conclusion: The IRD provides the junior doctor the first experience in applying acute medical skills to a stressful environment. Moreover, skills on leadership, feedback, and teamwork are put to test with this educational activity.

Take-home Message: The care of the patient in an acute medical environment does not just entail the doctor, but needs close partnership with other healthcare professionals. The IRD can prepare doctors in managing an acutely ill patient with collaborative care from our nursing colleagues.

Transforming the Transition: Medical Student to Junior Doctor

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Background: It is well recognised that the transition from final year medical student to first-day junior doctor is highly stressful and associated with a sense of unpreparedness. Apprehension is frequently reported with managing the acutely unwell patient and safe prescribing.

Summary of Work: We devised and delivered a 1 day near-peer teaching course for final year medical students. We aimed to promote student confidence in approaching common clinical scenarios. The regional course was piloted in 2015 with 39 students and due to excellent feedback was repeated in 2016.

Summary of Results: 70% of students described the course as very good or excellent. Of the topics covered, students found safe prescribing and clinical cases the most beneficial in preparation for starting work. 80% of students described safe prescribing as useful. 67% of students rated small group teaching on clinical cases as excellent.

Discussion: The results suggest that despite completing undergraduate training, there remained a sense of apprehension around the transition from medical student to doctor. Fundamental skills such as prescribing and managing unwell patients were often feared by medical students due to a lack of experience.

Conclusion: This one day course was regarded as highly useful for preparing medical students for starting work. The practical approach of the course was felt to be very beneficial in developing key skills required by junior doctors.

Take-home Message: Skills-orientated workshops improve preparedness and confidence in medical students for starting work as junior doctors. Undergraduate teaching would benefit from incorporating task-based teaching into the final year curriculum.
#5FF13 (2419)
"I wish I had done this before": An educational package to aid transition from medical student to doctor

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Aria Nikjooy, New Cross Hospital, Wolverhampton, UK

**Background:** The transition from medical student to doctor is often perceived as stressful and is associated with increased patient mortality. Shadowing weeks aim to minimise the “Black Wednesday” effect. However, the possible benefits of vertically integrated education of targeted junior doctor skills within the final year of medical school are unknown.

**Summary of Work:** Clinical Teaching Fellows at New Cross Hospital have developed an educational package targeting specific skills to aid this transition: “Bleep Day” with low- and high-fidelity simulated on call experience, prescribing workshops, role-played communication scenarios, simulated ward rounds and lectures discussing the practical aspects of common junior doctor tasks.

**Summary of Results:** Preliminary student feedback has demonstrated improved knowledge and confidence in completing junior doctor specific tasks (100% of students). Data collection is ongoing and will be presented following post-programme evaluation.

**Discussion:** Existing literature on short, focused, skill-specific courses fails to assess the merit of integrating these within the medical school curriculum. A day-one junior doctor must integrate clinical and professional skills for competent practice. Local shadowing may not remediate such skills if not attained during medical school.

**Conclusion:** This educational package aims to develop students’ transferable skills enabling readiness for life as a newly qualified junior doctor, with positive feedback thus far. It is hoped that this will improve their confidence and competence, reducing the risk of clinical errors during their first days and weeks of work.

**Take-home Message:** Medical students perceive value in specific education of skills required as a junior doctor, running in parallel to the existing curriculum of core knowledge and competences. A comprehensive, vertically integrated package may assist in their transition from medical student to junior doctor.

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#5FF14 (1827)
Mind the gap between Med School curriculum and residency: Senior students’ perceptions to guide curricular changes

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**Background:** Are medical schools’ curricula well-adjusted and efficiently taught, so that young doctors have the required practical experience? We aim to identify whether students learn what medical schools aim to teach and if what they are taught is what they will need the most once they enter the healthcare system.

**Summary of Work:** As a pilot test, 17 last year students (LYS) and first-year residents (FYR) were asked to assess their theoretical knowledge (TK) and practical experience (PE) in all curriculum areas. The questionnaire will be sent to all LYS and FYR when academic year is concluded with results presented at the AMEE 2017 conference.

**Summary of Results:** Overall, TK was better than PE. Pediatrics skills were the best known and most practiced (60% reported high TK / <10% reported low PE); Treatment in Emergency Room (TER) was the worst trained skills (>80% reported low PE) and General Practice (GP) skills were the least known (31% reported high TK).

**Discussion:** Students (31-71%, depending on the area) consider they gained high TK of clinical procedures on Internal Medicine, Emergency Medicine, Pediatrics, Obstetrics-Gynecology, and GP. However, there is a significant gap between what PE students are expected to acquire and what they end up with (high PE 18-48%, depending on the area).

**Conclusion:** The gap from curriculum in paper versus curriculum in practice needs to be identified. Students feel more confident about their knowledge (31-71%) than about their practical experience (18-48%), especially in departments such as TER and GP and 100% consider this is essentially due to the lack of opportunities to practice.

**Take-home Message:** Most students feel they do not have enough opportunities to gain the practical experience they are supposed to, despite getting good theoretical knowledge. Since most Pediatrics’ practice goals are met, a similar teaching-learning process could be used as a model for other weak curricular areas, particularly GP and TER.
The transition from medical student to doctor: can Critical Care help?

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Background: Medical school graduates often lack confidence and feel unprepared for starting clinical practice. In the UK, the adoption of final examinations earlier in the year and movement of graduates away from where they trained may further undermine this confidence.

Summary of Work: A multiple scenario training day was run for all 30 new Foundation Year 1 (FY1) doctors during their hospital induction. Facilitated by physicians and members of the Critical Care Outreach Team (CCOT), participants completed modified Likert scale and free text response questionnaires before, after and 6 months following the training.

Summary of Results: Most new FY1 doctors feel apprehensive about calling for help or escalating care, and have little experience of doing so. Following participation, awareness of senior clinical assistance improved (38% to 93%). At 6 months, 100% of respondents reported having called CCOT during their clinical practice.

Discussion: FY1 doctors found the presence of CCOT members during their induction valuable, with this introduction felt to facilitate future conversations. Participants anticipated that the training in common scenarios in the specific local context would affect their clinical practice; at 6 months 83% had encountered at least 3 of 5 scenarios.

Conclusion: Timely and local training in common clinical situations can improve the confidence of new FY1 doctors. Awareness of and familiarity with Critical Care clinicians can also improve confidence and facilitate conversations about patient care.

Take-home Message: Meeting members of the local Critical Care team can improve new FY1 doctors’ preparedness and may ease the transition from medical student to practicing doctor.

"Asking for help" is not just asking for help - Findings from an ethnographic study on the first months as newly qualified doctor

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Background: Despite an increasing focus on improving the transition from university to working-life, many foundation year doctors (FY) report their first months as stressful, and burnout-levels indicate that they may be facing bigger challenges than they can handle. The current study focus on this transition, and how FYs overcome their challenges.

Summary of Work: The project consists of an ethnographic fieldwork at Aalborg University Hospital, Denmark. The analysis is based on 120 hours of observation of the FYs at work, both daytime and nighttime, and 5 ethnographic interviews. 20 doctors participated. The data is analysed thematically.

Summary of Results: It is not so much the lack of medical knowledge, but the experience of sudden responsibility, demands for quick clinical decision-making and a lack of local know-how that challenge them. The FYs have not yet learned to prioritise between tasks and time - especially when other staff have different priorities.

Discussion: To overcome these challenges, the FYs utilise various strategies. During the first months 1) the FYs often understate their medical expertise to get help on local know-how from the nurses, 2) for medical expertise they seek support from senior doctors and 3) co-peers are used for general support and sparring.

Conclusion: The FYs employ numerous context sensitive strategies to mitigate the transition where the collaborators are crucial in translating both local and medical know-how.

Take-home Message: In the process of becoming a doctor, the FYs’ use of collaborators plays a crucial role and should - together with factors as responsibility, time and know-how - be addressed in the planning of the foundation year.
Comparison of the effectiveness between two orientation programs on new graduated nurses

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Background: New graduated nurses' turnover rate within first 3-month is around 30% in Taiwan. An important factor related to new nurses' turnover because of insufficient clinical skills. The purpose of this study was to exam the effectiveness of self-efficacy of skill capability and the retention rate between two nurse's orientation programs.

Summary of Work: An experimental group (n=54) in which a new program included lecture courses, skills simulation practice, and nursing techniques videos; and a control group (n=86) received traditional lecture courses only. Participants were assessed self-efficacy and self-confidence by 5-point Likert's scale. Independent t-test was used to exam differences of OSCE nursing techniques.

Summary of Results: OSCE scores in the experimental group showed higher than ones in the control group (IV injection, Port-A, p <.01, respectively), also reported higher levels of self-efficacy (4.59 ± 0.69) and self-confidence (4.63 ± 0.61). An increasing new nurses' retention rate was showed from 88% in 2015 to 96% in 2016.

Discussion: The results were consistent with a previous study by Kimery (2016), in which “structured orientation programs” not only effectively decrease turnover rates, also improve both of self-confidence and self-efficacy in new graduate nurses. Meanwhile, hospitals will enhance the safety of patient-centered care quality and save money from retention.

Conclusion: After receiving this new hospital orientation program, the results showed that a comprehensive orientation program was useful on increasing nurses' self-efficacy and the retention rate. Specially, techniques video and simulation practice were valuable to intensify clinical skills and resilience of clinical practices. The mean is implementing a retention strategy is effective.

Take-home Message: The structured hospital orientation program for new graduated nurses eased the transition from nursing student to practicing nurse by decreasing the gap between education and practice, also can enhance self-efficacy and retention rates. Having such a program supported a successful orientation process and therefore retained the organization's nurses.

Self-Directed Learning; A comparison of The Attitude and Perceptions of Residents and Faculty in Pediatrics ACGMEI Program-Qatar

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Muna Maarafiya
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Background: Self-assessment, self-directed learning(SDL) is one of the cornerstone for new aura of teaching. Consider as one way to support transition from undergraduate to postgraduate learning. Our aim to explore and compare attitudes, knowledge, and skills about self-assessment, SDL among pediatric residents and faculty that can support residency program to promote residents SDL culture.

Summary of Work: A cross sectional survey administered among pediatric residents and faculties from July - November 2017 in Hamad General Hospital, main tertiary hospital in Qatar. It includes; details of demographics, perception, attitude and experience toward SDL concept. Questions offered objective answers utilizing 5-point Likert scale.

Summary of Results: Out of 99 respondents, 50% residents and 49% faculties. 90% of both perceived lifelong learning as necessary to physicians. Good understanding of SDL and how to construct effective Individualized Learning Plan (60%) and (50%) respectively. Faculty can assess their own skills (80% vs 50%, P=0.03), but less comfortable helping their resident write goals (45% vs 30%)

Discussion: Faculty believe that SDL improve patient care. They comfortable identify area of strength and improvement compared to residents (86% vs 60%). Residents and faculties have different attitudes and skills related to self-assessment and SDL. Better understanding their knowledge and experience will guide residency program on how best to teach and further develop these skills.

Conclusion: Postgraduate residents desire more guidance on how to engage in SDL. Residency programs need to provide explicit education during early years of the residency training on process of SDL, while Faculty modeling of SDL motivate learners and provide opportunity to demonstrate the process.

Take-home Message: Self-directed learning is an important and new tools for life long learning. Skills has to develop to start implementing it among residency program.
#5GG Posters: Curriculum Integration, Electives and Education Environment

## #5GG01 (1224)

**Online self-evaluation test in biomedical studies**

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**Background:** Previously, it has been shown that biomedical understanding acts as a mediator in clinical reasoning especially among novice physicians. However, for medical students, it is sometimes difficult to understand the connection between biomedicine and clinical practice. Our aim was to create novel tools to integrate biomedicine to clinical studies.

**Summary of Work:** In the project, two medical students developed an online self-evaluation test based on a patient case to integrate biomedical studies (anatomy, histology, pathology, cell biology, physiology, pharmacology, genetics, and biochemistry), and to link them to clinical studies. The test was performed in Moodle and piloted with voluntary Finnish medical students.

**Summary of Results:** In total, 40% of students (119 of 295) completed the test. Feedback was given by 71% of the students. Of those students 92% considered it useful to re-study the essential knowledge of biomedicine before moving forward to clinical studies. All students (100%) were satisfied with Moodle as a platform.

**Discussion:** This study supports the previous findings that studying biomedical subjects in a clinical context is motivating. Online implementation was found flexible and functional for this purpose.

**Conclusion:** Online self-evaluation test encourages students to reflect their learning and improve their understanding in biomedicine. The positive feedback given by students encourages us to develop the integrative self-evaluation online test further, and such test could become a part of the essential studies in the future.

**Take-home Message:** Online self-evaluation test is a motivating and useful tool to strengthen biomedical knowledge and link it to clinical practice.

## #5GG02 (3096)

**Parallel Integration of Clinical Skills with Ongoing Organ System Blocks: Why it Works**

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Mohammad Sharique Ahmad, Alfaisal University, Riyadh, Saudi Arabia  
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**Background:** Alfaisal University in Riyadh, Saudi Arabia, has established a unique approach through a specialized “Professional Skills” course to train pre-clerkship students all the basic clinical skills. The course is parallely implemented to the respective ongoing organ system block, ensuring all relevant clinical skills are delivered before their clerkship phase.

**Summary of Work:** A cross-sectional study that was done among clerkship students. An online survey was sent to explore clerkship students’ perception about the effectiveness of Professional Skills sessions, both in-house and in the hospital, in teaching them basic clinical concepts, and how it has helped them prepare for their clinical phase.

**Summary of Results:** More than 80% of the students (N=179) agreed that clinical skills sessions given during pre-clinical years have been beneficial in increasing confidence, improved history taking and carrying out physical examinations. Interns as teachers were rated higher compared to physicians.

**Discussion:** The course integration with on-going organ blocks, including both in-house training and hospital exposure, is favorably viewed by students for having helped them prepare better for their clinical years. Preference towards interns as teachers could be due to better attachment through a laid back yet professional approach to the subject.

**Conclusion:** Early exposure to clinical skills gives students a reliable foundation to prepare them for their clinical phase. The Professional Skills course inclusion into the curriculum has been vital for student development. Indeed, 90% of our respondents would recommend this course to other pre-clinical students.

**Take-home Message:** Alfaisal University is training medical students basic clinical skills from year 1. By integration with each block, students learn relevant clinical concepts throughout their pre-clerkship years of medical school. The course has a high approval rate for both implementation and eventual outcome among students.
How early is too early? Medical Students' perspectives on early clinical placement in Primary Healthcare Centres in Qatar

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Background: Clinical exposure in the Middle East for medical students usually follows an extended period of undergraduate pre-clinical study. We describe the implementation of a clinical programme from the beginning of medical studies incorporating clinical placements in primary care; supported by a university-based clinical skills programme and experiential review sessions (ERS).

Summary of Work: In 2016, 46 Qatar University medical students commenced biweekly clinical placements in Primary Health Centres (PHC) across Qatar, supervised by family physicians and supported by the university programme. They learnt about population health; clinical medicine and skills; and ethical and professional issues. Cumulative students' qualitative and quantitative feedback were analysed.

Summary of Results: Feedback showed that combining early PHC clinical placements and ERS supported our students' learning: The clinical programme improved student understanding of patient care (94% responses), allowed them to explore ethical and professional issues (90% responses) and enabled them to reflect on their experiences (90%) and identify learning needs (82%).

Discussion: In Europe, early medical student clinical exposure is well established. In the Middle East, there is a reluctance for early clinical placements with apprehension that students may not be adequately prepared for learning in the clinical environment. From early feedback, early clinical exposure is useful for our students in Qatar.

Conclusion: Preliminary data supports the introduction of early clinical placements for medical students in the Middle East combined with a supportive clinical skills programme and ERS in the University. Students enjoyed early clinical exposure, reinforcing their learning, correcting misconceptions and allowing them to develop and discuss learning needs.

Take-home Message: Introducing early PHC clinical placements for novice medical students, in combination with supportive university-based teaching and learning promotes learning in the clinical environment. Such supportive educational activities may provide a robust framework reinforcing learning and promoting the identification of learning needs.

What are the barriers that prevent student engagement in extracurricular activities?

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Background: The study aims were to discover how involved medical students are in extracurricular activities (ECAs), what affects involvement and if involvement changes as students progress through medical school. Anxiety at medical school is being addressed through wellbeing elements in the curriculum however encouragement of ECA participation could also improve wellbeing.

Summary of Work: The study included medical students from Bart’s and the London School of Medicine and Dentistry. A questionnaire was developed to gather information about students’ participation in ECAs. A number of students will be interviewed to explore the responses given in the questionnaire to more fully understand the patterns of engagement.

Summary of Results: Preliminary questionnaire findings have shown that engagement in extracurricular activities is affected by various factors with work pressure and financial reasons being the most common. The student interviews will explore these factors in more detail and further highlight the reasons for participation and the any disadvantages of involvement in ECAs.

Discussion: Engagement in ECAs was affected by multiple reasons with work pressure and financial reasons being common reasons for reduced participation. The work load at medical school is very extensive and the time spent on ECAs is often first to be sacrificed however this may be detrimental to student wellbeing.

Conclusion: This research will determine how involved students are in ECAs and the reasons that affect their involvement. Being aware of these reasons will help the medical school to engage more knowledgably with student ECAs and encourage engagement as part of the new wellbeing strands that are being introduced.

Take-home Message: There is not much literature that explores barriers that prevent student engagement in extracurricular activities. My research will highlight potential barriers so that medical schools are more aware of them. This will allow medical schools to encourage involvement in ECAs to complement wellbeing at medical school.
Extracurricular activity: What does the student perceive?

Chira Trairongchitimoh, Sunpasitthiprasong Hospital, Ubonratchathani, Thailand

Background: Future doctors have to face many changes in the society. For this reason, our Medical education center provided variety of extracurricular activities in every Friday afternoon for medical students. It’s unclear what the students perceive about these activities. This study was aimed to investigate the student’s attitude toward extracurricular activities.

Summary of Work: 5-level Likert scale questionnaires were distributed to all medical students studying in our medical education center. The returned questionnaire data was computed and analyzed.

Summary of Results: 93 questionnaires were returned (response rate 77.5%). From 28 activities, 48.4%, 40.9% of students attended 5-10 activities and less than 5, respectively. Most of students felt these activities were useful (81.8%) and happy to attend (86%). Friday afternoon is proper period for activities (87.1%). Few students (5.4%) felt they were disturbed by these activities.

Discussion: Most of students perceived that extracurricular activity is of benefit to them and enhance their experiences. It is possible that there were some obstacles for student to attend more activities. Students are willing participate activities without disturbing the main study. The objective of each activity should be clarified.

Conclusion: The extracurricular activity is value for medical student’s accomplishment. Student’s feedback might help design proper activity to achieve the objectives for better outcomes.

Take-home Message: The students prompt to learn to become medical experts. Making the room for their achievements is quite challenge.

Characteristics and career of medical students who took international elective program in a Japanese medical school

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Background: The progress of globalization in healthcare has led medical students to be increasingly interested in participating in the international electives. The investigation of the students' characteristics and career after returning to Japan is essential to the comprehensive evaluation of the electives and its learning outcomes.

Summary of Work: Research participants were 532 medical graduates, which were classified into international (n=44) and domestic groups (n=488), at Gifu University from 2011 to 2016. We investigated the relationships with their backgrounds (e.g., hometown, scores of admission tests, academic performances before clerkship) and career (e.g., workplace as junior residents) in two groups.

Summary of Results: The scores of international group were significantly higher than those of domestic group in academic performances before clerkship (p<0.05), but not in admission tests. Although some of graduates of international group were from the place around the university, they worked in other regions as junior residents more than counterpart.

Discussion: Two characteristics of the international group were clarified: higher academic performances before clerkship and working outside Gifu. Achieving better performance at the university may be mutually related to their keeping high motivation for studying in the international context. Their experiences overseas would affect the decision on the subsequent career.

Conclusion: These findings suggested that although medical students gained valuable experience in international electives, they would not engage as doctors in the region. For further research on the international electives, we would investigate what educational opportunities are necessary for fostering the doctor who can globally and locally contribute to the healthcare.

Take-home Message: Medical students who experienced the international electives had achieved better academic performances and would work as junior resident outside the region of their university.
Active partaking in student organization-activities does not exclude success in studies

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Summary of Work: A questionnaire was sent to current students that are members of the student organization for Swedish-speaking medical students at the University of Helsinki. The questionnaire gathered self-reported information on activity in the student organization, study success, and feeling of belonging in the student communities. The results were analysed using SPSS.

Summary of Results: A total of 53 students returned the questionnaire. All participants reported activity in the student organization. The students reported spending 4-40 hours a week on independent studies; there was a significant association between study hours and stress. No association was found between experienced stress and the degree of extracurricular activity.

Discussion: The results show that general activity in the student organization coexists with a positive perception of one’s own study success, as well as experiencing a positive belonging both to the student organization and the study programme. More time spent on studies was associated with a higher degree of stress.

Conclusion: Active partaking in extracurricular activities creates positive camaraderie amongst students in the student organization and study programme. A high overall extracurricular activity was not associated with less time studying, nor a lower degree of satisfaction with study results. Future studies should aim to investigate the reasons for this.

Take-home Message: We found no indications that extracurricular activities impair study success. Student organizations offer valuable non-faculty organized support for producing good medical practitioners.

Students’ perspective on mandatory non-medical electives in Alfaisal University

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Summary of Work: This was a cross-sectional study that encompassed medical students from all years. Internet-based surveys were designed and distributed to the student body via social media. Students were asked about their perception of non-medical electives by use of questions designed to assess factors such as usefulness, time wastage, personal interest, etc.

Summary of Results: Only 12.7% of students (N=118) found NMEs to be helpful. Nearly 55% of students reported that NMEs are time consuming. Moreover, 63.5% agreed that removing NMEs would help them focus better on medical courses. A majority believed that the available NME are not interesting and more options should be provided.

Discussion: This study suggests that the majority of students were uninterested in the NMEs currently on offer at Alfaisal University, and that students do not see the significance of the current selection of NMEs towards their future careers. The study also found NMEs to have an inconclusive impact on students’ GPGAs.

Conclusion: Most students agreed that having NMEs has a negative impact due to their unnecessary consumption of time. To help satisfy students without removing mandatory NMEs, Alfaisal University would be wise to reevaluate the current selection of electives available, and to explore providing more optional NME choices to satisfy students’ interests.

Take-home Message: As NMEs are mandated by the Ministry of Higher Education - and are therefore not subject to elimination - Alfaisal University would be wise to instead provide more NME choices as per their medical students’ interests, as well as their usefulness in their student’s future clinical, academic, and research careers.
Medical Educational Climate and Paediatric Resident Burnout in Thailand

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Background: Burnout is a condition that one experienced high emotional exhaustion, high depersonalisation, and low personal accomplishment. This study was undertaken to investigate the frequency and level of burnout among paediatric residents and explore related factors. In addition, the medical educational environment could be improved to lower the risk of burnout.

Summary of Work: An exploratory sequential mixed method was employed for this cross-sectional study. Firstly, the quantitative phase used a close-ended questionnaire as the instrument. Regression analysis was used to identify the correlation. Secondly, targeted participants from the first phase were interviewed individually.

Summary of Results: 41 residents, none had a high level of burnout. The work-related quality of life correlated with educational climate. Interviews six residents found correlation between burnout and the environment such as inappropriate tasks, teachers and teaching styles, the perception of knowledge insecurity to perform some tasks, time dimensions, home-work interface.

Discussion: The study found no burnout which differed from previous results. This could be from the diversity of educational climates between two institutions or, perhaps, the social desirability as our study was confidential but not anonymous. Although the quantitative part found no relationship between learning environment and burnout, the interview did.

Conclusion: The factors of the educational environment that required improvement to reduce the risk of burnout were identified as the ability of the medical service system to minimize workloads, time schedule arrangements, the clarity of role and work allocation, faculty development programme, the facilities, and the infra-structure.

Take-home Message: 1. Work related quality of life has correlation with educational climate
- Residents provided educational environment characteristics that could contribute to burnout in this study, such as the as inappropriate tasks, teachers and teaching styles, the perception of knowledge insecurity to perform some tasks, time dimensions and home-work interface.
The learning environment of Paediatric interns in South Africa

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**Background:** In South Africa (SA), interns work in a high disease burdened context with inadequate resources and often sub-optimal supervision. High levels of stress and burnout has been reported. Determining and understanding how interns perceive their learning environment will inform improvements in training relevant for many lower to middle income countries.

**Summary of Work:** The psychometric qualities of the Postgraduate Hospital Educational Environment Measure (PHEEM) was assessed among 209 paediatric interns and 59 supervisors, across 4 hospital complexes, in a high childhood disease burdened province of SA. Factor analysis was performed to assess the construct validity and internal consistency was measured with Cronbach's alpha.

**Summary of Results:** Factor analysis indicated a 3 factor solution (42% variance accounted for), with the teaching sub-scale having the best fit to the original tool. Cronbach’s alpha was 0.943 and 0.874 for intern and supervisors respectively. Overall (p=0.0001) and teaching sub-scale (p=0.0007) PHEEM scores differed significantly between interns and supervisors.

**Discussion:** Interns perceived the LE as being more positive than negative with significant challenges being noted. Poor infrastructural support from institutions, high workloads, excessive work-hours and inadequate supervision of training were noted as challenges. These challenges corroborated with the causes of high stress and burnout levels documented among SA interns.

**Conclusion:** The LE in a high disease burdened context, measured using a validated PHEEM tool was perceived very differently between pediatric interns and their supervisors. Causes of stress and burnout among interns in this context are the same obstacles that decrease perceptions of an ideal LE.

**Take-home Message:** The PHEEM tool is valid and reliable in a high disease burdened context. Measuring perceptions of the LE among junior doctors is important as the causes of stress and burnout can also be determined. Differences in how trainers and trainees perceive the LE of newly qualified medical doctors needs exploring.

The outcome of students’ perception after developing the educational environment in Sisaket Medical Education Center

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**Background:** Educational environments are an important factor for students’ learning. Sisaket Medical Education Center (MEC) is a newly established faculty. The committee paid attention to the learning environment and tried to develop the faculty then followed the results by using DREEM. This study aims to compare the students’ perception after developing the educational environment.

**Summary of Work:** The DREEM questionnaire was administered to 4th-6th year medical students of Sisaket MEC. The students’ GPAX, sex and class were identified and the DREEM score compared during 2015 and 2016. Focus groups consisting of two students representing each year in 2015 were conducted then the teaching support team, educational information technology and education environment were revised and the focus group repeated in 2016.

**Summary of Results:** Fifty students in 4th, 5th, 6th year responded the questionnaire. Female 29(58%). The total mean DREEM score was no significant difference between 2015 and 2016 (120.20/119.61, p=0.882) and no significant difference in SPL (29.79/29.26, p=0.616), SPT (27.52/28.44, p=0.455), SPA (20.29/19.56, p=0.316), SPA (27.32/27.90, p=0.540) and SSP (15.96/15.04, p=0.216). The results from focus group show improvement but there were some problems in teaching technique and teaching tools.

**Discussion:** The Sisaket MEC is the new medical center. After the committee corrected the problems especially in information technology and teaching support team, the results from the focus group showed improvement. However the DREEM score in this year was not different from last year. So the committee have to continue improving teaching technique and teaching tools.

**Conclusion:** After developing educational environment in the new established medical center, 2 years following the DREEM scores were no different but the results from the focus group showed improvement.

**Take-home Message:** With the faculty team’s attention to the students’ perception of the educational environment, even if the score still shows no difference, there is a good chance for faculty to improve. The educational environment is the important part of outcome based curriculum and the better students’ perception, the better the outcome of learning.
Development of HEMLEM - a healthcare education micro learning environment

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Background: The learning environment (LE) forms part of the hidden curriculum and is of interest to educationalists as it may impact on the outcomes of the whole curriculum. Additionally, rather than being made up of a single, fixed phenomenon, LEs may be made up of multiple, smaller, flexible, micro LEs.

Summary of Work: The healthcare education micro learning environment measure (HEMLEM) is a mixed methods-derived instrument designed for use across all healthcare student groups, to assess clinical learning environments. HEMLEM is made up of existing and new items, prioritised via a Delphi process, and then piloted with a wide range of healthcare students.

Summary of Results: Forty new items, 31 items adapted from existing tools, three combined items, and one original item from an existing scale were identified and included in round one of the Delphi process. The post-Delphi pilot tool will be administered to 500+ healthcare students, data analysed, and a final HEMLEM produced.

Discussion: Whilst a number of tools currently exist to quantify the LE, they tend to be designed for a single healthcare group - most commonly medical or nursing students. These tools also tend to look at over-arching LEs, rather than the micro environments students experience day-to-day e.g. a single clinic.

Conclusion: The mixed methods approach outlined here is designed to lead to the development of a brief, evidence-based, micro LE measure that can be used by any healthcare student group on placement. The final instrument can then be subject to further assessment of its performance e.g. in different professional groups.

Take-Home Message: Thinking about the LE as made up of a number of micro LEs - that can be quantified and assessed - may provide additional ways for educationalists to better understand elements of the hidden curriculum and its influence on students. This work was supported by a Health Education England grant.
Medical students’ perception of online professionalism and social media use after a specialised lecture

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Background: As digital natives, today’s medical students regularly use social media. However, students may not understand that their online footprint has consequences. These can be both harmful and beneficial to their professional image. Doubts remain concerning the effectiveness of interventions aimed at improving the use of these tools by medical students.

Summary of Work: First year medical students from the faculty of Medicine of Albacete (Spain) answered a survey on their use of social media. After the survey, students attended a lecture by a sixth-year medical student and social media “super-user”. One month later, the same survey was conducted and the results were compared.

Summary of Results: In the post-lecture survey, there was an increase in the number of students who perceived social media as useful in their education and professional practice (86% -> 97%). There was also an increase in the perception of potential negative consequences, along with a greater demand for training (77% -> 87%).

Discussion: Despite its relevance, online professionalism is not covered in most undergraduate medical programs in Spain. Social media use was widespread among students, with the most frequently used service being Instagram (78.5%). Over 70% had shared medical information online, but less than 30% checked the reliability of said information before sharing.

Conclusion: A single lecture-format intervention showed changes in the perception and use of social media by medical students. Familiarity with key concepts such as personal brand increased substantially after the intervention (36% -> 96%). This may present a feasible and cost-effective way of improving online professionalism among medical students.

Take-home Message: Owing to the potential for “good or evil” of social media regarding online professionalism, as well as students’ own demand for further training in the field, social media use should be covered in the curriculum of Spanish medical schools.
An exploratory study of the relationship between faculty and residents’ current use of social media and their intention to use social media for professional development

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Background: Social media applications provide useful platforms for professional development among doctors. Given that the main determinants of doctors’ intention to use social media for development are perceived usefulness and ease of use, this study examines if these determinants are moderated by patterns of current social media use.

Summary of Work: 187 faculty and residents (38% response rate) completed an online questionnaire on their current social media use and perception of social media for professional development. Current use patterns were determined by latent class analysis (LCA). Multiple group analysis using results from LCA was used to explore the best fitting model.

Summary of Results: Three social media user groups were identified: ‘Active’ (42%), ‘Passive’ (35%), ‘Non-user’ (23%). Higher perceived usefulness predicts higher intention across all three groups (beta=0.68, 95% CI:0.57-0.80). Lower perceived ease of use predicts lower intention for Active and Passive users (beta=-0.24, 95% CI:-0.36 to -0.11); not for Non-users (beta=0.06, 95% CI:-0.22-0.33).

Discussion: The impact of perceived usefulness and ease of use to predict intention to use differs depending on the pattern of current social media use. Non-users might not be familiar enough with social media to give accurate perceptions of ease of use, hence ease of use is less predictive of intention.

Conclusion: The study explored the relationship between faculty and residents in a Singapore Residency Program current use of social media and their intention to use social media for professional development. Social media use moderates the perceived ease of use on intention to use social media for professional development.

Take-home Message: Faculty and residents’ social media use moderates the perceived ease of use on intention to use social media for professional development. This knowledge is useful for targeted information dissemination, plans and interventions related to social media use for professional development.

Attitudes to & maximising the potential of social media platforms in undergraduate T&O education

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Background: Today’s medical undergraduates are continuously connected, command the immediate availability of information and expect their tutors to keep up with emerging clinical science, teaching methods and technology. Despite increasing pressure to use social media, the evidence base is limited and there is little information on how it should be incorporated.

Summary of Work: We formulated a questionnaire to explore undergraduates’ attitudes towards social media in medical education. Using “1-10 scale” questions and free-text answers, we assessed attitudes on; the use of Facebook/Twitter in musculoskeletal and other teaching, what a social media feed should potentially include, and opinion towards a focussed app.

Summary of Results: 91% of undergraduates (N=109) rated “Twitter usefulness” 7/10 or less; 68% rated Facebook equivalently. A prospective social-media feed accompanying teaching, musculoskeletal and other, was well regarded (61% and 49%, 8-10/10). Most positive were “X-rays and interesting cases” to accompany musculoskeletal teaching (68%, 8-10/10) and a proposed focussed app (80%, 8-10/10).

Discussion: Our survey highlights that although medical undergraduates regard Twitter/Facebook as not useful, there is some appetite for a social media supplement for their education. A summary of key-points for each lecture would be well received but most preferable would be interesting cases, X-Rays and clinical pictures during a musculoskeletal placement.

Conclusion: The use of social media in undergraduate medical education has potential, especially in orthopaedics. However, this shouldn’t be in the form of a Twitter/Facebook feed and demand is not as great as the literature may suggest. Nevertheless, there is enthusiasm for a dedicated, reliable app to enhance undergraduate medical education.

Take-home Message: • Attitudes towards the use of social media in medical education are positive but not in the expected form. • There is good potential for the use of social media in orthopaedics. • The creation of a focussed, reliable app to accompany the syllabus could fill the social media role that students demand.
#5HH05 (3183)
Social media in promotion and dissemination of online training opportunities among health professionals globally: an explorative study

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Background: Institutions develop eLearning resources in health and make them freely available to support capacity building. Many are barely used, due to the information not reaching its audience or users unable to find them through personal searching. Employing social media marketing strategies for dissemination of resources can increase their global uptake.

Summary of Work: The University of Southampton developed a social media campaign, utilising LinkedIn, Facebook and specialist websites to disseminate the Malnutrition eLearning course. Subsequently over 13,000 from 121 countries enrolled on the course. To investigate how the campaign worked, a survey was conducted in 2013 and a follow-up evaluation study in 2015.

Summary of Results: Evaluation results across both studies show the publicity posted through social media was acted upon by 35% (2013, n=141) and 19.0% (2015, n=304) of the study participants. These participants then promoted the course by “word of mouth” to the others, being cited as “recommended from colleagues or lecturers”.

Discussion: Social media can be effective in disseminating the course to a global audience, with a potential of reaching professionals who would otherwise be “hard to reach”. Once impressed by the quality of a resource, the initial users spread the word, informing their colleagues about the resource, subsequently improving clinical outcomes.

Conclusion: When institutions develop eLearning resources targeting global healthcare workforce, students and educators/trainers, social media can provide the tool to effectively disseminate and promote the resources to reach the relevant audience. From the initial “early adopters”, the news of the resource spreads within the user group, if it is valued.

Take-home Message: The Malnutrition eLearning course supported by a social media campaign has been effective in scaling up training for health professionals in the management of malnutrition. This has resulted in a reduction in child mortality by malnutrition and demonstrates a model which could be adopted for other global health interventions.

#5HH06 (1196)
Attitudes to social media with medical ethics in medical students

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Background: Nowadays, medical students have extensively used the social media for information exchange, discussion, and consultation. The students have occasionally invaded the privacy of other people either intentionally or unintentionally. This project, therefore, studied the attitude and experience of using the social media on the medical ethics of the students.

Summary of Work: A cross-sectional descriptive study in medical students from Surin Medication Education Center. Data was collected from 63 fourth to sixth year undergraduate students. The research instruments including a demographic questionnaire and an attitude questionnaire. The collected data was analyzed using descriptive statistics.

Summary of Results: The students under the studied group use the social media every single day. The results also showed that 63.49% of all the students disclosed their own identities, 57.14% did not set their privacy and 66.67% of all the students use the social media for consultation to other hospital staff.

Discussion: The students posed risk on using social media against the medical ethics. The disclosure of their identity, do not privacy setting, the online medical consultation by revealing photos of the patients, and the use of images and videos of other people, are the violation of the right of patients.

Conclusion: Most of the medical students studied at Surin Medication Education Center are not aware of the violation of the right of patients and the infringement of intellectual property. The students tend to pose high risk on using social media against the medical ethics.

Take-home Message: To solve the ethic problem of the medical students, the guideline or manual for the social media use and online access should be prepared and adopted among the medial students.
#5HH07 (979)
She can say what she wants! – What faculty and residents consider when they evaluate the appropriateness of Facebook posts

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Background: As social media blurs the line between professional and personal boundaries, studies have examined the perceptions of medical professionals and laypersons in order to understand what constitutes unprofessional online behavior. This study aims to understand the underlying considerations of faculty and residents when they evaluate the appropriateness of online posts.

Summary of Work: Six Facebook posts deemed inappropriate were identified from an online search. 182 faculty and residents (36.8%) from the NHG-AHPL Residency program rated the appropriateness of three of these posts and explained their evaluation. Main considerations were identified using structural coding (Saldana 2011) and responses of faculty and residents were compared.

Summary of Results: A total of 169 responses from faculty and 294 responses from residents were analysed and six main areas of considerations were identified. A higher relative percentage of faculty considered “Professionalism”, “Confidentiality” and “Purpose of post” while a higher relative percentage of residents considered “Platform”, “Language/tone” and “Freedom of expression”.

Discussion: While faculty and residents shared similar considerations, a higher percentage of residents considered the poster’s rights to express his/her opinions for certain posts and whether posts were on a public platform. These residents could be more concerned about freedom of speech and might have more defined professional/personal lives boundaries.

Conclusion: The study provides an insight into what faculty and residents within a Residency program in Singapore consider when they evaluate the appropriateness of social media posts.

Take-home Message: While faculty and residents shared similar considerations when evaluating posts, there is variation in the considerations of faculty and residents for certain posts. To inform social media use guidelines and curriculum, future studies could also explore the considerations of the public.

#5HH08 (218)
The role of the smartphone in the transition from medical student to Foundation Trainee: a qualitative study

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Background: The transition from medical student to junior doctor is one of the most difficult in medicine. Challenges include rotating around new environments, new responsibilities and the reality of inexperience; affecting doctor and patient health. Opportunities to support this transition have arisen from advances in mobile technology and increased smartphone ownership.

Summary of Work: This qualitative study consisted of interviews and focus groups with Foundation Year 1 Trainees and final year medical students within the same NHS Trust. A convenience sample of 14 participants was recruited using chain sampling. Interviews and focus groups were recorded, transcribed verbatim and analysed in accordance with thematic analysis.

Summary of Results: Participants used their smartphones to support prescribing practices. Instant messaging complemented existing bleep systems, allowing coordination of both work and learning opportunities. Though refuted, there were still instances of clinical photography. Concerns about appearances were important to both cohorts, but participants described tactics employed to integrate phone use into practice.

Discussion: Trust-specific antimicrobial applications have the potential to reduce prescribing errors. Though participants represented both high and low intensity users, most acknowledged multiple modes of communication facilitated increased clinical efficiency possibly at the expense of interruptions. Foundation doctors must not feel pressured into breaking NHS policies on clinical photography by seniors.

Conclusion: This study suggests that both final year medical students and foundation trainees use smartphones in everyday practice. Medical schools and healthcare institutions should seek to integrate smartphone use into core curricula/training to enable safe and effective use and further ease the transition to foundation training.

Take-home Message: Trust-specific applications have the potential to increase compliance with local protocols. Instant messaging may help increase efficiency in the workforce. Clinical photography has great potential but at present risks confidentiality without strict regulation. Fear of public perception remains the biggest hindrance of smartphone use in the workplace.
#5HH09 (2427)
How mobile is Mobile Learning?

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Background: The Faculty of Medicine at the University of Helsinki has provided tablet devices for incoming students since 2013. Study materials are distributed to students in electronic form to facilitate mobile learning. The mobile devices have become students’ personal learning portfolios, that are accessible anywhere.

Summary of Work: Research forms an integral part of the faculty’s mobile learning project. Students have participated in regular web-based questionnaires, focus-group interviews and observations. In this study, research material is based on eight questionnaires from years 2015 and 2016, consisting of four student cohorts (n = 580), surveyed with the Guttman scale.

Summary of Results: Tablet devices were used for studying throughout the day, before leaving for school (57%), on the way to school (39%) and between classes (84%). Tablets were used also after the classes (64%), in the library (77%) and at home after the day in the campus (88%).

Discussion: Students have flexibly integrated mobile learning in their studies and are proficient to turn the waiting between classes and patients to an effective study. Results were similar between all four student cohorts, with two cohorts from preclinical and two from the clinical phase of studies.

Conclusion: Even though almost all the students have smartphones, laptops or desktop computers, tablets have become an essential study tool for them. They carry and use tablet devices whenever possible. Therefore, it is important to support mobile learning by allowing students to use mobile devices in various learning encounters.

Take-home Message: Tablet computers enhance learning by creating various opportunities for students to study anytime and anywhere, with study materials and other learning resources instantly available.

#5HH10 (1047)
How can mobile technology and healthcare apps support newly qualified doctors’ education and patient care?

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Background: The aim of this study was to address the use, benefits and barriers of using smartphones, apps and flash cards in a cohort of foundation year doctors (FY). Secondly, a specific app (MyMedCards) containing medical information was evaluated for its ability to replace flash cards and support clinical decision-making.

Summary of Work: The study included a cohort of 103 FY employed in the North Region in Denmark, and it applied two electronic surveys. The first survey investigated the use of flash cards, smartphones and apps. Forty-five FY responded, and 22 of these subsequently evaluated the functionality and the applicability of MyMedCards.

Summary of Results: Ninety-three percent applied smartphones at work; 39% at daily basis. Their smartphone contained on average four medical apps, and advantages such as time saving and accessibility were outlined. The app MyMedCards supported clinical decision-making (81% agreed), and was the preferable tool compared to flash cards (85% agreed).

Discussion: FY in Denmark are adapting to the emergence of mobile technology and medical apps. Access to reliable information at the point of care was essential. Several barriers were outlined such as the use of smartphones near patients, which may impede full implementation and benefits of mobile technology.

Conclusion: Smartphones and apps like MyMedCards can provide easy and instant access to medical information and support FY in providing the best possible patient care. Several barriers still exist; but the ongoing development of technology forecast a future for apps in the healthcare system and new possibilities for medical education.

Take-home Message: The use of mobile technology and healthcare apps can be valuable tools to support FY in providing the best possible patient care. Furthermore, the increase in doctors’ adoption rate of mobile technology generates new opportunities for improving medical education.
Background: More and more mobile devices (e.g. smartphones, tablets) are used for learning, communication and organization in classical studies. But there are a lot of differences in the used devices, apps and networks. The research question was, how these do vary among students from different health studies (medicine, dentistry, psychology, nursery).

Summary of Work: A survey with 136 questions (Tick boxes, Likert scales: 1=never to 4=definitely, free text) was answered by students of four departments: medicine (346/598), dentistry (171/204), psychology (142/243) and nursery (46/46). Participation was voluntary and anonymous. Afterwards the results were evaluated by using descriptive statistics. Overall response rate was 65% (705/1091).

Summary of Results: Medicine: highest acceptance of mobile learning (x̄=2,5); especially for information retrieval (x̄=3,3). Dentistry: highest usage of texting (x̄=3,4) and social media (x̄=2,6) for the organization of learning. Psychology: lowest acceptance of mobile devices for learning, seen as ineffective (x̄=2,8). Nursery: highest usage of email (x̄=3,5) and stationary PCs (x̄=2,1).

Discussion: The results show that there is a serious use of mobile learning in health studies but it differs clearly between the departments and studies. The use of mobile devices for learning reflects the different curricula, different habits of lecturers and the different age groups (e.g. extraoccupational master studies in nursery).

Conclusion: Universities should know about the different use of mobile learning and consider them when planning interprofessional curricula. Problems could emerge because of the different expectations and used media but could also be solved by combining students with different experiences and competences to support each other in one learning group.

Take-home Message: For the successful use of mobile learning in health curricula the specialties of the subject and the students have to be regarded.

Discussion:

MOOCs are an excellent vehicle for reaching large numbers of learners from across healthcare professions. The use of frontline practitioners as course mentors should be developed further as a way to enhance the MOOC learning experience, developing frontline staff as educators and a model for sustainable delivery of healthcare MOOCs.
Different ways to blend a Massive Open Online Course (MOOC) into medical teaching

Renee A Hendriks, Leiden University Medical Center, Leiden, Netherlands
Peter GM de Jong, Leiden University Medical Center, Leiden, Netherlands
Marlies EJ Reinders, Leiden University Medical Center, Leiden, Netherlands

Background: The number of Massive Open Online Courses (MOOCs) in medicine is increasing rapidly. This brings new opportunities for educators to use high quality teaching materials in their own classroom teaching. At Leiden University Medical Center a MOOC on Kidney, Pancreas and Islet Transplantation has been developed and blended into teaching.

Summary of Work: In medical school MOOC content is being used for replacing lectures and as sources of information. Besides this the complete course is being offered within the Honors College and Transplantation Summer School. Finally parts of the course are being used in residency and continuing medical education programs.

Summary of Results: Effects have been evaluated by survey. Students in all areas rate the MOOC as an interesting addition to the face-to-face curriculum and the online lectures and discussion forums as inspiring. Of the medical school students 62% explored to some extend other parts of the MOOC outside the provided assignments.

Discussion: Students indicate they like the online resources in the MOOC as well as the interactivity and discussion platforms as an inspiring addition to the traditional course materials. Medical students partly explore optional parts of the MOOC, while the Honors track and Summer School students do that in great extent.

Conclusion: Individual online resources in a medical MOOC or an entire MOOC as an independent course can be used successfully in the regular on-campus teaching, residency and continuing medical education programs. The high quality materials, interactivity and online discussions offer added value to the current models of classroom teaching.

Take-home Message: Massive Open Online Courses offer new opportunities for blended learning and are rated by students as an inspiring addition. They can be used very well in current models of classroom teaching.

Students as Educators: Enhancing Medical Education through MOOC Creation

Leah Marks, University of Glasgow, UK
Kevin Glasgow, University of Glasgow, UK

Background: A great deal of the 21st century medical community is online, and this medium provides an exciting opportunity for students to create medical teaching content for both colleagues and the public. In doing so, evidence suggests they consolidate their own knowledge and skills.

Summary of Work: We ran a Student Selective Component in which a small group of MBChB4 students developed/ran a Massive Open Online Course on their chosen medical topic. Students were involved in all phases of MOOC development; pedagogical discussion, curriculum design, participant recruitment, filming video material and acting as a lead educators.

Summary of Results: This SSC provided the opportunity to evaluate the impact of having a student-led teaching and learning environment. Students kept reflective diaries of the process and insights from these will be disseminated. High levels of student engagement and the effectiveness of teaching as a revision tool were two highlights reported.

Discussion: We propose that by turning the ‘teachers as educators and students as consumers’ model around, and allowing students to become generators of educational content, we enable them to gain a huge variety of skills. The resulting MOOC “Basic First Aid; How to Be an Everyday Hero” is an excellent showcase.

Conclusion: We believe that extending this content creation opportunity to a greater number of medical students will allow others to experience the rewards of being teachers as well as learners. Indeed the concept that the two are not mutually exclusive is one of the most significant points that our work highlights.

Take-home Message: The doctors of tomorrow are likely to be increasingly engaged in the education of the following generation. Gaining an insight into effective teaching and learning is therefore crucial. Creating MOOCs for the public or for fellow students is a creative way to utilize this new online phenomenon.
Peer assessment as an indicator of student performance

Linda Turner
Susie Rebelo Hopkins, Faculty of Medicine, Academic Unit of Medical Education, University of Southampton, Southampton, UK

**Background:** Peer assessment in group work facilitates reflection and enables students to develop attributes required by the GMC for effective team-working. However, assessing individuals within group work is problematic unless it is aligned to learning outcomes and weighting of the peer assessment is an appropriate proportion of the overall mark.

**Summary of Work:** Peer assessment was introduced as part of a module in public health and team-working in the first year of an undergraduate medical curriculum as peer assessment is recognized as essential to evaluate group work and promote reflection and feedback. Outcomes of peer assessment in assessing student performance were evaluated.

**Summary of Results:** Performance of 653 students was analysed. Scores from group work peer-assessment correlated with self-assessment ($r_s=0.52$, $p<0.0001$), module mark ($r_s=0.24$, $p<0.0001$) and results in other modules. Correlation between paired peer-assessment scores and student marks for the Medicine in Practice module and end of year examinations was observed for year 1 modules.

**Discussion:** Managing the design of the module and linking the peer assessment factor to the team-work process is essential in engaging the students and low peer assessment scores require text comments. A self-assessment score also needs to be included and the process needs to be monitored by experienced facilitators.

**Conclusion:** First-year medical students were able to judge the performance of their peers in group work compared to their own performance. This was indicative of overall performance of students in year 1. 80% of students were in favour of using peer assessment although there were some reservations and variations between groups.

**Take-home Message:** Peer assessment can be a predictor of student performance in assessments in the undergraduate curriculum. Contrary to previous studies, it appears that undergraduate students are capable of robust peer assessment.

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Peer-teaching is possible!

Kadri Suija, University of Tartu, Tartu, Estonia
Ruth Kalda, University of Tartu, Tartu, Estonia
Tarmo Loogus, University of Tartu, Tartu, Estonia
Liis Põld, University of Tartu, Tartu, Estonia
Anu Sarv, University of Tartu, Tartu, Estonia

**Background:** Studies have shown that peer-teaching is an effective way to improve student engagement and has a positive impact on students’ development. Three years ago, a group of medical students showed initiative to arrange a course about practical skills that use the peer-teaching method.

**Summary of Work:** The aim of this study was to investigate what advantages involving students in the teaching process gives and what is the best way to organize it. We created two focus groups, one for student teachers and the other for faculty teachers. The interviews were analyzed using thematic analysis.

**Summary of Results:** Both peer-teachers and faculty teachers received positive experiences in the process. They also found similar factors that need improvement (time management, communication, amount of material). Students reported feelings of autonomy during peer-teaching. Teachers found that teaching methods should be concentrated on more.

**Discussion:** Similarly to earlier studies, our results also showed that students need a course on teaching and peer-teaching gives positive impact on students’ development. Our students had high motivation to act as peer-teachers and tutor-teachers had interest in being like „pioneers“ in supervising such a course in the medical faculty.

**Conclusion:** Based on our results, peer-teaching is highly valued by the students and by the faculty teachers. We should develop teaching skills of peer-teachers more (use of time, suitable material and topic, how to reduce risks). We have planned a special course for peer-teachers.

**Take-home Message:** Peer-teaching and learning show benefits for both teachers and students. Both students and teachers learn during peer-teaching. Peer-teaching is an exciting method that could be included in the medical curriculum more.
Peer Assisted Learning (PALS) in Medical School

Neal Patel, University of Bristol, Bristol, UK
Luke Anderson, University of Bristol, Bristol, UK
Helena Lee, University of Bristol, Bristol, UK
Judit Molnar, University of Bristol, Bristol, UK
Carwyn Edward, University of Bristol, Bristol, UK,
Nicola Jakeman, Royal United Hospital, Bath, UK

Background: Experience indicates that clinician delivered teaching creates a hierarchical, pressurised and unfavourable learning environment. Peer assisted learning (PAL) in medical education aims to avoid the unidirectional transfer of information often seen in clinician delivered teaching, yet there remains a lack of evidence on the effectiveness of peer teaching.

Summary of Work: Multiple teaching packages were designed and delivered to third year medical students from fourth year medical students at the Bath Royal United Hospital. The teaching packages were based on simulation and students were required to give pre-session and post-session feedback in order to assess the effectiveness of the peer-developed teaching.

Summary of Results: Feedback from the teaching packages was very positive, with students finding the sessions enjoyable and beneficial. The feedback stated that the peer delivered teaching packages created a more relaxed and supportive environment, in which it was easier to raise questions and discuss issues in comparisons to clinician delivered teaching.

Discussion: Peer teachers and learners have similar knowledge bases and social roles, allowing peer teachers to explain concepts at appropriate levels. However while peer teachers are more likely to know what students want to learn, clinicians are more likely to know what students need to know with superior knowledge.

Conclusion: The advantages of PAL are pronounced. Students can relate to their fellow students’ methods of thinking and are at ease in the learning environment. The results of this study highlighted the benefits of peer assisted learning, as well as the students’ wish for additional PAL in their medical education.

Take-home Message: Clinician lead teaching can produce an unfavourable learning environment. Peer to peer teaching creates an environment where students feel more confident and comfortable to discuss areas of confusion and question their teachers due to social congruence. However clinicians have a better understanding of core knowledge that students need to know.

Learning by acting as a team of educators, entertainers and patient interviewers

Smith Soimadee, VachiraPhuket Hospital, Phuket, Thailand

Background: On the breast cancer day, 22 October every year we will do activities to educate and empower people to concern their breast health. The topics are about risk of breast cancer, screening, breast self examination, investigation, treatment and misconceptions about breast cancer. Instead of lecturing, this project was assigned to our 4th year medical students.

Summary of Work: Twelve 4th year medical students were assigned to educate other professionals in VachiraPhuket Hospital about Breast cancer. The topics were directed by the teacher. Searching, Garthering information and discussion with peers under supervision by teacher before activity day. Kahoot application, singing a song with dancing, interviewing two real patients and reflection on action were used.

Summary of Results: Feedback of students are: 1. More understandable, enjoyable and retention rate than lecturing. 2. Learning to work as a team. 3. Inspired by perspective of real patients not only themselves but also healthcare personnel that how the patients feel and expected from their doctor. 4. Opportunity to practice as a communicator to empower participants protecting their health.

Discussion: If you can't explain it simply, you don't understand it well enough. Albert Einstein. So the students must understand their topics well before they can explain it to the participant. They work and learn together. Design the process to engage participants by using Kahoot, making a song with dancing. Inspiring people and themselves with real patient interviewing.

Conclusion: Teaching others, working together as a team with friends and other healthcare personnel, creating something like Kahoot game, making a song with dancing, inspiring people by interviewing real patients, opportunity to act as a communicator to empower a large group of people bring about enjoyable, understandable, valuable learning for our students and healthcare professionals.

Take-home Message: Teaching others, learning as a team of healthcare personel and inspiring by interviewing real patients with creativity of the students can bring an enjoyable, more understandable, more practicing as an educator or communicator, as a leader or member of team. More inspiration from deep listening to real patients what they expected from their doctor.
Near-peer teaching as a solution to the challenges of delivering undergraduate education

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Kate McDonald, Sheffield Teaching Hospitals, Sheffield, UK
Matthew Tse, Sheffield Teaching Hospitals, Sheffield, UK
Lois Salter, Sheffield Teaching Hospitals, Sheffield, UK
Shah Nawaz, Sheffield Teaching Hospitals, Sheffield, UK

Background: Near-peer teaching is a growing area within medical education. We report a near-peer extracurricular teaching initiative (“Twilight Teaching”) predominantly delivered and co-ordinated by recently-qualified junior doctors for clinical medical students. This was developed in response to varied learning experiences of medical students. Tutors described transitioning from student to teacher.

Summary of Work: “Twilight Teaching” began in September 2015 and is on-going. Tutors and students across various geographical sites sign up for each academic term. After each term students scored the overall usefulness and provided qualitative feedback. Tutors self-evaluated their teaching and confidence on certain topics before and after each teaching block.

Summary of Results: Between September 2015 and November 2016, 527 students and 108 tutors were involved. Students rated the usefulness of the program as X (mean, range 3.9 - 4.9) out of 5. Qualitative feedback was positive. The mean tutor confidence significantly improved from 4.09 to 4.28 (out of 5) (p=0.0034).

Discussion: Junior doctors taking on the educator and co-ordinator roles are a profound change. Problems that were identified during the programme were actioned and “Twilight Teaching” continues to improve. The success of the programme is due to student determined topics, improved student/teacher co-ordination and increased tutor confidence.

Conclusion: The evaluations demonstrate that junior doctors can deliver and co-ordinate teaching on a large scale effectively. The confidence in these roles seems to improve with experience. This would suggest that junior doctors can be involved effectively in educator roles, historically dominated by seniors, at earlier stages of their careers.

Take-home Message: Junior doctors can deliver and co-ordinate large scale teaching programmes. Experience improves confidence in these roles suggesting early involvement of junior doctors as educators is beneficial. At a time of increasing pressure on services, junior doctors could be critical in maintaining excellence in training of medical students.

How Useful is Near-Peer Teaching amongst Medical Students for both Teacher and Learner?

Stephanie Taylor, University of Cambridge School of Clinical Medicine, Cambridge, UK
Max Bacon, Surrey and Sussex Healthcare Trust, Surrey, UK

Background: Near-peer (NP) teaching programs, delivered by students to other students, are increasingly popular in medical schools and the benefits for both student tutors and tutees are well documented. Further study is required given the hope of establishing NP teaching as an efficacious, well-received, and cost-effective method of teaching within medicine.

Summary of Work: This questionnaire-based study analysed perceptions of tutors and tutees of NP teaching in several well-attended and valued programs at Cambridge Clinical School between 2013 and 2016, in order to assess usefulness for medical education. Questionnaires utilised Likert scales to gather opinions as well as 1-10 Ratings scales and Open-text boxes.

Summary of Results: Tutee satisfaction rates with the competence of NP tutors (across several domains) were high and tutees rated NP teaching significantly more highly than clinical school lectures and seminars for both exam preparation and knowledge development. Tutors consistently perceived the teaching programs to improve their own knowledge, confidence and teaching skills.

Discussion: Multiple years of teaching provided a good data pool, with >150 responses in some areas, such as pathology. Tutees views on scheme utility for exam preparation. Questionnaire response-rate and completion was satisfactory and covered many important areas such as tutor opinion, teacher-appropriateness and comparison to other teaching methods.

Conclusion: Both tutors and tutees rated NP teachers as appropriately competent to teach, including having sufficient knowledge, course familiarity and understanding of tutee’s learning needs. Tutees rated NP teaching as more useful than other forms of teaching looked at in this study. Tutors found the schemes enhanced their own education.

Take-home Message: NP teaching schemes are not only well-attended and valued by tutees, but are important for developing the role of the future doctor ‘as a teacher’, supporting the case for consistent, systematic inclusion of NP teaching in medical education. More study into cost-effectiveness and impact on objective student performance is required.
**Peer teaching: Early Clinical Exposure taught by senior Medical Students**

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Jaruluck Klunklin

**Background:** Teaching early clinical exposure, in small groups, should be offered to preclinical Med-students. The 2nd and 3rd years Med-CMU have 250 students/class, so it is very difficult to provide 25-50 teachers to teach in the same time. The idea of upgrading senior 5thyear-Med-students to be the teacher is challenged.

**Summary of Work:** One group consisted of a 5thyear and 5 of 2nd or 3rd years Med-students. Senior taught basic physical examination according to block system which being teach at that period. Then evaluation the effectiveness of instruction by the senior, junior and teachers were done.

**Summary of Results:** The younger prefer senior Med-Student more than teacher. Friendly communication make them dare to question and answer. Junior respects senior as a role model. Senior prides themselves and reliance more in duty. They show many maturity manners, as suggestion junior to attend class on time or review topic before practice.

**Discussion:** Brief teaching before having class could standardize the senior and control the outcome. Peer teaching could dramatically solve teacher shortage. Beyond expectation, this could strengthen seniority system, instill a love of institute, allow junior to study hard and arouse them to be the smart doctor.

**Conclusion:** Med-students in the preclinical-years are very much eager to be a doctor. But learning more difficult in basic science content in lecture will lead student feel gradually more depression. Early clinical exposure activity which set up in these early levels will make them enjoy learning and early approach professional manner.

**Take-home Message:** Peer teaching improves student learning, to teach and to learn twice. Senior Med-student as teacher becomes “experts” in their assigned topic.

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**Teach your peers! The benefits of a peer-led mock OSCE**

Vicky Tilliridou, University of Liverpool, Liverpool, UK

**Background:** It is well documented that objective structured clinical examinations (OSCEs) are associated with high levels of stress and anxiety among medical students. Subsequently, this could impact negatively on student performance. This may be further exacerbated by the lack of practice students receive prior to these exams.

**Summary of Work:** A mock OSCE was organized to provide final year medical students with practice prior to their summative OSCEs. Peer-assisted learning was employed with involvement of 54 junior doctors to facilitate and examine 28 students across 26 OSCE stations. Individualised oral and written feedback was given at each station.

**Summary of Results:** The mock OSCE improved the learners’ subjective quantification of their own medical knowledge, confidence and self-esteem. It also provided social and psychological support prior to their exams. Tutors also reported that they had learned how to design stations, run OSCE sessions and felt more proficient at giving specific constructive feedback.

**Discussion:** Implementing Vygotski’s zone of proximal development theory, interaction with peers successfully aided students to develop skills and strategies required to master the OSCE. This day provided students with an opportunity to practise under realistic exam conditions, highlighting their clinical knowledge and enhancing their awareness of areas requiring further revision.

**Conclusion:** The mock-OSCE benefited all participants; it provided students with the opportunity to simulate clinical examinations in a less stressful environment, and allowed tutors to gain experience both in examining and giving feedback.

**Take-home Message:** This mock OSCE demonstrates that a peer-assisted learning model can be employed to successfully transition learners from novices to experts, through practical experience in a friendly environment. Constructive feedback was pivotal in highlighting students’ strengths and weaknesses. Tutors consolidated their knowledge-base and gained experience in examining OSCEs and delivering feedback.
#5JJ09 (1763)
Learning-by-teaching strategy of first aid and basic life support training for medical students can improve the knowledge about life support skills of trainers and trainees

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Pavita Laohakul, Department of Emergency Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand
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Borwon Wittayachamnankul, Department of Emergency Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand

Background: Traditional first aid and basic life support (BLS) training for fifth year medical students at Chiang Mai University includes lecture-based learning and hands-on practice with manikins, however, some students felt that this is insufficient. A new learning-by-teaching curriculum, where fifth year medical students teach first year medical students, was implemented.

Summary of Work: A new training curriculum for first aid and BLS was developed. Fifth year medical students were assigned to teach first year medical students under supervision of emergency physicians. Evaluation was done by interview, questionnaire and test of knowledge before and after the training.

Summary of Results: The first year medical students' knowledge score increased from 14.72 ± 13.68% pre-training to 87.63 ± 6.27% post-training. The fifth year medical students felt more confident to use their knowledge in real practice. The confidence score in a 10-point scale was increased from 6.17 ± 2.09 to 9.39 ± 0.93.

Discussion: The new training curriculum for first aid and BLS was able to increase the trainee's knowledge, and at the same time improving the trainer's confidence when applying the knowledge in real practice.

Conclusion: Learning-by-teaching strategy of first aid and BLS training for medical students is an effective method to improve the knowledge and practice the needed skills. Both the trainers and the trainees, can benefit from the learning-by-teaching strategy curriculum. Addition of this curriculum as a regular training course in medical school is encouraged.

#5JJ10 (446)
Can’t we all just get along? Competition, collaboration and peer learning at medical school

Neill Storrar, Centre for Medical Education, Edinburgh, UK
David Hope, Centre for Medical Education, Edinburgh, UK
Helen Cameron, Centre for Medical Education, Edinburgh, UK

Background: Medical students must develop collaborative skills, but must also compete for academic ranking and postgraduate employment. In peer assisted learning (PAL) this contradiction is particularly acute, and prior work has shown the potential for adverse competition and consequent student distress. Here we explore how students negotiate these tensions in PAL.

Summary of Work: Using a grounded theory approach, senior students in one medical school were interviewed individually about PAL experiences, with appropriate consent and confidentiality procedures. Student views on collaborative work including the roles of cooperation and competition, the balance between these and the consequences of peer interaction, were addressed in depth.

Summary of Results: We report how students resolve contradictions between competition and collaboration in PAL to gain useful learning and transferable skills. We describe how students work together, choose collaborators, develop effective working relationships, and navigate difficult and stressful situations.

Discussion: PAL enhances medical training through collaborative learning which improves educational gains and team-working skills, but the tension between competition and cooperation is often overlooked. Our research explores the complexities of this contradiction and identifies strategies to resolve problems, promote effective peer learning and avoid potential shortcomings.

Conclusion: This research promotes understanding of student interactions in PAL, identifies issues that are widely applicable to peer learning throughout healthcare education, and helps educators navigate potential conflicts between collaboration and competition. The findings suggest ways to reduce stress and support student mental wellbeing – a major current priority.

Take-home Message: PAL is a useful tool but can create conflicts between collaboration and cooperation. By actively discussing such issues with students, it is possible to develop mitigation strategies, promote more effective approaches to learning, and ensure stress remains manageable. This can better prepare students for clinical practice.
**#5JJ11** (2496)

**Students' perspective on curricular implementation of a PAL-programme – a qualitative approach**

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**David Steinbart**, Lernzentrum (skills lab), Office of the Vice Dean for Teaching and Learning, Charité Medical School Berlin, Germany

**Katja A Dannenberg**, Department of Emergency Medicine at Campus Benjamin Franklin and Lernzentrum (skills lab), Office of the Vice Dean for Teaching and Learning, Charité Medical School Berlin, Germany

**Dorothea Eisenmann**, Department of Anesthesiology and Operative Intensive Care Medicine CCM & CVK and Lernzentrum (skills lab), Office of the Vice Dean for Teaching and Learning, Charité Medical School Berlin, Germany

**Fabian Stroben**, Lernzentrum (skills lab), Office of the Vice Dean for Teaching and Learning, Charité Medical School Berlin, Germany

**Take-home Message:** A required elective programme can be reasonable to strengthen cost-effective small group teaching during curricular lessons and to maintain a relaxed learning environment using peer teachers. Higher expectations in a required elective programme should be anticipated and discussed carefully with participants when changing an existing programme.

**Background:** Peer assisted learning (PAL) is commonly used during medical studies and appreciated for facilitating a learning environment with high social and cognitive congruence.

Due to curricular restructuring the extracurricular PAL tutorials at Charité were implemented as a required elective programme for newly-registered students.

**Summary of Work:** We conducted four focus group interviews with 24 students studying under both conditions (extracurricular/required elective) until data saturation. We asked participants for their reasons to attend tutorials in both groups to explore the experiences of students who had near-peer tutors.

We utilised questionnaires and focus group interviews to explore the experiences of students who had peer-to-peer teaching compared to those who had near-peer PSCE teaching. Over 100 students were sampled until we reached data saturation. This was transcribed and thematic analysis by multiple investigators was used to derive our findings.

**Summary of Results:** This study is currently underway, with data collection due to be completed by April 2017.

**Discussion:** In this course, we have pioneered a new format of peer OSCE teaching, that maximises experience and optimises the quality of the feedback provided. We believe the findings of this study will elucidate the advantages and challenges of peer OSCE teaching to both the peer teacher and the student.

**Conclusion:** Our project suggests that our novel peer-led OSCE teaching format that maximises the students’ experience as an actor and examiner is better at developing OSCE-specific skills. The improved teaching skills and understanding of the OSCE assessment from the examiners’ point of view was particularly highlighted by students.

**Take-home Message:** The benefits of peer-led teaching is well evidenced. With the increasing popularity of the OSCEs as an assessment tool, there is potential for peer-assisted learning to be further integrated into the undergraduate curriculum. We ran a mock OSCE course that allocated students either to peer or near-peer tutors.

**#5JJ12** (3202)

**A Qualitative Comparison of Peer-to-Peer versus Near-Peer OSCE Teaching for Medical Students**

**Samantha Leong**, University of Bristol, Bristol, UK

**Merridith Izatt**, University of Bristol, Bristol, UK

**Chloe Caws**, University of Bristol, Bristol, UK

**Elizabeth Hancock**, University of Bristol, Bristol, UK

**Abigail Shaw**, University of Bristol, Bristol, UK

**Background:** The benefits of peer teaching in medical education is well-evidenced. With the increasing popularity of the OSCEs as an assessment tool, there is potential for peer-assisted learning to be further integrated into the undergraduate curriculum. We ran a mock OSCE course that allocated students either to peer or near-peer tutors.

**Summary of Work:** We utilised questionnaires and focus groups to explore the experiences of students who had near-peer to peer teaching compared to those who had had near-peer PSCE teaching. Over 100 students were sampled until we reached data saturation. This was transcribed and thematic analysis by multiple investigators was used to derive our findings.

**Summary of Results:** This study is currently underway, with data collection due to be completed by April 2017.

**Discussion:** In this course, we have pioneered a new format of peer OSCE teaching, that maximises experience and optimises the quality of the feedback provided. We believe the findings of this study will elucidate the advantages and challenges of peer OSCE teaching to both the peer teacher and the student.

**Conclusion:** Our project suggests that our novel peer-led OSCE teaching format that maximises the students’ experience as an actor and examiner is better at developing OSCE-specific skills. The improved teaching skills and understanding of the OSCE assessment from the examiners’ point of view was particularly highlighted by students.

**Take-home Message:** The benefits of peer-led teaching is well evidenced. Peer-led OSCE teaching should be better utilised as an adjunct to resource intensive faculty-led OSCE teaching.
Peer-assisted learning in a teacher-centered education culture – A survey of traditional learning communities, Kenjinkai

Kenjinkai

Maki Otani, Jichi Medical University, Shimotsuke, Japan

Yasushi Matsuyama

Kenichi Heta

Hitoaki Okazaki

Background: The effects of peer-assisted learning (PAL) in a teacher-centered culture are unknown. “Kenjinkai” includes approximately 15 students (2-3 per school year) from the same prefecture which implement student-led PAL. However, the strong dependence of undergraduates on teachers’ lectures in a previous study questioned how Kenjinkai functions as a PAL platform.

Summary of Work: We collected one questionnaire from a representative of each of the 47 Kenjinkais. We selected two Kenjinkais, which implement monthly PAL sessions, observed their sessions and individually interviewed 10 participants. Data were analyzed in accordance with thematic analysis.

Summary of Results: All 47 Kenjinkais conduct at least one PAL session annually. However, 45 did not conduct frequent PAL sessions mainly because of “no leaders” (n=16). The two Kenjinkais conducting monthly PAL had “seniors taking on leadership”. The participants considered PAL as a “significant tutoring experience” and “foundation of postgraduate learning communities”.

Discussion: A strong dependence on senior student leadership instead of teachers is a unique feature in PAL within a teacher-centered culture. Participants in monthly PALs perceive the significance of tutoring and consider Kenjinkai PAL as the basis of a postgraduate learning community.

Conclusion: Experience of tutoring is significant in Kenjinkai PAL. The leadership of senior students is a key feature for effective PAL in a teacher-centered culture. A unique advantage of Kenjinkai PAL is to serve as the basis of a postgraduate learning community.

Take-home Message: 1) Kenjinkai PAL promotes deep learning through the experience of tutors, even in a teacher-centered culture. 2) To optimize Kenjinkai PAL in that culture, senior student leadership is essential. 3) Kenjinkai PAL is the foundation of future postgraduate learning communities.
**#5KK Posters: Junior Doctor as Teacher**

**Location:** Hall 3 Foyer

**#5KK01 (1287)**

A three-year longitudinal milestone-based “Residents as Teachers” Program: a preliminary report

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Chen-Huan Chen, Taipei Veterans General Hospital, Taipei, Taiwan
Hao-Min Cheng, Taipei Veterans General Hospital, Taipei, Taiwan
Jau-Ching Wu, Taipei Veterans General Hospital, Taipei, Taiwan
Yi-Tsung Lin, Taipei Veterans General Hospital, Taipei, Taiwan
Ling-Yu Yang, Taipei Veterans General Hospital, Taipei, Taiwan

**Background:** Competency-based medical education has yet to be applied to the faculty development activities. Most residents as teachers (RaT) programs are delivered over days or weeks without objective evaluation and long-term follow-up. Herein, we designed a novel longitudinal three-year, milestones-based RaT program.

**Summary of Work:** This program includes three annually half-day or one-day course according to the pre-set teaching milestones for residents. We used a randomized control study design to investigate whether this program will produce a better outcome than the traditional intensive program for all specialty first-year residents in Taipei Veterans General Hospital.

**Summary of Results:** The program will be evaluated by 5 times of OSTE, satisfaction, feedback from medical students, and evaluation from program directors. By the end of January, 2017, 24 residents in both group finished the first-year course. The post-course OSTE revealed a higher, but not significant, average score in the longitudinal group.

**Discussion:** This innovative RaT program is characterized by 1) a longitudinal design; 2) teaching milestones; and 3) multiple outcome measurements. The main challenge of the randomized control study is the low participation rate (n=35, 37.2%), which may be responsible for the insignificant preliminary OSTE result.

**Conclusion:** A longitudinal milestones-based RaT program has been implemented and is being assessed in an ongoing randomized control study.

**Take-home Message:** A innovative milestone-based RaT program is progressing. However, it’s challenging to conduct a longitudinal randomized control study on the busy first-year residents.

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**#5KK02 (268)**

Novice occupational therapy clinical educators in an acute hospital: experiences, challenges and recommendations

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Eugenia Pereira, Dynamics Therapy Centre for Kids Pte Ltd & Affiliated Companies, Singapore
Heidi Tan, Tan Tock Seng Hospital, Singapore

**Background:** Healthcare professionals are often expected to take on educator roles as part of their career development. This study describes the experiences of novice occupational therapy clinical educators, highlighting their perceptions of their work, support structures, and challenges, as well as recommendations for those beginning to take on clinical education roles.

**Summary of Work:** Individual semi-structured interviews were conducted with five occupational therapists with less than two years clinical supervision experience. Interviews were audio-recorded and transcribed verbatim. Giorgi’s (1985) method of data analysis was used to identify meaning units, significant statements and synthesize the themes into a consistent statement regarding the clinical educators’ experience.

**Summary of Results:** Four themes emerged from the data, Juggling facets of work, Holding onto anchors, Developing students to their best, and Becoming a better therapist. The clinical educators described their sense of responsibility when taking students, their use of placement support structures, and reflected on their experiences in learning to accommodate students.

**Discussion:** The beginning clinical educators acknowledged tensions in their clinical and educator roles, and at times, not knowing how else to help the students. They appreciated colleagues helping with their clinical loads and having a mentor that they could turn to for advice. Training was also important to them.

**Conclusion:** New clinical educators face challenges in their roles and want to do their best for their students. Departmental supports, mentoring and training are useful as they navigate their roles as new educators. Understanding their perspectives supports the development and refinement of structures and strategies for future educators.

**Take-home Message:** Novice occupational therapy clinical educators value their extended role and responsibilities. They endeavour to facilitate good quality clinical education experiences, and utilise resources and mentorship to support their performance. Understanding the perspectives of new clinical educators may have important implications for the refinement of resources and training for future educators.
#5KK03 (39)
First aid and Basic life support training for university students as the “real practice” method to develop teaching skills for emergency medicine resident

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**Background:** First aid and basic life support are the key skills in everyday life. As emergency physician, teaching skill is very essential in order to provide knowledge and skill for general population. For emergency medicine resident, real practice seems to be an appropriate way to improve teaching skill promptly.

**Summary of Work:** Our study constructed a first aid and basic life support training course for university students. This course combined not only lecture or demonstration but also hands-on practice and constructive feedback. Evaluation of this new method was assessed by residents interviewed and the questionnaires from participants pretest and posttest.

**Summary of Results:** 6 residents were interviewed and the questionnaires were answered by 139 course participants. All of residents said it encouraged their teaching skill and made them more confidence to teach others. Mostly said it is a responsibility and duty as emergency physician and opportunity to drill is so worth.

**Discussion:** Participants had increased score from 51.69 ± 24.51 % to 72.88 ± 19.82 % after training. This result was also confirmed by the level of confidence to do first aid and BLS before and after training which was increased from 5.19 ± 2.91 to 8.01 ± 2.15 out of 10.

**Conclusion:** First aid and basic life support training course by in-training resident was not only effective method to train university students but also had an influence in in-training residents as a chance to improve teaching skill.

**Take-home Message:** Real practice method is an appropriate teaching method for in-training residents. As an emergency physician, teaching skill is one of the most important skill in operation.

#5KK04 (3152)
The West of Scotland Near Peer Teaching Programme: experiences and results of establishing a regional teaching programme

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Edward Mains, NHS Lothian, Edinburgh, UK
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**Background:** The 'West of Scotland Near Peer Teaching Programme' was established in 2014. The aim of the programme is to increase foundation doctor participation in clinical teaching across the region, as well as providing a means of assessing and enhancing the quality of teaching.

**Summary of Work:** There have been three training sessions to date, providing tutor training via lectures and small group work. Tutors develop a teaching session, generally reflecting core topics/challenges encountered by foundation doctors. The session is advertised using an online booking service. Post tutorial, attendees provide feedback online, which generates an attendance certificate.

**Summary of Results:** From 115 foundation doctor attendees, post session feedback showed 94% attendee satisfaction with the applicability of our programme, 92% would recommend it to their colleagues and 94% felt they were more prepared to teach. Medical students’ have rated NPTP sessions as covering more relevant material and tutors are more approachable.

**Discussion:** Near-peer teaching is a format which has been successfully deployed in other parts of the UK. Foundation doctors accumulate a great deal of knowledge within their first months on the job and having recently left medical school, they are uniquely placed to tailor teaching to the specific needs of students.

**Conclusion:** The success of the training days, which have had excellent feedback, confirms the appetite for such programmes which benefit students and foundation doctors alike.

**Take-home Message:** Although informal junior doctor led teaching may be popular there may be a need for tutor training within a centrally organized framework. It has been challenging to establish such a programme but we have benefited from excellent local support, the inclusion of an effective doctor-student online interface, has been valuable.
#5KK05 (487)
Training Trainees to Teach: supporting core psychiatry trainees to improve the delivery of undergraduate medical education

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Bruce Owen, NTW Foundation Trust, Newcastle Upon Tyne, UK

Background: Often, core trainees are expected to deliver undergraduate teaching sessions with limited skills training. They identify this as affecting their confidence and reducing their uptake in such teaching. An in-house near-peer ‘Training Trainees to Teach’ (TTTT) course was developed to address this and is being evaluated.

Summary of Work: Trainees evaluated sessions via feedback forms. Five-point pre and post-session confidence ratings were also assessed during the group sessions using an anonymised electronic remote (Turning Point). A six month follow-up questionnaire is planned for February 2017, seeking detail on changes in behaviour and intended results.

Summary of Results: Feedback forms indicated that sessions met trainees’ learning outcomes and prepared them to deliver undergraduate teaching. Confidence ratings increased from 3 to 4, with the number scoring 4 or 5 trebling when comparing pre (31%) and post (96%) confidence scores. Results of the six month follow-up will be presented.

Discussion: All attendees identified that sessions met their learning needs, were interesting and prepared them for delivery of undergraduate teaching. They would recommend the sessions to other trainees. Mode confidence ratings were also positively improved, by a score of 1. However, evaluation of changed behaviours has not yet been completed.

Conclusion: This in-house TTTT course is well received by trainees; it increases their confidence in delivering good quality undergraduate teaching and helps them to feel better prepared in their role. This is assumed supportive of high quality teaching to undergraduate medical students but requires further evaluation.

Take-home Message: • Limited training in undergraduate teaching reduces trainees’ confidence and uptake in delivery. • This can be addressed via in-house near-peer skills based training which is well received by trainees. • There are also additional personal development benefits, to include matching learning needs and invoking interest in undergraduate teaching.

#5KK06 (1919)
Teaching residents to teach better; a newly developed training program

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Edith ter Braak, University Medical Center Utrecht, Utrecht, Netherlands

Background: Residents are trained to become good clinicians, deliver evidence-based care and simultaneously train interns and younger colleagues. Training programs for residents in giving and receiving feedback, teaching skills and applying the Dutch version of the mini Clinical Examination Exercise (CEE) are scarce in Netherlands.

Summary of Work: We developed a training program Teach the Teacher for residents: a one day course introducing the background on teaching, learning, feedback, teaching skills and applying CEE. Each topic is followed by practical training observed by the group, analyzed and provided by standardized feedback directed by one of the trainers.

Summary of Results: The first 13 residents showed high degree of satisfaction, with an agreement of 4.5/5 ±0.8 (mean ±SD) regarding “this training was very instructive”. Knowledge is applicable to clinical practice 4.5/5 ±0.5 (mean ±SD) and transferrable to my colleagues 4.5/5 ±0.5 (mean ±SD). Overall satisfaction was rated 8.2/10 (median; range: 7-9).

Discussion: Teaching competencies are still sidelined in most clinical training-settings. Training residents prepares them better in fulfilling their current and future role as teacher. This course will be expanded with an earlier developed e-module to further enhance the training and give residents more basic knowledge before entering the working group.

Conclusion: The resident’s appreciation for this training was high, especially for being instructive, applicable to clinical practice and enabling a knowledge transfer to colleagues.

Take-home Message: Teaching is an important part of becoming an all-round clinician. Residents deserve appropriate training in this field. Our newly developed training program was highly appreciated by the first 13 residents. This training program will be expanded to train as many residents as possible.
The challenges of peer-led teaching for students and newly qualified doctors

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Ammar Yusuf, The Whittington Hospital, London, UK
Ibrahim Sheriff, Bart’s and the London School of Medicine and Dentistry, London, UK

Background: Peer led teaching has been shown to be at least as effective as faculty led teaching. Students also find peer led teaching useful and enjoyable as it is offered by direct seniors. However, peer led teaching often varies in frequency and quality, for a number of possible reasons.

Summary of Work: This study aimed to explore and identify possible barriers to peer led teaching. Student tutors and newly-qualified doctor tutors were consulted in order to summarise obstacles they had experienced. Responses were collated and summarised.

Summary of Results: Three main obstacles to peer led teaching were identified. Firstly, a lack of time available for tutors and students to meet; secondly, the variability in the presence of a formal programme for peer led teaching at different hospitals; and finally, tutors being unaware of students’ particular learning needs.

Discussion: Peer led teaching is a helpful way for students and tutors to learn. However, sessions are often ad hoc and infrequently planned in detail. The main reasons for this are a lack of time and prior planning, an issue which is more prevalent in doctors rather than students who teach.

Conclusion: Peer led teaching is useful and should be encouraged but must be better supported to facilitate greater student and tutor engagement. Having a formal peer led teaching programme supported by a local management committee e.g. a student society could be a useful way in ensuring such schemes are a success.

Take-home Message: Formal peer-led teaching programmes can help to reduce the ad hoc nature of peer led learning, particularly for junior doctors who teach. By supporting tutors in this way we can help to ensure that the teaching which is delivered remains frequent, sustainable and relevant.

Near Peer Teaching of Physical Examination Skills in a Large Academic Medical Centre in Asia and Strategies to Sustain it

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Wong Wen En Joseph, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
Clarisse Chu Yen-His, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
Tan Jie Kai, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
Tay Sook Muay, Singapore General Hospital, Singapore

Background: In response to increasing emphasis on and the proven learning effectiveness of student active participation, feedback, reflection and discussion; we have conducted successfully near peer teaching (NPT) of physical examination skills to supplement faculty teaching. We also examine strategies to sustain this programme.

Summary of Work: Forty second-year students undergoing their maiden clinical posting at Singapore General Hospital underwent a one-day clinical skills workshop organized by final-year students. 3 physical examination stations – abdominal, peripheral vascular, and lumps – were conducted in a round-robin fashion. Pre-workshop and post-workshop tests were conducted and compared, and anonymized feedback was collected.

Summary of Results: Post-test scores showed improvement across all examinations - arterial (+49.7, credible interval 41.7-57.8), lumps (+34.7, credible interval 27.6-41.5), abdominal (+17.3, credible interval 10.0-24.6). Feedback was positive with 94% feeling more confident and 100% describing better understanding of rationale behind examination steps. 35% expressed interest to mentor in the future.

Discussion: The marked improvement in scores suggest NPT is useful in helping students bridge existing gaps in knowledge, complementing curriculum. Having NPT exposure may also inspire interest in future assumption of NPT roles. To ensure sustainability, we have earned a grant, continuously update our material, and conduct ongoing evaluation for improvement.

Conclusion: Near peer teaching positively augments faculty teaching of physical examination skills. Further studies can be done to increase sample size, compare faculty teaching against NPT-augmented faculty teaching, as well as explore the impact of the NPT program on the volunteer mentors.

Take-home Message: Near peer teaching is a promising, valuable, yet often under-utilized resource which may be uniquely valuable in addressing the challenges faced in teaching clinical skills. We are optimistic that future studies may detail its academic, non-academic, and logistical benefits to students, near-peer tutors and faculty members alike.
#5KK09 (2555)
‘The Breakfast Club’: The Advantages of Discussing Cases Over Coffee

Hiren Patel, Royal Wolverhampton NHS Trust, Wolverhampton, UK
Mehvish Khatoom, Royal Wolverhampton NHS Trust, Wolverhampton, UK
Sophie Taylor, Royal Wolverhampton NHS Trust, Wolverhampton, UK
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Background: Breakfast clubs are widely promoted in schools and have been recognised as an integral part of the school system. There is less evidence available regards their benefits in undergraduate hospital based education. We therefore introduced a ‘Breakfast Club’ teaching programme for medical students, to increase engagement in learning.

Summary of Work: A structured programme was devised covering a breath of clinical presentations, delivered by junior doctors, as a series of early-morning case based teaching sessions to the medical students. Continental breakfast was provided for all attendees.

Summary of Results: Teaching sessions were extremely popular amongst the students. Feedback stated that they particularly enjoyed the variety of sessions and the informal nature to them. This environment allowed students to ask questions more openly. A case based approach enabled better understanding of certain key topics.

Discussion: Active participation was seen throughout all teaching sessions. This could be attributed to the informal nature of the sessions and students subsequently feeling less concerned about giving an incorrect answer. Alternatively breakfast provision may have resulted in improved concentration/motivation levels.

Conclusion: There is no question of the importance of consultant teaching in undergraduate education, however there is an argument that on occasions it can be above the level required for a medical student. Teaching by junior doctors can deliver a breadth of information at a more comprehensible level for students.

Take-home Message: We have shown there is certainly scope for institutions to incorporate greater amounts of informal teaching sessions into educational programmes though. In addition, the value of simple incentives such as breakfast provision should not be underestimated in improving students’ motivation to learn.

#5KK10 (812)
Mentoring in a Near-Peer Teaching Programme – Can it Work?

Helen McDermott, RAISE, Birmingham, UK
Hazel Coop, RAISE, Birmingham, UK
Lisa Hallam, RAISE, Birmingham, UK
Eleanor Singer, RAISE, Birmingham, UK
Darryl Menezes, RAISE, Birmingham, UK
Christine Wright, RAISE, Birmingham, UK

Background: We report on the experience of cascade training and mentoring of junior doctors recruited to teach on a near-peer education programme to improve patient safety and competency of new doctors in the UK. A mentoring approach has been used because of reports of its value to personal and professional development.

Summary of Work: An online survey was used to evaluate RAISE teachers experience of mentoring. The survey was sent to 32 trainees who were recruited, trained and mentored to teach RAISE to new doctors. Every teacher was allocated a mentor, who was a more senior trainee. Every mentor had 3-5 teachers.

Summary of Results: There were 12 responders (38%). 100% could identify their mentor and how to contact them. 100% would recommend teaching on the course to a colleague. On average, approachability and accessibility, provision of constructive feedback and usefulness of the training was high scoring between 4.33-4.91 out of 5.

Discussion: Near-peer teaching has been a teaching modality with increasing support in the literature. There have also been a number of reports on what role is best for near-peers to fill. To ensure quality of delivery and learning for the new teacher, mentoring is one way to bridge this gap.

Conclusion: This cohort of teachers knew their mentors, who were accessible and useful. The new teachers found them a useful resource and provided them with constructive feedback and support in their development and in local delivery of this regional programme at their location.

Take-home Message: Good, effective mentoring is a way to enable the expansion of a local programme to several different sites regionally. This ensures support of new teachers in their skill development and ensures consistency in delivery of a formal teaching programme. It can also provide mentoring opportunities for more senior trainees.
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Richard Hays, Editor of MedEdPublish, and other members of the Editorial Team would be pleased to meet you to answer any questions as to how you can get involved, both by publishing in MedEdPublish and by reviewing published papers. If you need any help with submitting or reviewing, Kerrie McKay, MedEdPublish Administrator, will be there to give you a demonstration. If you can’t attend the session, why not attend the MedEdPublish workshop 9S, on Tuesday from 1600-1730 in room 203a, or drop by the AMEE Exhibition stand to meet Richard and Kerrie?
SESSION 6
Tuesday 29th August: 0815-0945

#6A Plenary: The future shape of medical education using the allegory of the symphony orchestra and the role of the conductor
Location: Hall 1

Robert Sells, University of Liverpool, UK

While the objectives of the orchestra and medical practice may seem very different, there are important lessons to be learned using the allegory of the symphony orchestra and the role of the conductor. Issues addressed will include the development of communication skills, the perfection of technique, the need for flexibility, the concept of professionalism, motivation and audit of performance. The presentation will be illustrated using examples from orchestral performances. Robert Sells brings a particular insight into medical practice from his unique background as an orchestral conductor and a practising renal transplant surgeon.

#6B Plenary: Addressing Health Disparities: Can Equity Pedagogy Help?
Location: Hall 1

Catherine R Lucey, UCSF School of Medicine, USA

Despite years of attention, progress towards achieving health care that is equitable and patient centered has been slow. To improve health outcomes for minority patients, educational environments for learners, and research environments for scientists, health professions education programs have used new approaches to recruit more diverse learners to our environments. Realizing the benefits of diversity requires educators to eschew a colorblind philosophy and instead embrace the principles of equity pedagogy. Designing curriculum, assessment strategies, and learning environments for optimal inclusivity and equity of opportunity will lead to improved student outcomes and ultimately to better health care.
SESSION 7
Tuesday 29th August: 1015-1200

#7A Symposium: Educating new kinds of physicians to better meet the needs of the community
Location: Hall 1

Ronald Harden, Professor of Medical Education (Emeritus) Dundee, UK
Terence Stephenson, General Medical Council, UK
Darrell Kirch, Association of American Medical Colleges, USA
Kathy Chappell, Accreditation Program and Institute for Credentialing Research, American Nurses Credentialing Center, USA
Matthias Wienold, International Alliance of Patients Organisation
Lawrence Sherman, Academy for Global Interprofessional Learning and Education, USA

Summary: Imagine if you could start again and radically change the education programme, should we train different sorts of doctors? Do all doctors on qualification need the same set of skills or could training focus on basic core competencies alongside mastery of a set of competencies and training in a specialist area? Panellists will examine from different perspectives the advantages and disadvantages of the current system of medical training and will explore possible changes including a fundamentally different approach to the sort of doctors trained.

#7B Symposium: Unravelling the complexities of major curriculum changes
Location: Hall 3a

Jennifer Cleland, University of Aberdeen, UK
Paul Worley, Flinders University, Adelaide, Australia
Debbie Jaarsma, University of Groningen, Netherlands
Tiuri van Rossum, Maastricht University, Netherlands
Floor Velthuis, University of Groningen, Netherlands

Summary: Nearly every healthcare educator is involved in curriculum change, or reform (CR), at least once, if not more often, during their careers. However, despite much activity directed at CR, making substantial changes to the form and delivery of medical education is challenging. Indeed, Whitehead and colleagues use the metaphor of a ‘carousel of ponies’ to illustrate that the returning themes of CR are like ponies circling around yet again on the curricular carousel in the continual rediscovery of discursive ‘truths’ in medical education. One reason for this is a misalignment between the existing conceptualizations of curricula and CR, with the former perceived as “complex” yet the latter often approached as well-defined and linear, with clear success factors and steps to be taken. We propose that reframing CR as a process-driven, complex entity, rather than an outcome-driven linear one, may enhance the possibility of change. Who should participate in the symposium? This symposium will be of interest to anyone involved in healthcare curriculum change, either undergraduate or postgraduate, either as a teacher, educational advisor and/or in administrative/leadership positions. What will they gain from participating? The aim of this symposium will help the audience see and understand the complexities of CR. In acknowledging this complexity, different ways of thinking about, and thus practically approaching and evaluating, CR can be considered.
#7C Symposium: Faculty Development to Achieve Excellence: Affirming global connections and advancing diversity

Location: Hall 3b

Yvonne Steinert, McGill University, Canada
Dujeepa Samarasekera, National University of Singapore
Patricia O’Sullivan, University of California San Francisco, USA
Outi Kortekangas-Savolainen, University of Turku, Finland
David Irby, University of California San Francisco, USA

Summary: The 4th International Faculty Development Conference in the Health Professions, a forum for educational leaders and faculty developers to exchange ideas, innovations and research findings, will take place just prior to the AMEE 2017 annual meeting. The theme of this special conference will be Affirming Global Connections and Advancing Diversity, and the goal of this symposium is to share reflections and lessons learned during the conference. One of the goals of the Conference is to foster a global community of leaders and educators in the field; this Symposium will build on this growing community of practice and help to achieve this objective.

#7D Symposium: Leveraging the UME and GME learning into practice: The role of CPD in the continuum

Location: Hall 3c

Organised by Global Alliance for Medical Education:
Todd Dorman, Department of Anesthesiology & Critical Care Medicine, Johns Hopkins University School of Medicine, USA
Nabil Zary, Games for Health Innovations Centre (ALIVE), Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore
Suzanne Murray, AXDEV Group
Dale Kummerle, Bristol/Myers Squibb Company / Global Alliance for Medical Education, USA

Summary: This session focuses on the strategies and approaches that transition learners from academia into practice. The demands of healthcare systems now require continued competence in the delivery of quality care to patients and populations. These expectations require that all physicians, healthcare professionals and teams actively engage in continued professional development throughout their careers to meet the rapidly changing scientific and organizational advances in healthcare. CPD that integrates quality improvement principles serves as a foundational element in this lifelong process. Our discussions will focus on opportunities for strengthening this continuum to foster quality care in all healthcare settings.

Who should participate in the symposium? Medical education researchers; Healthcare professionals; Faculty members; Medical Education Programme planners; CPD Outcomes researchers; CPD Academics
What will they gain from participating? Through this interactive symposium, participants will gain a better understanding of the key principles around developing and delivering evidenced based high quality CPD and how this fits with the continued competence and quality improvement required of all healthcare professionals responsible for the delivery of quality patient care across the education continuum.
#7E1 (40)
Learning to manage complexity through clinical simulation: medical students' challenges and possible strategies

Gerry Gormley, Queens University Belfast, Belfast, UK
Tara Fenwick, University of Stirling, UK

Introduction: Many have called for medical students to learn how to manage complexity[1]. Towards this end, some have pointed to the utility of complexity theory to help educators understand how complexity works and how best to manage it. In other areas of professional education, complexity theory has been widely applied to understanding learning processes. Specifically for simulation healthcare education, sociomaterial theories such as complexity may open up the design of simulation to better emulate clinical settings and maximise learning[2]. This study examines the nuances of students’ challenges in coping with a complex simulation learning activity and strategies to best manage complexity.

Methods: A maximal variation sampling strategy was used to recruit participants for this study. 4th yr medical students at QUB were invited to participate in the study. As in keeping with phenomenological based studies, sample sizes are generally smaller, allowing for more thoughtful analysis and not being overwhelmed by the volume of data. Therefore we aimed to investigate 8 participant experiences. Wearing videoglasses, participants took part in a simulation ward based exercise which incorporated characteristics of complexity. Point of View (PoV) video footage was used to elicit interviews, which were transcribed verbatim. Using complexity theory as a theoretical lens, an iterative approach was taken to identify the challenges that participants faced and possible coping strategies using both interview transcripts and video footage.

Results: Eight students took part in the study with 63 minutes of video footage / 311 minutes of interview data being captured. Analysis yielded 4 themes relating to challenges faced by students’ in coping with complexity:
- Unprepared for ‘diving in’: Encapsulated students challenges, and ability to engage, when initially presented with the dynamic uncertainty of complexity.
- Caught in an escalating system: Students challenges in intervening effectively and defusing emergence in order to reduce the complexity.
- Captured by the patient: Challenges when interacting with patients and being confronted with simultaneous demands, and lacking strategies for prioritising, or even for reducing the ensuing complexity.
- Unable to assert boundaries of acceptable practice: When challenged with situations of dynamic complexity, boundaries of acceptable practice are tested in a myriad ways.

Discussion and Conclusion: This study provides a deep insight into some of the fine-grained nuances of medical students’ challenges in coping with complexity in a ward based simulation exercise. Many characteristics of complexity can be recreated in such a learning activity, affording learners an embodied and immersive experience of these complexity challenges. Possible strategies for managing complexity themes include: a) taking time to size up the system b) attuning to what emerges c) reducing complexity d) boundary practices and e) working with uncertainty. This study signals pedagogical opportunities for recognising and dealing with complexity.


#7E2 (66)
“Help, I’m out of control!": Students’ emotional and behavioral responses to complexity

Esther Helmich, University Medical Center Groningen, Groningen, Netherlands
Laura Diuchun, Schulich School of Medicine and Dentistry, Western University, London, Ontario, Canada
Radha Joseph, Schulich School of Medicine and Dentistry, Western University, London, Ontario, Canada
Kori LaDonna, Schulich School of Medicine and Dentistry, Western University, London, Ontario, Canada
Nelleke Noverman-Poel, VU Medical Center, Amsterdam, Netherlands
Lorelei Lingard, Schulich School of Medicine and Dentistry, Western University, London, Ontario, Canada

Introduction: Recognizing and managing emotions in oneself and others is crucial for medical trainees while learning to navigate the complexity of modern healthcare. Current medical education literature highlights the emotional impact of specific complex situations, such as challenging or adverse events in surgery, but does not address how medical trainees manage day-to-day complexity in healthcare. Therefore, in the face of rising levels of complexity and the increasing recognition of the role emotions play in learning and professional development in medicine, we sought to understand how medical trainees respond to the emotions that may arise in complex situations in day-to-day clinical practice.

Methods: In an international constructivist grounded theory study, 29 medical trainees from Canada and Netherlands drew two Rich Pictures of one exciting and one frustrating complex clinical case. Rich pictures are visual representations that capture participants’ perceptions about the people, situations and factors that create clinical complexity (1). Rich Pictures can facilitate understanding and dialogue, and support the development of multiple perspectives in complex situations. These pictures were used to guide semi-structured, individual interviews. Drawings and interviews were collected and analyzed iteratively; that is, we used the interviews to inform the aesthetic analysis (2). We went back and forth between pictures and interviews, to enhance our understanding of the stories told in both the
Trainees' emotional responses were not straightforwardly oneself from patients and families in complex situations. Their drawings, such as empathizing with or distancing and behavioral responses to the emotions portrayed in their drawings, such as empathizing with or distancing oneself from patients and families in complex situations. Trainees' emotional responses were not straightforwardly predictable; e.g., scenarios they identified as ‘frustrating' could provoke positive emotions and vice versa. The main characteristic influencing students’ emotional responses to complexity was whether or not they felt able to control the situation.

Discussion and Conclusion: Students demonstrated a wide range of emotions in response to the complex clinical situations encountered during their training. Visual methodology seems to be a powerful approach to capturing these emotional responses. Regardless of the valence of the emotions, a sense of control seems to be the most important factor influencing trainees’ emotional and behavioral responses to complexity. Educators should attend to students’ responses to the complex clinical situations they encounter, and should consider ways to prepare students for feeling out of control in clinical training situations. Future research should explore what ‘control' means for medical trainees.


#E3 (144)
Coming and going: The role of episodic care in how teams define complex problems

Kori LaDonna, University of Western Ontario, London, Canada
Emily Field, University of Western Ontario, London, Canada
Lorelei Lingard, University of Western Ontario, London, Canada
Wael Haddara, University of Western Ontario, London, Canada
Chris Watling, University of Western Ontario, London, Canada
Sayra Cristancho, Centre for Education Research & Innovation (CERI), University of Western Ontario, London, Canada

Introduction: Medical educators increasingly recognize the importance of training to navigate complexity. The multidimensionality of complexity challenges clinicians’ ability to define the main problems of a complex clinical situation and to transform them into teachable moments. Two roadblocks perpetuate this problem. First, health care is a team sport, but explorations of complexity have been limited to the perceptions of individual clinicians. Second, experts perceive that the organizational and social aspects of practice create complexity; yet training is primarily devoted to the technical/biomedical. Training for complexity requires exploration of the multiple ways that problems are defined and the implications for team function.

Methods: Rich pictures were used to elicit 15 participants’ (n=11 physicians and 4 nurse practitioners) perceptions about the features that made 8 critical care or neurology complex cases; four cases included 2 different perspectives. Data collection and analysis occurred iteratively; constant comparative analysis was used to identify themes.

Results: Episodic care – the idea that different clinicians come and go during the care of a patient – complicated perceptions of what constitutes a clinical problem, which appeared to create a sense of institutionalized disconnect. Participants talked about their role in episodic care as having to deal with “one patient of many” and to limit their expertise to a particular question or issue. Attempting to do more than that seemed to expose clinicians experiencing compassion fatigue. Because participants foregrounded these dimensions differently in their descriptions of the case, their problem definitions varied. This variation was also related to the asynchronous organization of the team’s work.

Discussion and Conclusion: Team members recognize that they approach each case with a particular perspective, and that their definition of the key problems inherent in that case may differ from those of other team members. Complicating matters, the episodic nature of care may compromise communication strategies to bridge these gaps in how problems are defined, meaning team members may be working at cross-purposes. When training for complexity, medical education should highlight the phenomenon of multiple problem definitions, and seek to expose the role of care organization in intensifying this multiplicity.

#E4 (150)
Context: Much ado about - what, exactly?

Justin Mausz, The Wilson Centre, Toronto, Ontario, Canada
Meghan McConnell, The University of Ottawa, Ottawa, Ontario, Canada
Sandra Monteiro, McMaster University, Hamilton, Ontario, Canada
Walter Tavares, The Wilson Centre, Toronto, Ontario, Canada

Introduction: Simulation-based learning is an example of learning in context in which clinical contexts, problems, and tasks are recreated in controlled settings. While widely regarded as effective, unanswered questions exist about what elements of the clinical context must be recreated in simulated settings – and with what degree of realism – to promote optimal learning. Optimizing simulation-based learning (i.e., constructing the ‘fidelity' of the simulation) requires carefully considering the clinical context to understand what features are most relevant for learning. We therefore sought to explore contextual
influences on performance in a ‘context-rich’ clinical setting: paramedicine.

**Methods:** We followed constructivist grounded theory principles and recruited paramedic students and currently practicing paramedics to participate in one-on-one, semi-structured interviews. Unlike practitioners who practice in hospitals or clinic settings, the practice contexts for paramedics are equal parts diverse and difficult to control. Paramedics enter the patient’s environment and work to leverage affordances and overcome hindrances to optimize care. We selected out-of-hospital cardiac arrest as our criterion task of interest because this represents a high acuity clinical problem for which paramedics commonly train in simulation. We asked the participants to describe a recent experience in which they attempted to resuscitate a victim of sudden cardiac arrest. These interviews were transcribed verbatim and analyzed using thematic analysis with data collection and analysis continuing cyclically until we achieved theoretical saturation and no new themes were identified.

**Results:** Thirteen paramedic students and fourteen paramedics provided a total of thirty interviews (each representing a distinct event), yielding over twenty hours of audio data for analysis. We iteratively identified three inter-dependent themes describing contextual influences: the event – its physical characteristics, circumstances and people present – the conceptual response – the cognitive processes and challenges encountered – and the emotional response – the degree of emotional engagement in the resuscitation. We identified a crosscutting theme related to how to simulate these events in which the participants stressed the importance of realistically portraying the clinical context during simulation. Collectively, our results suggest a complex and dynamic interplay between the physical, conceptual and emotional domains of context with implications for instructional design.

**Discussion and Conclusion:** While the dimensions of context we identified parallel well with other recent conceptualizations of both context and fidelity, our results differ in that the dimensions we describe have strong inter-dependency effects. Characteristics of the event, particularly its physical features and circumstances, appear to directly influence cognitive processes related to clinical decision-making (i.e., optimizing care despite limitations in the environment) as well as emotional engagement (i.e., an empathetic response and perceived ‘duty of care’). Excluding these elements in simulation might artificially alter the concept to be learned, raising important questions for both instructional design and research related to the optimal balance between concept coverage and learning complexity. This also suggests a potentially novel perspective where interacting with the practice context might be a competency unto itself.

**Introduction:** Clinical performance and learning are influenced by human factors as stress and motivation. For healthcare professionals, stress has been linked with both impairments and improvements in performance and learning (1). Studies on stress-measurements are mainly conducted using medical students or trainees, and not in authentic multidisciplinary teams (2). The aim is to describe and discuss differences in physiological stress (salivary cortisol) and subjective stress perception (Strait Trait Anxiety (STAI); tension/pressure-dimension of intrinsic motivation inventory (IMI)) among healthcare professionals participating in multidisciplinary simulated obstetrical emergencies. The research question was whether different healthcare professionals manifested different stress-responses to acute simulated events.

**Methods:** The study was part of a larger randomised study comparing the effects of in-situ versus off-site simulation (presented elsewhere) (2) in the management of an emergency caesarean section and postpartum bleeding. A total of 97 participants from obstetrics and anaesthesia departments, including 39 doctors (consultants and trainees) and 58 allied healthcare professionals (midwives, specialised midwives, auxiliary, anaesthetists and operating theatre nurses).

**Outcome:** Salivary cortisol samples were obtained at baseline, 5 and 10 minutes after simulations; STAI self-reports were completed at baseline and 10 minutes after. The IMI pressure/tension-dimension self-reports were completed within 1 week of the simulated events.

**Statistical analysis:** Differences in subgroups in physiological and subjective stress responses were estimated using linear mixed models (cortisol) and linear models (difference between peak and baseline STAI, IMI). The models included healthcare professional group, departments, intervention (in-situ, off-site), gender, age, years of work experiences, pregnancy, medication and/or baseline measurements as appropriate.
Results: The doctors had 13% (CI:1-23%) greater cortisol-level than allied healthcare professionals (p=0.04) during both simulations. In contrast, doctors reported lower STAI scores than allied health professionals (2.7 points, CI:0.60-5.32, p=0.02) in the 1st simulation, but no differences in the 2nd simulation. The IMI dimension of tension/pressure was also higher for the allied health professionals compared with participating doctors (0.5 points, CI:0.03-0.98, p=0.04).

Age influenced the stress responses, with cortisol-level decreasing 7% (CI: 0.2-13) (p=0.05), STAI scores decreasing 1.4 point (CI:0.36-2.37, p=0.01) and the IMI-dimension tension/pressure score decreasing 0.4 point (CI:0.6-0.1, p=0.004) for every 10 years of age. STAI was 2.3 point (CI:0.60-3.97, p=0.01) higher for staff from Obstetric department compared to Anaesthesia-Operation department. The stress measurements were not influenced by any of other factors studied.

Discussion and Conclusion: The results highlight the complexity of stress measurements, and the importance of multidimensional approaches when studying stress in medical education. Data on self-perceived stress is insufficient. In this study, doctors manifested greater physiological stress responses, but less subjective stress responses, compared with allied healthcare professionals. These results may raise potential mental health concerns as physiological stress in the absence of subjective stress has been associated with maladaptive coping strategies. Age and experience was associated with reduced physiological and subjective stress responses, even a higher cortisol should be expected due to the physiology-response. Overall these results support the need for continued research into identifying vulnerability to stress in healthcare. Develop and implement stress-management approaches can be needed, and stress-management courses among healthcare professionals may be beneficial.

**#7F Short Communications: Curriculum - Evaluation**

**Location:** Hall 3e

**#7F1 (3271)**

Understanding the "emergence construct" in health professions education through program evaluation

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**Background:** To account for the intrinsic complexity of programs in Health Professions Education (HPE), researchers have suggested program evaluation represents an opportunity to collect data to understand the construct of 'emergence'. To date, however, there is no clear agreed-upon definition of or method for capturing 'emergence' in HPE programs.

**Summary of work:** Systems engineering conceptualizes emergence as unexpected processes, goals or behaviors exhibited by educational programs. We used an engineering design tool to identify/capture the elements present in a surgical training course. We removed elements in our data-set that stakeholders noted as planned, and considered the characteristics of the remaining 'emergent' elements.

**Summary of results:** The results showed emergent elements that did not align with the system-engineering definition of emergence. We conducted a series of abductive analysis of the data collected using the ADS (i.e., observations - 140hrs, interviews - n=12, analysis of course documents), to refine the definition of emergence.

**Discussion:** We re-conceptualize emergence as being defined along multiple dimensions including the valence for the stakeholders, and whether it is explained or unexplained. While the analyses suggest that all emergent elements are useful for better understanding educational programs, we emphasize data that cannot be explained via observed system interactions (i.e., unexplained-emergence).

**Conclusion:** This work has established a preliminary definition of and process for collecting data on the construct of emergence in HPE. Further work that refines our understanding of emergence in HPE can offer researchers new insights about complex systems and their exhibited behaviours.

**Take-home message:** Researchers have identified 'emergence' as a construct that educators must attend to, but they did not define it or establish methods to study it. Concepts and methods from systems engineering can address this gap.
#7F3 (2628)
Palliative care in undergraduate medical education: Students' perspective

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Annemie Courtens
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Background: Almost every doctor will come in contact with palliative care patients. It's important that medical students acquire the necessary competencies at the end of the undergraduate medical curriculum. The objective of this study is to measure undergraduate students' confidence in, their perceived importance of, and their knowledge of palliative care.

Summary of work: A questionnaire study, adopted from Weber (Weber et al., 2011), was conducted with sixth-year medical students of three Dutch medical faculties. The questionnaire measured the self-estimated confidence of the students in dealing with palliative care patients, their perceived importance of palliative care education and their knowledge about palliative care.

Summary of results: Of the 377 students, 138 (36%) students responded. Students didn't feel confident about being involved in caring for a dying patient. 68% of the participants claimed that palliative care is not sufficiently covered in the medical curriculum. Only 50% of the students answered more than half of the knowledge questions correctly.

Discussion: Students indicated that they were insecure about giving palliative care, especially when it concerns incorporating spiritual aspects of palliative care. Also, they stated that education about patient-oriented care and about symptom control in palliative patients is very important. Learning tasks need to be designed to bridge this gap.

Conclusion: They perceived education in palliative care as very relevant, but they found that the undergraduate curricula didn't sufficiently cover the important aspects of palliative care. Furthermore, it appeared that students lack knowledge. Palliative care needs more attention in the medical curriculum.

Take-home message: Final-year medical students are almost junior doctors who soon will have to care for palliative patients. They do find education about palliative care (very) relevant. However, they lack confidence and knowledge about palliative care. More attention for palliative care education in undergraduate medical curricula is needed.

#7F4 (2560)
Undergraduate Medical Education and Requirements of Doctor's Work - Physician 2013 Study in Finland

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Teppo Heikkilä, Ministry of Social Affairs and Health, Helsinki, Finland
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Background: Many efforts have targeted at improving undergraduate medical education (UME) to make it match better with needs of practicing doctors in modern health care. Especially needs of primary health care (PHC) work should be taken into account better in the UME curricula.

Summary of work: A survey to Finnish physicians in 2013, RR 50,5 %. Doctors graduated within 10 years, with finished/on-going specialist training were included (N=422). Doctors were asked how knowledge and skills learnt during their UME match with a doctor's work. PHC doctors were compared with doctors in operative and conservative hospital disciplines.

Summary of results: 72 % said that teaching of diagnostic skills met well/quite well with work; PHC group rated it highest (82 %). In all groups, around 60% were satisfied with studies on doctor-patient relationship, but teaching of collaboration skills was ranked low. Teaching of specific PHC topics showed the lowest percentages (<10%).

Discussion: PHC doctors as well as physicians in hospital specialties reported that basic medical skills learnt during UME match well or quite well with doctor's work. However, in many topics less than a half of doctors answered this way, the lowest percentages being in knowledge and skills specific for PHC work.

Conclusion: Curricula of UME have not developed as one could expect based on conclusions of earlier research. There is still room for improvements in UME to meet better requirements of work in different fields of health care. Different aspects of collaboration are crucial both in primary and secondary health care.

Take-home message: Specific skills required in doctors' work in PHC still need more attention in UME. Future curriculum reforms should be based on evaluation of changing requirements in modern health care.
#7F5 (736)
Voluntary vs. compulsory student evaluation of clerkships: effect on validity and potential bias

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**Background:** Students’ evaluations of their learning experiences can provide a reliable source of information about clerkship effectiveness in undergraduate medical education. However, low response rates in clerkship evaluation surveys remain an important limitation. This study examined the impact of increasing response rates using a compulsory approach on validity evidence.

**Summary of work:** Data included 192 responses obtained voluntarily from 49 third-year students in 2014-2015, and 171 responses obtained compulsorily from 49 students in the first six months of the consecutive year at one Lebanese medical school. Evidence supporting response process, internal structure and consequential validity was compared between the two administration modalities.

**Summary of results:** Response rates increased from 56% in the voluntary group to 100% in the compulsory group (P < 0.001). Females were more frequently responders in two clerkships in the voluntary group (p<0.05). Reliability of ratings (Cronbach’s Alpha) was comparable between the two consecutive years. Both groups provided similar clerkship ratings.

**Discussion:** While non-respondents may introduce quantitative and qualitative threats to validity, inducing responses through authority might not improve validity evidence. Non-response bias can be replaced by authority-induced bias, which was suggested in our study when students in the compulsory group provided real answers to a bogus question added to the survey.

**Conclusion:** While increasing response rates is often a policy requirement aimed to improve the credibility of ratings, using authority to enforce responses may not increase reliability and can raise concerns over the meaningfulness of the evaluation.

**Take-home message:** Inferences made from clerkship evaluations should be supported by validity evidence that is determined, partially, by the number and characteristics of non-respondents. Institutions should be careful about making policies to stimulate responses especially if significant decisions, such as curricular changes or faculty promotion will depend on these evaluations.

#7F6 (157)
Class evaluation in addition to course evaluation is required in integrated courses

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**Background:** Student evaluations of courses are common course evaluation tools. Most of the evaluations are on individual courses rather than individual classes. In the setting of team-teaching which is common in integrated courses, course evaluation may not convey qualities of individual classes and tutors.

**Summary of work:** We collected student evaluations on classes that they had taken in undergraduate medical education. We grouped the evaluation results into 20 categories and tested the association between the categories and student outcomes of each classes.

**Summary of results:** Among the 20 categories, we found 5 categories were significantly associated with student outcomes (p < 0.05). The 5 categories were workload, difficulty, coherence, articulation, and contents. These findings were not found in course evaluations.

**Discussion:** Many courses in undergraduate medical education are in the format of team-teaching. Due to variation of tutors in a single course, the class variance in a course may bigger than the course variance in whole curriculum.

**Conclusion:** Among the students' opinions on individual classes, 5 characteristics (workload, difficulty, coherence, articulation, and contents) were significantly associated with student outcomes. The characteristics of individual classes may be masked in course evaluations.

**Take-home message:** If we evaluate undergraduate medical education only at the level of courses, the effects of individual classes and tutors can be masked. Class evaluation in addition to course evaluation is required in integrated courses.
The impact of the practical year on the students' performance in the second German medical state exam (M2)

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Background: For the first time in the recent history of the final German medical state exam (M2) two nearly equal Student groups attended in April 2014 the same exam: one (group 1; N=4182) with, and the other (group 2; N=4418) without the experience of one-year internship (*practical year: PJ*).

Summary of work: We aimed at assessing the outcomes in the two student groups. We first compared the outcomes of two groups using ANOVA. We applied furthermore a differential item functioning (DIF) approach to detect differences in item characteristics that could be related to the practical experiences of examinees in the group one.

Summary of results: We found a significant higher total score ($\Delta = 1\%; p<0.001$) for examinees with experience of practical year (group 1). The competitive edges of the group 1 were much more pronounced in some specific components of the exam, e.g., in anesthesiology ($\Delta = 3.8\% ; p<0.001$), clinical radiology ($\Delta = 3\% ; p<0.001$). The applied DIF-analysis reveals explicitly that the more specific items of the exam were differentially difficult for examinees of group 2 even if they had the same level of ability.

Discussion: During the PJ German medical students intensify what they learned during their five-year medical studies and acquire further practical experience in making diagnoses and treatment plans, thus the exam in April 2014 represented an exceptional opportunity to investigate the impact of the practical year on the students' performance.

Conclusion: Comparing the outcomes of the students with and without the experience of PJ our results show a significant impact of the PJ on the performance in the second German medical state exam. Detecting differential item functioning we could demonstrate significant differences between equal-ability students.
Improving the Transition from the Preclinical to Clinical Phases in Undergraduate Medicine through Near Peer e-Learning

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**Boo Hui Tan, University of Glasgow Undergraduate Medical School, Glasgow, UK**
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**James G Boyle, University of Glasgow Undergraduate Medical School, Glasgow, UK**

**Background:** The transition from the preclinical to clinical phase of the medical school curriculum is a challenge to students. Having previously been used to an extremely structured timetable, with a predominance of lectures and tutorials, beginning full-time clinical placements can induce uncertainty and lack of confidence in medical students.

**Summary of work:** Special study component clinical students developed interactive e-learning resources: Wiki pages, videos and PowerPoint presentations based on a needs analysis of peers. Preclinical students were surveyed on confidence and preparedness prior to resource availability. They will be resurveyed having had access to the resources before and after commencing clinical phase.

**Summary of results:** Confidence (n=71) averaged 5.17±1.72 on a scale of 1 (not confident) to 10 (confident). 19% knew how to contact. % of students that agreed or strongly agreed on being prepared on key transition domains: transport (45%), accommodation (12%), hospital facilities (13%), ward life (18%), educational events (18%) and assessments (3%).

**Discussion:** Initial results suggest that preclinical students lack confidence and preparedness for the next stage in their undergraduate training. This perhaps highlights the potential to improve this transition for preclinical students. The impact of the e-learning resources will be reassessed immediately before and after the transition to the clinical phase.

**Conclusion:** Moving the focus of learning away from the lecture hall to the clinical environment comes with uncertainty for preclinical students. The provision of e-learning resources created by near peer clinical students may boost their confidence in clinical placements, and improve their educational experience. Full results will be presented in conference.

**Take-home message:** 1. The transition from the theoretical phase of a medical degree to the clinical one is challenging for students. 2. We hope to demonstrate that Wiki pages, videos and PowerPoint presentations created by near peer clinical students improve preparedness and confidence in preclinical students starting their clinical placements.

**RAISE (Raising Awareness at Induction in common Sources of Error): A Qualitative Evaluation**

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**Helen McDermott, RAISE, Birmingham, UK**
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**Kimberley Nettleton, RAISE, Birmingham, UK**
**Christine Wright, RAISE, Birmingham, UK**

**Background:** Every year, new doctors in the UK start work on ‘Black Wednesday’. New doctors are apprehensive about starting work and do not want to cause harm. Each year, the National Patient Safety Agency (NPSA) highlights situations where morbidity and mortality can be prevented.

**Summary of work:** We delivered an innovative near-peer teaching programme, RAISE, to eight trusts in the West Midlands during new doctors’ induction in 2016. This is a lecture-based, 2-hour session tailored to each trust, covering 6 topics, delivering key messages based on NPSA alerts and commonly encountered scenarios, backed up by clinical cases.

**Summary of results:** 289 evaluation forms were collated. 99% of the doctors thought the session was relevant. 97% would recommend the programme, liked its structure and felt it was pitched at the right level. Qualitative analysis of the comments demonstrated that RAISE was informative, practical and succinct, with useful, clear take-home messages.

**Discussion:** Near peer teaching programme can provide a unique and effective way of delivering key patient safety information to new doctors and for the teachers. There have been other near-peer teaching programmes that have also showed the extra value of near peer teaching.

**Conclusion:** Delivering a near-peer teaching programme, during induction, which has key patient safety messages presented clearly and succinctly is relevant to new doctors. There is an appetite amongst new doctors for this type of session as 97% would recommend it to a colleague.

**Take-home message:** The RAISE programme is a simple way to inform and make new doctors aware of common areas where patient safety may be compromised. The use of cases to consolidate learning by near-peers enables new doctors to grasp the importance of these patient safety messages.
**#7G3 (28)**

**Virtual On-Call: The junior doctor experience**

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**Background:** The transition from medical student to junior doctor is large. For the first time, especially whilst on-call, new doctors have personal responsibility for the wellbeing of patients as team-members. The aim of this project was to provide students with high-yield experience in the recognition, prioritisation and management of different conditions.

**Summary of work:** A virtual on-call circuit with simulated patient notes containing different clinical scenarios requiring interpretation and prescription. Scenarios were: acute asthma, hyperkalaemia, diabetic ketoacidosis, anaphylaxis, cellulitis, haematemesis and hospital-acquired pneumonia. The student was contacted every eight minutes via bleep by a concerned nurse on the various wards to address the situations.

**Summary of results:** Medical students from Southampton University did the virtual on-call including a formal handover at the end. Qualitative results were exceedingly positive with students emphasizing the immense assimilation of practical and theoretical knowledge they experienced. Personalized qualitative and quantitative feedback was disseminated to the students alongside learning points.

**Discussion:** Various skills were put to practice during the Virtual On-call including how to recognize, prioritize and manage common conditions and presentations as a junior doctor. Students also had their communication skills assessed by writing in the notes and drug charts; and formally handing over patients using the Situation-Background-Assessment-Recommendation template.

**Conclusion:** Whilst progress has been made in ensuring medical students are ready for post-graduate employment; a prior survey revealed there is a gap in their exposure to high fidelity experiences as a junior doctor. Virtual On-call provides the experiences but more work needs to be done in this field.

**Take-home message:** Virtual On-call serves as a realistic experience filling the gap and furnishing students with skills, experience and knowledge for the future. The goal is to repeat for quantitative comparison and to fortify productive organizational learning in the hospital. Secondly, to scale up by replicating and running the simulation programme regionally.

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**#7G4 (807)**

**Transitional challenges experienced by interns in Middle Eastern hospitals: an Interpretative Phenomenological study**

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**Background:** Research describes how graduates experience both anxiety and excitement at the beginning of their intern year, which later dissolves into fatigue and apathy. The aim of our study was to explore the challenges of transitioning to working life for graduates of medicine during the first few months of hospital life.

**Summary of work:** Interpretative Phenomenological Analysis (IPA) was used as the method of enquiry to gain an understanding of the participants’ experience and how they themselves make sense of their clinical world. Semi-structured interviews were used to generate data, which was analysed using the principles of IPA.

**Summary of results:** Three main themes were identified:
1. The essentials of practice revealed how participants felt the weight of responsibility in their roles as interns.
2. The day-to-day routines of practice were dedicated to developing trusting relationships.
3. The realities of practice was centred on the human aspects of caring.

**Discussion:** The three main themes identified from the data analysis evidenced that the first few months of practice were a challenging time for the interns where they experienced a sense of dissonance in not knowing what was expected from them and unsure of their tasks and responsibilities.

**Conclusion:** Describing the challenges that interns experience during the early months of clinical practice is valuable, as it provides educators with clearer insights as to how transitional bridges between educational ideals and the day-to-day reality of practice may be developed.

**Take-home message:** The transitional challenges of interns are complex and varied and should be addressed by both the hospitals and the medical schools.
#7G5 (50)
Graduate nurses’ evaluation of mentorship: Development of a new tool

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Wilson WS Tam, Singapore
Debra K Creedy, Queensland, Australia

**Background:** New graduate-nurses may experience difficulties in the transition from student to practitioner. Mentoring is commonly used to support graduates. However, there is a lack of published tools measuring its effectiveness. As mentoring is resource intensive, development and testing of a validated tool is important to assist in determining program effectiveness.

**Summary of work:** A quasi-experimental design was used. Following a critical review of literature and content experts’ input, the 10-item National University Health System Mentorship Evaluation (NUHS ME) instrument was tested with a convenience sample of 83 graduate-nurses. Changed scores were evaluated using paired samples t-test.

**Summary of results:** Seventy-three (88%) out of a possible 83 completed the pre-and post-program survey. Internal reliability was excellent with a Cronbach's alpha of 0.92. Test-retest reliability was stable over time (ICC=0.81). Exploratory factor analysis supported a 1-factor solution. Paired Sample t-test showed statistically significance between the pre- and post- program scores (p<0.001).

**Discussion:** The NUHS ME scale showed good psychometric properties. Response patterns on individual items reflected high agreement with the proposed characteristics of this group of Millennial nurses. Although mentoring programs have differing goals or objectives, it provides supportive guidance to assist graduate-nurses’ transition to become competent nurse professionals.

**Conclusion:** This NUHS ME scale showed excellent internal reliability and stability. However, confirmatory factor analysis needs to be undertaken with larger samples of graduate-nurses in other contexts. An experimental study design could be considered to determine the causal relationship between mentoring and its outcomes.

**Take-home message:** This succinct and validated scale can be adapted and potentially be used for other purposes, example, providing mentors with an improved understanding of graduate-nurses’ issues; mentor’s selection criteria; mentor’s other supporting roles; and guiding Mentorship Leadership programs content development to strengthen mentors’ knowledge and skills in these areas.

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#7G6 (2211)
Designing active learning experiences through innovative learning design and blended pedagogy

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**Background:** Since 2014, the UQ Rural Clinical School (RCS) in Toowoomba have been developing an educational program to prepare students for the workplace. The design and delivery of this program is underpinned by the RCS’s Technology Enhanced Learning Strategies that focus on innovative learning design and a blended delivery pedagogy.

**Summary of work:** This program uses a flipped-classroom to explicitly teach ward management and clinical ward skills to final year medical students. This involved pre and post ward round scenario assessment tool, interactive e-learning with role-play and reflective small group learning sessions to engage the students in “real-life” ward round scenarios.

**Summary of results:** Program evaluation included a pre and post test of ward management and clinical ward skills. A paired-sample t-test showed a significant improvement in mean percentage correct ($\chi^2(26)=2.90, p=0.008$) at the end of the program. Students expressed that these packages were very interactive, informative, realistic and relevant to their learning process.

**Discussion:** The program was technology enabled that required an innovative integration of face to face learning experiences with online experiences both of which focus on active learning and engagement. Well designed interactive scenarios can effectively promote deep learning, clinical reasoning and can orient students real life work on the wards.

**Conclusion:** The implementation of active learning strategies throughout all components of the blended program ensures that students are continually practicing what they would do in a real world context, as well as critically analysing and reflecting on their learning and how this translates to the work environment.

**Take-home message:** Incorporating active learning strategies and blended pedagogy can improve the student learning experience, graduate preparedness for internship and the confident transition to practice.
Thrown into the World of Independent Practice: From Unexpected Uncertainty to New Identities

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**Background:** Medical professionals undergo many transitions throughout their careers, including from training into independent practice. Theoretically, this period offers opportunities for learning and development, yet is also fraught with uncertainty and stress. There has been a lack of empirical scholarship, however, examining this transition from a perspective of professional identity formation.

**Summary of work:** The author undertook an autoethnographic exploration of his initial years of independent practice in four different contexts. He created a textual archive from journals, informal notes and personal communications related to this period. From a Heideggerian perspective, he analyzed this archive to understand how these contexts shaped his professional identity.

**Summary of results:** Important differences emerged between sites using Heidegger's three axes of making sense of being in the world: Understanding, Attunement and Discourse. In each context of independent practice, significant learning of local variations was not only useful but inseparable from the delivery of effective and efficient clinical care.

**Discussion:** Effective use of one's general clinical knowledge is critically contingent upon developing understandings of local discourse, assumptions, activities and systems, all of which may be unexpectedly different between sites of practice. In turn, one's professional identity is significantly re-made, with different aspects called into being in different contexts.

**Conclusion:** Transitioning from residency into practice is a vulnerable time that challenges one's sense of competence and, accordingly, one's identity as a physician. While recurrently practicing in different geographies potentially augments this vulnerability, it also leads to sense of self comfortable with variability in local practices and infused with contextual flexibility.

**Take-home message:** Complete preparation for independent practice is impossible, yet developing educational content that augments contextual flexibility and increased comfort with uncertainty may prepare our trainees not just to navigate the unavoidable novelty of transition, but lay the groundwork for professional identities attuned to engage more broadly with change itself.
#7H1 (842)
An outcome-based approach to selection of medical students

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Background: Up to now, the choice of selection procedures for medical school admissions is often pragmatic, based on available tools rather than desired outcomes. An alternative approach is to start with the end goal, educating a good doctor, and develop an outcome-based selection procedure through backward chaining.

Summary of work: Using data from three cohorts, we examined the relationship between performance on an outcome-based selection procedure (with multiple, previously-validated, selection tools) and study success across a three-year medical bachelor program, by comparing study outcomes of selected students and those who were rejected at selection but entered via an alternative route.

Summary of results: The Maastricht University selection procedure satisfied psychometric demands. The selected students significantly outperformed their rejected counterparts on most aspects of the program, including cognitive and (inter)personal outcomes and assignments calling on both aspects (i.e. OSCEs). The predictive value of selection was most pronounced for OSCEs performance.

Discussion: Unlike traditional medical school selection procedures, our outcome-based procedure used backward chaining to select for the end product, good doctors. While the evidence for the predictive validity of traditional procedures is mixed, we found good evidence for predictive value for performance on different assessments over the three-year program.

Conclusion: As far as we know, this is the first study to show predictive value of a holistic, outcome-framework based selection procedure for medical school. Backward chaining of an outcome framework results in the selection of students who perform better in a bachelor program based on that same outcome framework.

Take-home message: It is important to develop a holistic selection procedure, one which assesses the whole range of competencies of a good doctor. Second, it is critical to test if a selection process measures what it claims to measure. We have shown that a purposively-planned outcomes-focused selection process can predict early-stage outcomes.

#7H2 (410)
Comparing the effects of non-cognitive versus cognitive admission within cohorts in one medical school

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Roland Laan, Department for Research in Learning and Education, Radboudumc Health Academy, Radboud University Medical Center, Nijmegen, Netherlands

Background: In medical school selection, non-cognitive performance in particular correlates with performance in clinical practice. It is arguable, therefore, that selection should focus on non-cognitive aspects despite the predictive value of prior cognitive performance for early medical school performance.

Summary of work: The aim of this study at Radboud University Medical Center, Netherlands, was to determine the effects of admitting students through an autonomous non-cognitive procedure. We compared their (n=135) Bachelor’s performance to the performance of students selected through an autonomous cognitive selection procedure (n=439), enrolling in the curriculum simultaneously.

Summary of results: The non-cognitive selection students:
- had the highest dropout rate (p<0.001), - obtained the highest grade for the nursing attachment more often (p=0.02) and - had a higher mean grade for the third year practical clinical course (p=.04). Adjusted for pu-GPA, the differences remained significant. Course grades did not differ.

Discussion: The merit of non-cognitive selection is indeed a better performance on non-cognitive courses, which is promising for clinical practice. The higher dropout rate is worrisome. If students, despite their potential capacities for clinical practice, drop out in year 1, they will never even reach the clinical phase of medical school.

Conclusion: The cognitive procedure resembled the tasks of early medical school. To maintain the positive effect of non-cognitive selection on practical courses while simultaneously lowering the dropout rate, we recommend designing a curriculum sample selection that combines non-cognitive and cognitive samples of the early medical school curriculum that is selected for.

Take-home message: Design a selection procedure combining non-cognitive and cognitive samples of the early medical school curriculum. If both are close samples of authentic tasks, the merits of curriculum sample as a method and the predictive value of non-cognitive and cognitive assessments will be joined.
Holistic student selection process in a US veterinary medical program

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Lisa Greenhill, American Association of Veterinary Colleges, Washington, DC, USA

Background: USA veterinary admissions committees, rely heavily on GPA and standardized testing scores in their selection processes, which predict student academic performance, but may contribute to a demographically homogenous student population. Based on evidence from other health professions, holistic review of applications, along with the multiple mini interview, were implemented.

Summary of work: A holistic student selection process and the multiple mini interview were implemented within a US veterinary program, and data on ethnicity, culture, gender and age were collected over a period of five years. There was a substantial increase in diversity within the student’s matriculating in the program.

Summary of results: The development of a program mission statement supporting diversity, the inclusion of multiple mini-interviews and the holistic application review process have positively impacted the diversity of the college student community. Finally, the presenters will discuss various ways attendees may consider implementing holistic review both incrementally and through full scale conversion.

Discussion: Discussion will include how the development of a program mission statement supporting diversity, the inclusion of multiple mini-interviews and the holistic application review process have positively impacted the diversity of the college student community. Information on implementation will be presented.

Conclusion: The implementation of a program mission statement which aligns with the student selection process, led to a sharp increase in the diversity of the student population within a US veterinary medical program.

Take-home message: Identifying barriers to veterinary school applicants, and the consideration of life journey, is critical to the the application review process, and the creation of a diverse student population. A program mission statement which aligns with the holistic student selection process, creates a legally defensible process.

Preparation for the BioMedical Admissions Test (BMAT): Candidates’ use of free and commercial resources

Amy Devine, Cambridge Assessment, Cambridge, UK
Kevin Cheung, Cambridge Assessment, Cambridge, UK
Tom Gallacher, Cambridge Assessment, Cambridge, UK
Sarah McElwee, Cambridge Assessment, Cambridge, UK

Background: BMAT is used by universities for selection to medicine courses. Cambridge Assessment Admissions Testing provides free preparation materials, including practice papers, as BMAT preparation should not impose financial barriers to accessing the test; however, the impact of preparation materials, including commercial resources offered by third-parties, needs to be investigated.

Summary of work: This study investigated how candidates prepare for BMAT and measured the association between preparation behaviours and BMAT performance. 295 BMAT November 2015 session candidates completed an online survey of BMAT preparation behaviours, including self-study and external sources of help. Survey responses were linked to candidates’ BMAT scores for analysis.

Summary of results: Most respondents used the free preparation materials and only a minority attended commercial courses. Some preparation behaviours varied by gender and educational background. Completing practice papers under timed conditions was associated with better performance. When self-study was included in analysis, use of commercial resources was not predictive of performance.

Discussion: Identified differences in preparation behaviours can contribute to understanding group differences in test scores, and inform advice from outreach programmes promoting diversity. Findings from the survey support current guidance to favour freely available materials from the test developer over commercial resources, and this evidence should be communicated to prospective applicants.

Conclusion: This study suggests that free and widely available materials provided by the developers of BMAT facilitate effective preparation, particularly when used to practice under timed conditions. However, whether candidates employ this strategy varies by gender and background, highlighting the importance of encouraging this preparation method in all candidates.

Take-home message: Guidance from the developers of BMAT states that anyone offering a paid service to help prepare for BMAT will have no more knowledge than someone who has studied papers available on the website. The present study supports this advice and suggests medical schools should reiterate this to promote suitable preparation.
#7H5 (2138)
Selection into medicine using interviews and other measures

Peter Harris, UNSW, Sydney, Australia
Boaz Shulruf, UNSW, Sydney, Australia
Andrew Cole, UNSW, Sydney, Australia
Phil Jones, UNSW, Sydney, Australia
Colleen Ma, University of Sydney, Sydney, Australia

Background: Selection into medicine has been much debated. The place of interviews remains contested. Selection tools are rarely designed to correlate with in program assessments. Predicting performance including timely completion of this expensive education in an ongoing challenge.

Summary of work: Data from 1024 students, representing four cohorts of students who successfully completed one medical program, were analysed by hierarchical linear regressions to determine the relationship between selection tools and core assessment tasks.

Summary of results: Admission tools yielded low correlations with one another (r<.30). Correlations between interview sub-scores were high (.435<r<.640). All interview sub-scores loaded on to a single factor explaining over 60% of the variance. The scores explained less than 13.5% and 3.8% (respectively) of the variance in the key outcome measures.

Discussion: These findings reinforce a number of previous studies. It may be that the success of the selection process results in low dropout rates, implying that the suitable candidates were selected. Alternatively, interviewers are strongly driven by their impression of a “successful student” reducing the impact of the interview.

Conclusion: Each admission tool measures different attributes. Medical practice requires a variety of skills and attributes. Various selection tools may be used to influence student mix and workforce needs. This study highlights areas for future exploration of selection tools against a broad range of outcomes.

Take-home message: Selection tools address differing attributes. Interview procedures may not reflect the decision making of interviewers. Admission tools need to be reviewed against a range of potential and measured outcomes.

#7H6 (1298)
A Situational Judgement Test for Admission to the Faculty of Medicine at Memorial University of Newfoundland

Fiona Patterson, Work Psychology Group & University of Cambridge, London, UK
Wanda Parsons, Faculty of Medicine, Memorial University of Newfoundland, Canada
Victoria Roe, Work Psychology Group, Derby, UK

Background: The Faculty of Medicine at Memorial University of Newfoundland sought to expand their undergraduate MD admissions process (MMI and structured interview), using best practice methodology to assess approximately 700 applicants for 80 places. Situational judgement tests (SJTs) represent a cost-effective method for assessing non-academic skills of large groups of applicants.

Summary of work: An SJT was developed, piloted and evaluated for possible implementation alongside the existing admissions process. A best practice methodology was used including: development of the test specification, item development and review, subject matter review panel, piloting and psychometric analysis. SMEs were involved throughout the development to ensure relevance and realism.

Summary of results: The psychometric evaluation of the SJT will be presented, including: reliability, scoring distributions, group differences, candidate reactions and criterion-related validity. Initial results indicate that the SJT can differentiate between applicants and shows a good level of internal reliability.

Discussion: Psychometric analysis results and applicant feedback will be discussed, along with practical implications regarding the use of SJTs to promote diversity in recruitment and identify students willing to work in remote and rural locations.

Conclusion: The results provide insight into the implementation of an SJT for high-stakes selection in undergraduate medical training in Canada, particularly in relation to widening access. Results could be used to inform the utility and effectiveness of the methodology in this context.

Take-home message: SJTs are an evidence-based methodology for assessing non-academic skills within healthcare. This emerging research will broaden existing knowledge of the applicability of SJTs for high-stakes selection in undergraduate medical training internationally, with a particular focus on widening access in this context.
#7H7 (2836)  
Bias in the construction of a situational judgement test for student selection

**Johanna Hissbach, University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany**  
Anja Schwibbe  
Stefan Zimmermann  
Wolfgang Hampe

**Background:** Situational Judgement Tests (SJTs) are becoming increasingly popular in medical school selection. They are said to be flexibly adaptable to the different needs and targeted constructs. However, the issue of construct validity needs to be further addressed.

**Summary of work:** In 2016 Hamburg Medical School piloted an SJT within the scope of the undergraduate admission procedure. 1076 applicants responded to ten scenarios and 66 items on a four-point Likert scale ranging from “very inappropriate” to “very appropriate”. The set of 66 items was subjected to principal components analysis (PCA).

**Summary of results:** A three dimensional structure emerged: “solve the problem”, “avoid conflict”, and “smooth and soothe”. On the first dimension “solve the problem” mean ratings of an expert group were spread across the whole spectrum of appropriateness, whereas for “avoid conflict”, and “smooth and soothe” ratings concentrated at the negative end.

**Discussion:** Dimensional analysis revealed a negative bias toward passive response options. There is a lack of scenarios in which letting things go is valued as a preferable option. This makes the test susceptible for distortion by favouring a stereotype answer pattern toward active behaviour.

**Conclusion:** PCA points out an unwanted stereotypy in SJT item design which narrows down the number of effective distractors.

**Take-home message:** SJT scenarios should not predictably favor one problem solving solution. In many life situations doing nothing might be the best option. In designing new SJTs such scenarios should be given more weight.
#71 Short Communications: Portfolios
Location: Room 101 a/b

#711 (2495)
Implementation of an undergraduate learning portfolio integrating EPAs with a logbook, reflective activities and a mentoring program

Marc Sohrmann, University of Lausanne, Lausanne, Switzerland
Mirjam Schuler Barazzoni
Jean-Michel Carrier
Raphael Bonvin

Background: One of the key features of a successful learning process is the ability of medical students to develop a reflective, pro-active approach with respect to their learning: assess their progress towards the learning objectives, identify their strengths and weaknesses, and continuously evaluate and improve their performance.

Summary of work: In order to provide the necessary curricular structure and support, our medical school has developed a learning portfolio for its undergraduate clinical skills education program (PULS). The structure of PULS is guided by PROFILES, the new EPA-based national framework defining the objectives of the medical studies in Switzerland.

Summary of results: PULS accompanies the students during their 4-year clinical curriculum, integrating a longitudinal mentoring program. The learning scenario, which is repeated each semester, is based on 3 steps. First, the students collect relevant information in the form of reflections and formative evaluations, and by tracing their clinical exposition within a logbook. They then use this information to evaluate their progress with respect to the different EPAs described in PROFILES. Finally, the students synthesize their reflections and the assessment of their progress in a short text, which will be used as the basis of a meeting with their clinical advisor.

Discussion: They then use this information to evaluate their progress with respect to the different EPAs described in PROFILES. Finally, the students synthesize their reflections and the assessment of their progress in a short text, which will be used as the basis of a meeting with their clinical advisor.

Conclusion: We will present the structure and the content of our electronic portfolio, describe how we integrate the EPAs with the other components of PULS in order to allow the students to assess their progress, and discuss the challenges associated with the introduction of a longitudinal mentoring program.

Take-home message: We will conclude our presentation with a list of success factors we consider key for the implementation of a longitudinal learning portfolio such as PULS.

#712 (3098)
EPAs, Milestones and the use of a Learning Portfolio to enhance self-evaluation

Mirjam Schuler Barazzoni, CHUV, Lausanne; Switzerland
Marc Sohrmann, CHUV, Lausanne, Switzerland
Christopher Newman, CHUV, Lausanne, Switzerland
Raphaël Bonvin, CHUV, Lausanne, Switzerland

Background: The medical school of Lausanne has developed a learning portfolio (PULS) to support the learning of clinical skills. The structure of the portfolio is guided by the framework of the national learning objectives of the medical studies, based particularly on nine entrustable professional activities (EPAs) for entering residency.

Summary of work: Students need to know at which level they are entrustable. Ad hoc decisions may be made informally on an impression, but summative entrustability decisions require the availability of a supervisor. To help students to identify their progress, we developed a model based on self-evaluation of their entrustability level.

Summary of results: We conducted an iterative process of definition and validation of milestones to characterize the different entrustability levels of each EPA. The milestones’ descriptors rely on observable behaviors and can therefore be connected to the content of the learning portfolio (formative assessment, feedback forms, self-reflective activities).

Discussion: We will discuss the process of students’ self-evaluation of a perceived entrustability level and the importance of a mentoring programm to support their self-reflection, facilitate the synthesis of the portfolio’s information as well as guide them to identify learning objectives and the means to reach the next entrustability level.

Conclusion: We will conclude with students’ and teachers’ perception of the process, regarding specially on the one hand the utility of milestones and, on the other hand, the learning effect.

Take-home message: In a curriculum based on EPAs, students need to know at which level they are entrustable. To help them to self-evaluate their progress, milestones based on observable behaviors are defined for each entrustability level. A synthesis of the portfolio’s content to support their evaluation will be facilitated by a mentor.
#713 (476)  
Medical Student engagement with an e-portfolio; A good predictor of Final Examination performance  
Allison-Lynn Andrews, University of Southampton, Southampton, UK  
Sarah Hughes  
Helen Lottery  
June Abay  

**Background:** In response to the GMC (General Medical Council) recommendations our graduate students are asked to maintain a professional portfolio. A small group of students did not complete this requirement within the set time limit and went on to fail final examinations.  

**Summary of work:** We studied three consecutive year groups of medical students who should have completed the whole course at the time of data collection. The completion rate of every individual student was monitored monthly throughout their Final year and then compared to examination results.  

**Summary of results:** Portfolio completion rates of students who failed Final examinations was significantly different to the rest of the cohort (p=0.0003). 90% of students who failed Final examinations did not engage within six months of starting Final year. Conversely 75% of students who were proactive and organised obtained honours at examination.  

**Discussion:** Completion of portfolio requirements appears to a very good predictor of examination performance. Those students who did not engage and only uploaded evidence just before the deadline for completion had a significantly different outcome to those who were proactive and organised their portfolio in a methodical manner.  

**Conclusion:** It is unclear what the selecting factor maybe but organisation plays a significant role in portfolio management. For the majority of students who fail no concerns have been raised about their academic ability but there is some historical evidence of poor time management or their ability to undertake self-directed learning.  

**Take-home message:** This previously unrecognised indicator of a struggling student may be an important first step for early intervention and an opportunity to provide support.

#714 (336)  
Factors influencing electronic portfolio (ePortfolio) acceptability and impacts on occupational therapists continuing professional development  
Brigitte Vachon, École de réadaptation, Université de Montréal, Montreal, Canada  
Marie-Lyse Foucault, École de réadaptation, Université de Montréal, Montreal, Canada  
Annie Rochette, École de réadaptation, Université de Montréal, Montreal, Canada  
Ailiki Thomas, School of Physical and Occupational Therapy, McGill University, Montreal, Canada  

**Background:** The use of ePortfolio for continuing professional education (CPD) purposes has grown during the last decade and has been implemented by many professional regulatory organizations. However, evidence suggests that multiple personal and contextual factors and e-Portfolio characteristics can influence its acceptability and impacts on CPD (CPD plan implementation, practice improvement).  

**Summary of work:** A survey was conducted among occupational therapists in Quebec (Canada) where completion of an ePortfolio is mandatory. It comprised 34 questions and measured ease of use, satisfaction, perceived impacts of portfolio on CPD and potential influential factors. Stepwise multiple linear regressions were performed to identify factors influencing acceptability and impacts.  

**Summary of results:** A total of 546 respondents completed the survey. Factors most significantly influencing ePortfolio acceptability and impacts (p ≤ 0,05) were: perceived relevance of the tool for improving practice, improved ability to complete the tool with repeated use, understanding of portfolio instructions and goals and a desire to receive more feedback.  

**Discussion:** Findings highlight the importance of improving professionals’ attitudes towards the ePortfolio and their understanding of its purposes. Repeated use and adequate feedback provision could lead to greater perceived relevance of the tool. Strategies to increase provision of feedback by peers or mentors should be evaluated in the context of CPD.  

**Conclusion:** Understanding factors influencing acceptability and impacts of ePortfolio is important to improve its valid and effective use in the context of CPD. Interventions aimed at improving attitudes towards and purpose of the ePortfolio provided by regulatory organizations could improve ease of use, satisfaction and perceived impacts of portfolio on CPD.  

**Take-home message:** Specific factors can be targeted to significantly improve ePortfolio acceptability and impacts. Most important factors appear to be perceived relevance of portfolio, understanding of portfolio instructions and goals, developing ease with using the tool and feedback provision.
Continuous workplace learning in healthcare education: a co-creation and innovation project in Ghent (Belgium)

Mieke Embo, University College Arteveldehogeschool, Ghent, Belgium

Background: Embo’s continuous workplace learning model is an evidence-based and practical model to train and assess competencies and to guide continuous competency development during workplace learning. The model was paper-based and designed in one midwifery department. This project aims to digitize the model and to explore generalizability to other healthcare programs.

Summary of work: The university College Arteveldehogeschool Ghent (Belgium) funded a two years co-creation and innovation project ‘digitizing workplace learning’, a collaboration project between speech pathology and midwifery (2015-2017). A multidisciplinary team described specific goals in different subprojects. A graphic designer supported the process.

Summary of results: The model is digitized by Medbook, piloted at the University Hospital Ghent for both professions and implemented in midwifery. Delphi-studies are set up to validate assessment-criteria. A digital quality measurement instrument was launched. Audio and video applications are investigated. The project members share expertise with interested colleagues from other departments.

Discussion: Workplace learning is complex and this project confirms that digitizing workplace learning encompasses all educational components. Introducing the concept of ‘continuity’ as an organizing principle is key to success. The role of personal coaches to guide overarching competency development and the expansion to an overall portfolio was discussed.

Conclusion: Digitizing Embo’s continuous workplace learning model was the start of a really inspiring and growing co-creation and innovation project between healthcare educators from different disciplines, professionals from the workplace, researchers and company directors. Results, pitfalls and challenges of this project will be presented.

Take-home message: A competency-based model for continuous learning in healthcare education was digitized and implemented in order to prepare graduates for the challenges they will face in the healthcare system. The concept of ‘continuity’ as an organizing principle seems essential to improve further healthcare education.

How well did the new ePortfolio promote reflection? A qualitative study

Iain Grom, University of Glasgow, Glasgow, UK

Anna O’Neill, University of Glasgow, Glasgow, UK

Background: The Glasgow Undergraduate Medical ePortfolio aims to support Personal and Professional Development in medical students during their early years’ small group learning activities. It provides a stimulus to reflective practice through early engagement with an authentic ePortfolio. Tutors can give timely evaluation and feedback, key in reflective practice development.

Summary of work: An exploratory qualitative study enabled the voices of 14 students (2 focus groups) and 6 tutors (semi-structured interviews) to be heard. Research/interview questions were based on literature review and course evaluation. Interviews were conducted using an inductive process, recorded, transcribed and coded.

Emerging themes: • Feedback/Assessment; • Reflection; • Support/Training; • ePortfolio function

Summary of results: • Supported Reflective Learning, including early introduction; • Tutors were good mentors; • Feedback was perceived to be of varying quality/quantity; • Tutors felt feedback training may be required; • The interface could be improved; • Submission timing was suboptimal; • Institutional and educational support could be stronger; • Participants preferred formative over summative assessment; • Engagement was good

Discussion: Submissions were often made late in the semester minimising potential educational benefit from tutor feedback and increasing the possibility of inauthentic submission. Scaffold boxes aided reflective writing while interface difficulties were a disincentive. Through the ePortfolio tutors gained greater insight into student thinking. However, students felt feedback quality was variable.

Conclusion: Participants backed use of the ePortfolio in early curriculum years and its role in promoting reflective learning. Adjustments to feedback provision, training and timing may be helpful. Improvements in the ePortfolio’s limited scope and enhanced institutional backing may help it realize its educational potential to promote reflective learning.

Take-home message: • Improve tutor training of reflective practice and feedback; • Extend the scope of the ePortfolio to allow it more opportunity to promote reflection; • Improve interface experience; • Mutually agree earlier submission dates; • Improve institutional support for reflective learning and ePortfolio curriculum integration; • Arrange further study of reflective writing content
#7J Short Communications: Clinical Teaching 1
Location: Room 101 c

#7J1 (2916)
Medical education tools in modern electronic health records – case Apotti

Kaisla Joutsenniemi, Psychiatry Center, University of Helsinki and Helsinki University Hospital, Helsinki, Finland
Tinja Lääveri, Oy Apotti Ab and Inflammation Center, Division of Infectious Diseases, University of Helsinki and Helsinki University Hospital, Helsinki, Finland

Background: In Finland, the electronic health record systems (EHR) do not sufficiently support the needs of medical education. The implementation of a common EHR for primary, specialized and social care, Apotti, enables innovative new workflows aimed particularly at supporting the needs of medical education. Apotti will go live in November 2018.

Summary of work: Apotti will provide convenient tools for practicing note-writing and making orders without compromising patient safety. Moreover, a large variety of reports provide opportunities for planning and tracking actions performed by medical students and medical educators. These functionalities will support medical education in municipalities and university central hospitals alike.

Summary of results: A specific note type designed for medical students enables them to practice making notes and receive feedback. Laboratory, procedure and medication orders made by trainees can be pended to be reviewed by the trainer before being released. Moreover, tools are built for obtaining patient’s consent for participating in medical education.

Discussion: Modern EHRs are not passive data storage systems, but interactive systems that include workflows, suggest next steps and give warnings when needed. Getting familiar with this environment gives medical students insight on what themes are important to study and learn in detail, and which areas are supported by an EHR.

Conclusion: A specific note type for medical students offers a safe practice area for students to practice making notes in a real EHR environment. Reports on the numbers of visits, orders and procedures performed by students provide medical educators the opportunity to follow the progress of their students.

Take-home message: Apotti will provide new tools for supporting medical education. A structured workflow for assessing patient consent, a practice note type for medical students and vast reporting opportunities for medical educators are among the first tools that will be built. Future needs of medical education will regularly be re-assessed.

#7J2 (2462)
A Novel Approach to Medical Student Learning: Immersion in the Wards

Kirsty Egan, The University of Edinburgh, Edinburgh, UK

Background: Tomorrows Doctors (2009) state medical graduates should be skilled in collaborating with members of the multi-disciplinary team. However, evidence at Edinburgh medical school demonstrated students felt unwelcome visitors in hospital ward and unfamiliar with this environment. A radical curriculum review envisioned immersing students within clinical teams with apprenticeship experiences.

Summary of work: A new module has been introduced at the onset of clinical years involving placing students in NHS hospital wards for two week duration working with nursing staff following aligned shift patterns. This aims to give students practical experience of caring roles, patient safety and working effectively within the team.

Summary of results: Student evaluation from frequent focus groups is generally positive. Placements present a wealth of opportunities for them to feel ‘useful’ and interact with patients, also developing their communication skills. Evaluation from nursing staff is similarly positive. However, a minority of students are disengaged and don’t seek opportunities whilst on placement.

Discussion: Students exposure to challenging situations e.g. dying and cardiac arrests are maturely handled. Particular patients resonate with students long after the placement has ended and students enjoy seeing improvement in patients conditions over time. Analysis of the disengaged students is on-going. A full summary of results will follow at presentation.

Conclusion: Students overall have found this module rewarding and value the roles of the ward staff. Their experiences helps prepare them for onward journeys into the clinical arena. Real efforts are being made to highlight the importance of this experiential learning to positively influence student attitudes in preparation for the module.

Take-home message: Medical schools should consider integrating this model of experiential teaching & learning as a core curricular requirement. It presents a wide range of positive and far reaching effects for not only students but also nursing staff who are learning to appreciate medical students capabilities.
Operationalized patient centeredness skills – an empirical study

Monika Engblom, Karolinska Institutet, Stockholm, Sweden
Charlotte Hedberg, Karolinska Institutet, Stockholm, Sweden

Background: To teach and learn patient centeredness (PC) is an on-going challenge because of unclear definitions and a traditional doctor-centered practice. A PC method for specific communicative behavior skills with easily recognized content and tools has been developed and used in feedback, self-reflection and assessment of medical students at Karolinska Institutet.

Summary of work: Two teachers assessed 217 video consultations, from final-term-students during one year, with students and real patients in practice. Among other things we studied students’ capacity to identify patients’ reason for visiting, with focus on ideas, concerns and expectations (ICE) and shared decision-making. We considered ICE to be the patients’ “questions”.

Summary of results: Ninety percent of the students provided >40 seconds spontaneous talking-time after an open invitation; 82% summarized initial statements, 83% identified patients ideas, 45% concerns, and 56% expectations; 60% responded to patients’ questions about ideas, 28% to concerns and 40% to expectations. 85% of the patients participated partly in shared decision-making.

Discussion: Inter-rater Reliability was good. Validity: the PC method is a condensation of behaviour skills based on recognized PC knowledge. Feasibility: only a few tools are needed for the expected PC outcome, partly because the consultation is hold chronological with a Patients part, a Doctors Part and a Shared Part.

Conclusion: The tools for PC, used for teaching, feedback, self-reflection and assessment seem well suited to its purpose. Students in their final term show insights in and used their skills in shared decision-making.

Take-home message: Tools for feedback and assessment of operationalized PC skills have been developed and tested in practice for medical students. The students learned how to identify patients’ reasons for visiting, listening to spontaneous anamnesis and responding to the patients’ questions. The students also used their skills in shared decision-making.

Clinical Debriefing tutorials: an educational tool to enhance professionalism skills and workplace readiness for medical students

Katharine Gardiner, School of Medicine, University of Notre Dame, Fremantle, Australia
Niamh Keane, School of Medicine, University of Notre Dame, Fremantle, Australia
Dylan Griffiths, School of Medicine, University of Notre Dame, Fremantle, Australia
Carole Steketee, School of Medicine, University of Notre Dame, Fremantle, Australia

Background: The second half of the postgraduate medical course at the University of Notre Dame is structured in the ‘clinical apprenticeship’ model. Internship surveys of graduates show students report feeling under-prepared for the clinical workplace, emphasising the need to develop their own professionalism skills. We aimed to enhance post-practicum professional learning.

Summary of work: We implemented six Clinical Debriefing Tutorials (CDT’s) to final year students (n=112), clinician facilitated. We aimed for students to maximise learning from clinical placements by synthesising their ‘real-world’ experiences into the framework of professionalism skills and competencies. An evaluation survey was administered to determine the efficacy of this approach.

Summary of results: 38 students completed the voluntary survey (response rate 34%). 72% reported that CDT’s were useful to their learning. Benefits emphasised by students were: group discussion and tutor feedback consolidating understanding of clinical work (79%), benefits of collegiality (74%) and developing strategies to personally manage critical incidents after CDT discussion (74%).

Discussion: Analysis of students’ responses of the change in their professional behaviour resulting from discussions in CDT’s emphasised strategies within five CanMEDS competencies, with professionalism changes the highest (28%). Students also commented on the CDT helping them to reflect, work within a team and develop respect for patients and colleagues.

Conclusion: CDT’s enhance students’ learning from clinical placements by enabling students to reflect on their workplace experiences, develop personal strategies to deal with critical incidents, use collegial support networks and continue to develop professionalism competencies. These formal and informal components of the CDT are integral parts of the educational tool.

Take-home message: In CDT’s, professional competencies are discussed with reference to clinical practice. CDT’s assist medical students to process their clinical experiences and draw on the support of colleagues for their professional development. CDT’s are designed to supplement and augment student learning that occurred during clinical rotations.
Teaching the Art of Disrobing – A Case Based Workshop for Medical Students at the Weill Cornell Medical College in Qatar

Barbara Blackie, Sidra Medical and Research Center, Doha, Qatar
Stella Major

Background: Preclinical medical students learn to conduct physical examination on standardized patients. Whilst enthusiastic about seeing patients, they expressed anxiety/concern/discomfort with the act of disrobing and touching the patient. Patients express that when touch is needed, they prefer no hesitancy, no rushing nor any lingering. A curricular gap was identified.

Summary of work: Three cohorts attended a workshop; explore how asking patients about disrobing for the physical exam makes them feel, describe what is known about how patients feel about interacting with student doctors, and develop strategies using patient examples on how to ask patients to disrobe. Knowledge was assessed with pre-post testing.

Summary of results: 103 (81%) evaluated the workshop with a scale (1=Strongly disagree, 5=Strongly Agree). The session: Provided valuable information (4.2); Will change my practice (3.9); Was interactive (4.3); Well presented (4.5); Evidence based (4.1); Recommend it to other students (4.5). Correct quiz answers improved from 47% at pre to 52% at post-test.

Discussion: Students’ valued discussing gender, body art, and the obese patients. The cases represented patients seen in this setting, and discussions were from both western and Arab context. One student wrote: “I got to understand my colleagues’ mindset”. Adding role-plays for students to actually formulate phrases with a patient was suggested.

Conclusion: Interactive context-specific, case-based discussion sessions are feasible and valued by medical students to improve awareness and comfort when talking about disrobing with patients in the context of the physical examination. Knowledge on strategies to tackle disrobing challenges can be tested using clinical vignettes relevant to the local setting.

Take-home message: Discussing disrobing and how to touch patients for the physical examination was found to be a challenge for preclinical medical students. This curricular gap, created an opportunity for faculty to design a case based workshop, which was well received and also led to a modest improvement in participants’ knowledge base.

Using Activity Theory to Understand the Challenges of Learning Intimate Examinations

Anna Vnuk, Flinders University, Adelaide, Australia

Background: Learning breast, rectal and pelvic examinations is challenging for both students and educators. Using Cultural Historical Activity Theory (Engestrom, 1999) to analyse the learning of these examinations (in both sessions with manikins and in clinical situations on patients) highlights the complex interactions between students, supervisors and patients.

Summary of work: Students in years 2-4 of a four year graduate entry medical program were invited to either attend semi-structured individual or focus group interviews. The interviews were transcribed, de-identified and the data was then analysed using Activity Theory. Ethics approval was received for this research.

Summary of results: The students’ experience highlights the uncertainty of their role in the community of practice (in the doctor-patient relationship), the development of their understanding of the complex rules that their supervising clinicians use as gatekeepers of the activity and the students’ description of the activity as ‘object’.

Discussion: The gatekeeping role of the clinicians, to protect the patients, clashes with the focus of students on obtaining the ‘object’: intimate examination experiences. Additionally, from the student’s perspective, the ‘object’ is completely removed from the ‘outcome’: being able to perform the examinations competently to assist with the management of patients.

Conclusion: This focus of students on obtaining intimate examination experiences pervades their discussion, displaying them as more self-centred than patient-centred (Manninen et al, 2013). Whilst this may be a developmental step in their learning, it is not how the formal curriculum is expressed and leads to concern about long-term implications.

Take-home message: Whilst the experiences reported here are unique to the university where the research was undertaken, the insights are useful to promote discussion on how to enhance this learning activity in order to lead to the best outcomes for students and, more importantly, for patient care.
#7K1 (1431)
Medical students as module co-directors in the Berlin Modular Curriculum of Medicine

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Background: Students’ participation can markedly enhance medical education. The undergraduate medical program at the Charité – Universitätsmedizin Berlin consists of 40 modules. Each is led by a team of four module directors (one medical student and three teaching faculty members form different disciplines). We evaluated the students’ role as module director.

Summary of work: A mixed-method study was conducted involving one focus group session with student module directors and two online surveys, one with the student module directors and another with the teaching faculty module directors. Survey questions employed Likert scale ratings and narrative comments. The results were analyzed qualitatively and quantitatively.

Summary of results: Teaching faculty and student module directors consider each other equal partners. Both find that student module directors improve the curriculum and highly value the others’ work. Student module directors contribute to curricular design through their holistic curriculum experience (planned, taught, assessed and hidden) and by systematically bringing in students’ feedback.

Discussion: Teaching faculty module directors have strong expertise in their discipline, but their view on other curriculum domains is often fragmented. Incorporating students regularly into the module directory board yields a broader view on the whole curriculum. The module directors understand and respect each other’s perspective and area of expertise.

Conclusion: Student and teaching module directors at Charité find that the curriculum benefits from the integration of students as equal partners in the module directory. The module directors value each other’s work. They complement one another’s experience and expertise. As teams, they improve content, structure and alignment of their modules.

Take-home message: (1) Students as regular members of the module directory board improve the curriculum through their holistic experience with the curriculum and effective integration of student feedback. (2) Students are well accepted as module co-directors by teaching faculty module directors in the process of curricular review and development.

#7K2 (3198)

Student Engagement: top down and bottom up approaches for collaborative engagement within the ethos of an educational alliance

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Background: Recent work around feedback and student conversations resulted in discussions about different approaches to student engagement across medical schools. We present our experience of student engagement through a multiplicity of methods, with the formal top down representation to more informal bottom up collaborations across the wider curriculum.

Summary of work: We use a range of top down and bottom up encounters in a variety of settings. Formal approaches are organised and structured with invited representation, often related to representative roles or stage of course. Informal engagement includes unstructured discussion at events with no formal agenda or through informal, opportunistic encounters.

Summary of results: The range of activity facilitates engagement in all aspects of learning. Formal engagement provides a mechanism for students to understand the intricacies of curriculum management. Informal engagement provides students with broader understanding and insight into the views of students beyond their own social group, leading to more reasoned thinking.

Discussion: Formal and informal opportunities for student engagement are important for learners to understand the diverse nature of the educational experience, as each student experiences their own curriculum, depending on the different patients, placements and supervisors they interact with. Recognition of this diversity supports the ethos of an educational alliance.

Conclusion: Formal and informal, top down and bottom up opportunities help students to understand the diverse nature of the educational experience within an educational alliance.

Take-home message: Creating a climate of formal and informal, top down and bottom up student engagement supports the ethos of an educational alliance.
Background: In 2013, the Lyon-Est Faculty of Medicine introduced student engagement, inspired by ASPIRE’s criteria. In four years, our practice went further than Trowler’s definition: students are not only active (“Engagement 1.0”) but actors of their own education (“Engagement 2.0”): they not only participate but are themselves instigators of innovations.

Summary of work: A qualitative study was conducted at the Faculty to evaluate the benefits of this “Engagement 2.0”, compared to the basic “1.0” version. Several students involved in student-initiated projects were interviewed about the impacts of this “Engagement 2.0” on the development of their non-academic skills, defined by CanMEDS’ framework.

Summary of results: There are two ways for students to benefit from their engagement. First, student-initiated projects are directly helpful for every participating student, improving their medical training. Then, the "instigator-students" anticipate indirectly the development of their own non-academic skills, by simulating situations of care whilst managing their project.

Discussion: This new engagement needs an increase of the student power within the institution but most faculties are not ready to support this kind of policy. That is why our Faculty is trying to become a forerunner of this dynamic by introducing the notion of faculty rewarding of student engagement.

Conclusion: Theoretical conception of student engagement requires only their active participation in teachers’ projects. However, our Student Engagement 2.0 gave birth to a new generation of students engaged as instigators of the innovation. This new dimension seems to be a better way to improve students’ medical competencies.

Take-home message: The student engagement that you know is no longer innovative… It is time for Student Engagement 2.0! Teachers, stop thinking about education without your students: they may know what they need! Students, do not only participate in teachers’ projects: create your own projects! Here’s a pathway to become better doctors!
#7K5 (2494)
No such thing as a free lunch? An innovative staff-student lunch programme to enhance student-faculty engagement in the first year of medical school

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**Background:** Strong student-faculty engagement is linked to greater academic achievement. First year medical students experience a transition from secondary education to a large, unfamiliar university-level environment, in which forming meaningful student-teacher relationships may be difficult. We hypothesised that our novel student-faculty lunch programme might help to break down this barrier.

**Summary of work:** Interested first year students were placed into groups of six, and matched with a member of faculty. Funding was secured to offer paid lunches on- or off-campus, one per group. Interviews were conducted with participants to determine their reasons for taking part and the perceived benefits of doing so.

**Summary of results:** Over 150 students (approximately half of the yeargroup) participated in the programme with 15 faculty members. Feedback from participating students and faculty was overwhelmingly positive, with both reporting that the lunches provided a different perspective on the institution. Students felt more valued and more able to approach faculty members.

**Discussion:** Student-faculty lunch programmes are a low-cost intervention that are well-liked by students and faculty alike. They offer a way for educational institutions to foster student-faculty engagement, especially in the first year of study. Full analysis of why students chose not to participate is needed, but a fear of 'awkwardness' contributed.

**Conclusion:** We present a cost-effective method for increasing student-faculty engagement within the setting of a medical school. To our knowledge, this is the first such programme described in a UK institution.

**Take-home message:** Student-faculty lunches are a novel and cost-effective way of promoting student engagement with faculty and the wider institution. They may be particularly useful targeted at the first year of study.

#7K6 (2665)
Student staff collaboration in medical education according to students and educational directors of the undergraduate medical programs in Netherlands

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**Background:** Students and academic staff working together to design and evaluate aspects of educational practice, has recently become more prevalent in medical education. Although research demonstrates that both stakeholder groups derive significant benefits from working collaboratively on teaching and learning(Millard,2013), it is not clear which factors influence this collaboration in practice.

**Summary of work:** We conducted 5 focus groups with student representatives and 10 interviews with program directors of Dutch medical schools to explore their perceptions on student-staff collaboration. We coded transcripts and used an iterative, inductive analysis. Themes of both stakeholder groups were compared and discussed until consensus on main factors was reached.

**Summary of results:** Our data revealed four main factors that influence student staff collaboration in medical educational practice: vision of the medical school regarding student engagement (e.g. on the ownership of education), the organisational structure of student representative bodies, individual staff factors (e.g. respect for students' opinion) and individual student factors (e.g. commitment).

**Discussion:** Whereas students acknowledge that their voice is being heard, mutual collaboration with shared decision making on education does not always happen as far as the educational directors supposed it did. Since shared ownership is an important characteristic for continuous educational improvement(Bendermacher,2016), this study indicates room for improvement in student-staff collaboration.

**Conclusion:** This study provides insight into the perceived student staff collaboration in educational practice at Dutch medical schools. Four overarching themes were found that influence student staff collaboration in practice. Our study reveals interesting opportunities on how to improve this collaboration, which may further increase the quality of medical education.

**Take-home message:** Students and staff need support to be able to collaborate effectively. • A clear institutional vision on student-staff collaboration and a transparent student organization can be helpful to derive benefits of student-staff collaboration. • 'Mutual respect', 'commitment' and 'ownership of education' are important concepts for successful collaboration.
Medical student organisations on the international level - a threat or a treat?

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Background: We asked former and current executives (e.g. presidents) from international medical student organisations, how their involvement impacted the course of their medical education, university obligations and further career choices. Most popular structures of this kind are the European Medical Students’ Association (EMSA) and International Federation of Medical Students’ Associations (IFMSA).

Summary of work: 15 respondents (10 graduates, 5 students) from 11 countries were interviewed on-line. 17 questions were designed to identify e.g. how top leadership in international student NGOs influenced their university performance or what skills they gained. Several individuals expressed, in their words, how this impacted their medical future. Full questionnaire: https://goo.gl/forms/BM1VXUavZ5liXMNQ2

Summary of results: Common reasons for joining EMSA or IFMSA (international level) were personal development and extra experience outside the academic curriculum. Although some declared less time for studying (ar.30% respondents) or slightly worsened grades (ar.40% respondents), most executives agreed it gave them problem-solving skills, resilience or introduced to inspiring individuals (including clinicians).

Discussion: Leadership in student organisations often becomes a “full-time job” which must be harmonised with university obligations. In many cases, a clash was reported (e.g. skipping classes while travelling), a failed exam or even a semester. However, this was in many cases compensated by obtained skills and opportunities, as described below.

Conclusion: While ar.70% of interviewees said their engagement couldn’t even be measured in hours (“constantly processing information”), skills such as communication, perseverance, time management, teamwork and languages are still useful many years after quitting their organisation. One respondent declared “Joining [organisation] is one of the best decisions I made at university”.

Take-home message: Medical universities might consider (stronger) recognition of activities in student NGOs. Such structures serve not only as a nursery for social skills but also expose students to interesting opportunities or career choices outside clinical setting. Those professional alternatives include e.g. medical education, public health, health politics or coaching in healthcare.
**#7L1 (923)** Enhancing the preparedness of doctors to manage death related communications

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**Background:** Around 60,000 people die in Scotland each year, with approximately 1:3 dying unexpectedly. Evidence exists that doctors have training in communication skills relating to expected deaths but may be less prepared for the other sudden types of death they might experience; potentially adversely affecting patients, families and the doctors themselves.

**Summary of work:** NES carried out a national survey of junior doctors and training providers (undergraduate & early years) and reviewed curricula and academic literature (bereavement education, post-death team based reflection, staff wellbeing, bereavement care standards). Gathered intelligence was then used to develop a national training framework and associated toolkit of educational resources.

**Summary of results:** Results demonstrated that many doctors are unprepared for sudden death related communication with a consequent 1:5 questioning medicine as a career choice. Other main difficulties reported were talking to angry / estranged families, securing opportunities for observation & feedback, staff wellbeing and debrief, and accessing support from seniors / colleagues.

**Discussion:** NES has developed an educational framework to support clinicians from undergraduate through to practitioner level to prepare, deliver, record, then reflect on their practice in order to enhance peri-death related communication. This is considered to be a clinical skill, the development of which must be supported through observation and feedback.

**Conclusion:** The new UK educational framework and toolkit will be utilised by trainees and trainers with the aim of reducing harm due to poor communication. Additionally, it is expected that impact evaluation will demonstrate an increase in effectiveness of peri-death communication, enhanced patient safety, reduction in complaints, increase in staff wellbeing.

**Take-home message:** There is evidence to suggest that UK doctors are not prepared for the range of peri-death communications that they will have to manage. The NES educational framework and toolkit seeks to provide a new approach to prepare doctors in a manner that is safe for patients, families, colleagues, and themselves.

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**#7L2 (1918)** Training the “Breaking bad news” with undergraduates: a challenge for Medical Education

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**Background:** Breaking bad news is one of a physician’s most difficult tasks and medical schools do not always offer a satisfactory and enough preparation for medical undergraduates. In this context, in 2016, a new Brazilian medical school decided to create an optative discipline called “Communication of bad news: training future doctors”.

**Summary of work:** An exploratory study of qualitative approach was done. It was performed one focus group with 12 students before the discipline and other one after the discipline in a public university in Brazilian Midwest. It was used a script, focusing on the importance of breaking bad news, methods and difficulties faced.

**Summary of results:** The focus group conducted before the discipline showed only 25% were aware of the importance of breaking bad news and the existence of specific protocols to guide situations. The focus group conducted after indicated that 85% learned the importance of issue and began to apply protocols in their medical practice.

**Discussion:** During the optative discipline, students had contact with: the breaking bad news in the view of health professionals, the patient and the family; Spikes Protocol; the "ABCDE" communication model; regional guidelines; role-playing strategy to train how to deal with many bad situations; simulations; students’ personal skills and students’ personal limitations.

**Conclusion:** The activities done during the course helped to develop the students’ communication skills. It allowed to reach the profile of graduates required by the new National Curriculum Guidelines for Medical School. In addition, students stated knowledge acquired strengthened them to deal with future breaking bad news in their medical practice.

**Take-home message:** The physician’s attitude and communicational skills play a crucial role in how patients receive the bad news. It is essential that medical students have an academic background dedicated to deal with bad news communication in their medical curriculum. Thus, they can transform theory into practice in their community experiences.
#7L3 (2729)
A case study to explore how medical students learn linguistic cognitive skills during preclinical training

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**Background:** Communicative competences are considered central aspects of the medical profession but are often reduced to the physician-patient relationship. Little attention has been given to teaching the linguistic cognitive skills. This study was conducted to understand how medical students learn linguistic cognitive skills during preclinical training in an integrated curriculum.

**Summary of work:** Using a case study, we conducted 3 in-depth interviews on 14 undergraduate medical students during their clinical training asking their experiences on learning linguistic cognitive skills during their preclinical training. Inspired by the grounded theory techniques, we analyzed the qualitative data to develop a framework to interpret results.

**Summary of results:** The conceptual framework generated contained two main constructs: 1) 'political strains of integrating the linguistic cognitive skills into the medical curriculum', and 2) the effect of 'nobody knows what they have until it is gone'.

**Discussion:** Under the first construct, students commented there exists some clinical courses considered fundamental, but some others that promote linguistic cognitive skills are perceived unimportant. Under the second construct, students missed the opportunities they had for learning communicative skills in preclinical training. Inspired by the grounded theory techniques, we analyzed the qualitative data to develop a framework to interpret results.

**Conclusion:** This framework describes how medical students perceive learning of the linguistic cognitive skills during preclinical training. We believe the theoretical constructs that emerged from this study will help curriculum designers to consider the students’ feedback about how they experience the integration of communicative competences into the curriculum.

**Take-home message:** Integrating the linguistic cognitive skills into the medical curriculum is a political matter. Curriculum designers should consider how students perceive the power relationships of the biomedical, clinical, and social science courses to construct a successful integrated curriculum.

#7L4 (1878)
Role Play as an Educational Tool: “Patient Encounters” Workshop

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**Background:** In addition to knowledge of and compliance with medical guidelines, good medical care includes being considerate and respectful towards the patient. Thus, achieving favourable outcomes in medical care requires successful communication with the patients, which in turn results in patients’ confidence and adherence to their medical care and treatment.

**Summary of work:** The students play a “doctor” one at a time, whereas the teacher assumes “patient” roles with eight different characters: a demanding woman, a nervous woman, a crying girl, a girl with a dominating mother, a shouting man, a withdrawn woman, an aggressive man, and an inquisitive elder woman.

**Summary of results:** After each scene, the students describe their reactions to the situation. Afterwards, other students and the teacher give feedback and the situation is discussed in general terms. (In the presentation in AMEE a video of the workshop will be presented.)

**Discussion:** The workshops consist of small groups (maximum 8 students per group), which makes it easier for the students to give into the role of a doctor and give feedback. The workshop takes place during the final stages of their medical training, after they have already had some clinical experience.

**Conclusion:** The workshop has gained excellent feedback from students. They have considered it an important part of their medical education, and have wished for even more training on the subject.

**Take-home message:** Although the subject is acknowledged to be important, the education on the subject of successful patient encounters is limited in the medical faculty, and it is extremely warranted. Using role play as an educational tool offers unique opportunities to approach the subject.
Developing expertise in motivational interviewing communication skills in nurses

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Background: For healthcare professionals, applying newly learned communication skills such as motivational interviewing, and improving these skills in daily practice, can be a challenge. The importance of the ability to enhance patient motivation as a professional skill is broadly recognized, but the effects of a workshop-only have usually faded within months.

Summary of work: In a before-after study, cardiac care nurses received a 3-hour motivational interviewing workshop. Subsequently, for each nurse we recorded four patient visits in nurse coordinated outdoor clinics. The audio recordings were analyzed using eight targets of motivational interviewing consistency (MITS2.1). Hereafter, the nurses received personalized structured feedback on their performance.

Summary of results: The mean improvement was 5.6 points on a 32-point scale for the per protocol analysis of 15 nurses. This 5.6 point change indicates an improvement from demonstrating "a small part of motivational interviewing consistent practice" to demonstrating "a mainly sufficient degree of motivational interviewing consistent practice".

Discussion: Personalized follow-up learning activities after a workshop seem to promote the improvement of communication skills. Although each performance of each nurse in this small sample may have been influenced by the "perceived difficulty" of the patient, we observed a clinically relevant improvement of the nurses’ core motivational interviewing skills.

Conclusion: The follow-up of a workshop by personalized structured feedback on practice performance is a promising method to maintain and improve newly learned professional communication skills.

Take-home message: To use newly learned communication skills in daily practice often requires more than just participating in a workshop. Individual and personalized feedback on real consulting room practice is a good method to support the professional in putting newly gained communication skills into practice.
#7M1 (1151)
Stigma kills: reducing medical students’ stigma against mental illness

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**Sarah**

**Background:** People with severe mental illness die some 20 years earlier than otherwise expected, largely due to physical causes. Stigma against people with mental illness increases during medical school. This leads to diagnostic overshadowing after graduation – the tendency to misattribute key symptoms to psychiatric, rather than physical, causes.

**Summary of work:** Progressive emphasis on recovery model of mental health service delivery (where service user is central to developing their treatment plan) during psychiatric attachment; in successive years, introduction of seminars on recovery; placement in recovery-focused NGO service rather than standard inpatient/community mental health settings; requirement for written reflection on recovery.

**Summary of results:** Introduction of seminars alone initially well received but lack of reinforcement in clinical placements led to no change in ratings of attitudes; student resistance to extended placements in NGO as perceived loss of learning opportunities in more acute settings; dramatic positive change following briefer placements and requirement for reflective report.

**Discussion:** The programme now integrates theory (within a transformative learning paradigm) with an authentic service delivery context (involving one-on-one discussions with service user mentors). The obligatory reflective report requires students to engage with this experience, increasing understanding and reducing stigma. Students included most key theoretical elements in their reports.

**Conclusion:** It is possible to significantly shift well-established attitudes that contribute to serious harm to those using services through relatively brief interventions provided these are integrated with positive authentic clinical experiences. The long-term impact remains to be explored. A transformative learning model may be particularly relevant to such attitudinal change.

**Take-home message:** Stigma against people with mental illness by doctors has serious health consequences, resulting in diagnostic overshadowing, under-diagnosis of serious treatable conditions and avoidable mortality. Interventions for medical students appear to be effective, provided these are integrated with authentic learning experiences with service users.
Clinical pharmacology and therapeutics education in EU needs harmonisation and modernisation: a cross-sectional survey among 185 medical schools in 27 countries

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Background: Effective teaching in clinical pharmacology and therapeutics (CPT) is necessary to ensure that medical students become competent prescribers. As there has been no recent analysis of the structure of CPT education in the European Union (EU), we investigated the structure, delivery, and assessment of CPT education in EU medical schools.

Summary of work: We designed and validated an online questionnaire that was sent to the teachers with overall responsibility for CPT education in EU medical schools. Questions focused on undergraduate teaching and assessment of CPT and students’ preparedness for their future prescribing task.

Summary of results: 185 medical schools (64%; 290) from 27 EU countries responded. 72 (39%) schools used merely traditional-learning methods, and 108 (58%) schools did not provide students with the opportunity to practise real-life prescribing. Overall, 127 (69%) of the respondents believed that their students were not well prepared for prescribing.

Discussion: There is a marked variation in the quality and quantity of CPT education within and between EU countries. Furthermore, CPT teaching and assessment throughout EU is mainly based on traditional-learning methods. This has potential consequences for prescribing competencies of junior doctors and patient safety.

Conclusion: To ensure that future graduates have a uniform level of prescribing competencies, a collaborative approach should be adopted to harmonise and modernise the undergraduate teaching and assessment of CPT across the EU.

Take-home message: • There is marked variation in the quality and quantity of CPT education within and between EU countries. • CPT teaching and assessment throughout EU is mainly based on traditional-learning methods. • Most medical schools do not consider their students to be well prepared for prescribing as a junior doctor.

LGBT attitudes and experiences of staff and students in health education: a longitudinal study

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Background: The Equality Unit’s 2009 report LGBT (Lesbian, Gay, Bisexual, Transgender) students and staff experiences was unsettling reading, with 20% LGB and 28.5% T students reporting taking time out of their courses and staff experiencing personal and institutionalised discrimination. The Equality Act 2010 introduced legal protections and obligations in the UK.

Summary of work: An online anonymous questionnaire of open and closed questions was developed to gather the University staff and students’ LGBT experiences and attitudes. All members of the University at April 2012 were invited to participate. The questionnaire, slightly modified to reflect restructuring of the University, was again sent out April 2017.

Summary of results: In 2012, LGB respondents were significantly more likely than non-LGB to think LGBT rights also benefit non-LGBT people, but the majority of non-LGBT would feel uncomfortable attending LGBT meetings. Four participants who articulated particular problems were all from health education. We present changes in perceptions since 2012.

Discussion: The 2012 survey raised several issues, including siloing LGBT issues to the LGBT community. We have since introduced workshops, internally and externally facilitated, to complement the mandatory online diversity training, printed and online material, a poster campaign, and identified LGBT champions. This paper presents the current picture and lessons learnt.

Conclusion: Supporting LGBT rights benefits students and staff irrespective of protected characteristics. Understanding LGBT experiences and attitudes further benefits health professional students who will encounter LGBT patients in their work. Safe educational places are needed to explore these issues. Monitoring of impact is needed to inform future work.

Take-home message: Healthcare educators need to be mindful of both the national legal framework they work in and of those their graduates may move to. Safe areas are needed within the curriculum for all students and staff to explore their preconceived ideas, biases and attitudes to sexual and gender identities.
Should health students be taught about health literacy?

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Background: In these days of universal education it is assumed that most people, when they reach adulthood, have acceptable literacy. Literacy standards in many countries have been evaluated and low standards have been found to impact health. Health literacy involves both reading/writing, numeracy and information technology.

Summary of work: A longitudinal study by the Organisation for Economic Co-operation and Development has shown that overall international literacy levels are fairly low. Do health professionals in training need to be made aware of discrepancies in literacy between themselves and their patients? Implications arising from this work will be discussed.

Summary of results: The impact of an aging population, international migration and the growth in refugee numbers means that universal standards of literacy cannot be assumed. The use of technology also masks individual literacy levels. Can we assume that all patient health information or instructions are able to be read and understood?

Discussion: A growing emphasis on inclusion of the social sciences and humanities in healthcare professions education suggests that health literacy is an area required in medical and health professions curricula. Health student awareness of the literacy level of patients is important as low literacy levels impact compliance with treatment and management.

Conclusion: There are some simple methods for assessing and developing resources for health literacy in order to better manage and treat patients with low health literacy. Health students need to be made aware of these so they become patient-centred healthcare professionals.

Take-home message: Health students need to be able to understand and assess the health literacy of their patients and to make adjustments to the literacy level of written instructions and materials provided to patients when low health literacy is identified.

Scenario-based Nutrition Community design approach to facilitate medical and allied health professionals' training of nutrition

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Background: Nutrition is fundamental to health and disease, and nutritional care a critical element of patient care. However, the principles of nutrition and their clinical application are insufficiently covered in health-science programmes internationally and workforce is inadequately equipped. To provide accessible nutrition training, University of Southampton developed nutrition portal and courses.

Summary of work: The target users were diverse, from medical students to frontline health workers working in emergency or community settings. Scenario-based Nutrition Community, positioning patients and their care in the centre, was applied to courses design. An evaluation study (EthicsID:12872) was conducted to investigate the effectiveness of the design.

Summary of results: 1462 existing users (77 countries, 01/2010-04/2015) of a course, Malnutrition eLearning, and 1320 new users (42 countries, 06/2015-08/2015) participated in the study. Knowledge and confidence improved in all groups (>70%, p<0.001). 82% reported graphical illustration enhanced their understanding, and 77% reported the Nutrition Community characters helped their contextualisation of knowledge.

Discussion: The users ranged from health professionals, educators, students to policy-makers. The course helped them learn the nutritional care patients needed from a multi-disciplinary care team. Majority had applied their knowledge in practice and agreed that the course made them realise the importance of their (future) professional roles in (mal)nutrition care.

Conclusion: To facilitate nutrition training for diverse health professionals globally, an innovative design approach, a scenario-based Nutrition Community, was devised and implemented. Presenting nutritional care through patients' stories created a gateway to learn nutrition and nutritional care regardless of the users' professions but also helped them to contextualise their knowledge.

Take-home message: Designing an eLearning solution that enables learning of a science, the principles of nutrition, and its clinical application is challenging, particularly when the care requires a multi-disciplinary team. Positioning patients in the centre can enable presenting the care needed from different health professionals, integrating the science and its clinical application.
#7M7 (1441)
Nutrition-related issues in graduate medicine education and national physician license examination in Taiwan

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Background: In recent year, the nutrition care is an important issue in developed countries. However, there is no clear specification for nutrition education in medicine school in Taiwan. We like to know current status of nutrition training in graduate medicine education and nutrition-related quizzes in national physician license examinations.

Summary of work: We surveyed the general situation of graduate medicine nutrition curricular in twelve department of medicine in Taiwan. Then, we analyzed the 6400 quizzes for clinical and basic knowledge about nutrition in the National Qualification Examination, twice per year, from 2007 to 2016.

Summary of results: With regard to nutrition-related courses, five schools had required and four schools had elective courses, non-define in the other. Most curriculums were in the fifth grade or integrated in the first and second grade. In national physician examinations, nutrition-related quizzes were 0.7% and 0.6%, accounting for about 1.3%.

Discussion: National accreditation and examinations affect the school curriculum design and students’ learning attitude. There may be a gap in nutrition education between school and clinical needs. The change of medical system in Taiwan also makes time limit for nutrition-related courses. Therefore, it is worth to extend nutrition education to post-graduation.

Conclusion: The current school curriculum for nutrition education, as well as nutrition-related topics of national examination are low in Taiwan. How to combine or integrate nutrition-related knowledge in the curriculum, national physician license examinations and post-graduate education are still important issues in the future.

Take-home message: Although the nutritional courses of the Department of Medicine in Taiwan are more than the past attention, the proportion of nutrition-related questions is still inadequate in the national physician examination. In-school curriculum planning and examination in nutrition medicine has room for improvement in Taiwan.
#7N Short Communications: Assessment – General

Location: Room 103b

#7N1 (2640)

Developing an assessment strategy for the 21st century

Lee Coombes, Cardiff University School of Medicine, Cardiff, Wales
Elizabeth Metcalf, Cardiff University School of Medicine, Cardiff, Wales
Phil Smith, Cardiff University School of Medicine, Cardiff, Wales
Rebecca Vallender, Cardiff University School of Medicine, Cardiff, Wales
Steve Riley, Cardiff University School of Medicine, Cardiff, Wales

Background: Cardiff School of Medicine is currently rolling out a new curriculum (C21), designed to be a modern curriculum for the 21st century. As part of this process, assessment has been rethought with a move away from traditional models to better prepare students for practice by supporting reflection and self-directed learning.

Summary of work: This session will discuss how the assessment strategy was developed and what it includes, particularly focusing on the principles of frequent look/rapid remediation, distributed assessment, and programmatic assessment it is based on. We aimed to create an assessment programme that strives for authenticity through formative, summative, simulation and workplace assessment.

Summary of results: As part of the new strategy, updated clinical and knowledge assessments have been introduced aimed at supporting student progression through frequent low stakes assessments and by providing detailed feedback within and across domain based assessment, while emphasising an integrated, holistic approach to patient assessment, clinical reasoning and care planning.

Discussion: Change can be challenging, but the advantages of the new strategy have been clear clear. A strong evidence base has been created, with an approach designed to revise and refresh the assessment programme when new evidence is available.

Conclusion: Progression decisions under the new strategy are educationally, statistically, academically and legally defensible. Success can be measured through improvements to student survey scores, preparation, perceptions and assessment literacy when interpreting and acting on feedback.

Take-home message: No single approach to designing an assessment strategy was deemed adequate, but a combination of approaches provides a strong base for an assessment programme.

#7N2 (2476)

Large scale peer assessment of professional behaviours in interprofessional learning teams

Chris Roberts, University of Sydney, Sydney, Australia
Christine Jorm
Gillian Nisbet
James Crossley
Chris Gordon
Timothy Chen

Background: Peer assessment of professional behaviour within interprofessional learning (IPL) teams may have value in determining students individual participation in collaborative team work. We investigated what factors in a peer assessment of collaborative behaviours impacts decision-making about their individual contribution to an IPL team task.

Summary of work: In a cohort of students (n=1521) in 271 teams undertaking an IPL activity, each student rated themselves and their IPL team peers. In a mixed methods study, we calculated the reliability of the assessment and student mean ratings from their peers compared to self-ratings. Qualitative feedback unpacked particular student performances.

Summary of results: A peer assessment of professional learning behaviour was reliable for 'within group' comparison (G = 0.69 - 0.73) but poor for 'across group' comparison (G = 0.31 - 0.35). For students who rated themselves highly, but were rated modestly by their peers, qualitative feedback indicated lack of commitment to collaborative teamwork.

Discussion: Peer assessment of professional learning behaviours may be unreliable for decision-making outside an IPL group. Conclusions from peer assessment about a student’s behaviour compared with their peers in the cohort, may not be appropriate for summative assessment.

Conclusion: A peer assessment of individual collaborative learning behaviours is reliable for decision-making within an IPL team to determine an individual students contribution. Further research on peer feedback in IPL teams could focus on how levels of individual contribution could be used to adjust team performance scores.

Take-home message: Large scale IPL is difficult to assess. The potential of peer assessment to rate individual contributions of their peers in IPL will be of value to those educators and institutions with modest resources for robust assessment. An appropriate e-Learning platform automates much of the process.
"AIM" for quality in undergraduate medical assessment: Development and validation of 'Assessment Implementation measure (AIM)', a tool to measure faculty perceptions about the implementation of assessment standards in undergraduate medical programs

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Rehan Ahmed Khan, Riphah International University, Rawalpindi, Pakistan
Raheela Yasmin, Riphah International University, Rawalpindi, Pakistan

Background: Faculty perceptions about assessment quality in medical institutes can provide information about gaps in institutional and standard practices. However, no validated survey instrument has been identified in this context. This study aims to develop and validate a tool to evaluate the quality of assessment practices as perceived by the faculty.

Summary of work: A mixed method study design was used, including literature review for preliminary questionnaire draft preparation, a three-round 'Modified Delphi process' with 10 medical education experts, cognitive pre-testing of 5 intended respondents and pilot study on 30 randomly-selected faculty members. Content validity index (CVI) and reliability through Cronbach's alpha was calculated.

Summary of results: The 30-item AIM tool had item-level CVI (I-CVI) of 0.9-1.0 and scale-level CVI (S-CVI) of 0.98 (S-CVI/Avg method) and 0.86 (S-CVI/UA method). Cognitive pre-testing revealed good item interpretation. Pilot study analysis revealed Cronbach's alpha of 0.9 for the tool and 0.67 to 0.80 for the four domains.

Discussion: The participant number and criteria used were in accordance to those accepted in literature. The calculated values of I-CVI and S-CVI were well within accepted range (minimum accepted I-CVI =0.78 and S-CVI= 0.8). The reported acceptable values of alpha, range from 0.70 to 0.95 which correlates well with calculated values.

Conclusion: The final AIM tool has 30 items and is based on a 5-point Likert scale (0-4). The final score ranges from 0-120. It is found to have good content validity and reliability and can be used to measure perceptions of teachers about implementation of assessment against accepted international standards. The 'AIM' tool can be used for evaluation and improvement of assessment in undergraduate medical education.

More voice, less multiple choice: poster exam in social medicine for third-year medical students

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Vanessa Schimbeno, Mannheim Institute of Public Health, Medical Faculty Mannheim, Heidelberg University, Germany
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Sven Schneider, Mannheim Institute of Public Health, Medical Faculty Mannheim, Heidelberg University, Germany
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Background: Medical educators agree that training of future physicians should be competency-based. Cross-disciplinary skills such as preparing and presenting a scientific poster are neither stressed nor systematically tested in our medical curriculum. We therefore explored how best to integrate the assessment of such higher-level thinking skills into the social medicine exam.

Summary of work: We designed a unique exam in which students present a scientific poster on a social medicine topic in three minutes as if before peers at a conference. They draw a general topic out of a hat but then are free to choose the direction and emphasis of their research question.

Summary of results: Since 2009, almost 1500 students have passed the exam in social medicine and given feedback on the relevance for their future careers of the competencies and skills gained in systematic search and critical review of the literature; use of citation techniques; interpretation of statistics; and last but not least, rhetoric.

Discussion: The poster exam, although time-consuming for students and faculty alike, benefits students. By elaborating a social medicine topic in a scientific poster format, students acquire the competency to combine and apply medical knowledge and scientific skills early in their training. Additionally, they learn to present and to argue their case.

Conclusion: It is feasible to teach and examine a “theoretical” subject such as social medicine in a way that engages students and allows them to learn and practice critical thinking, reasoning, and methodological skills that will be relevant regardless of their future path.

Take-home message: Being a doctor requires higher-level thinking skills that need to be taught and assessed. It is possible to encourage active cognitive learning behaviors by applying innovative examination methods that go beyond testing practical skills or regurgitating knowledge. We encourage the use of alternative examination formats that help serve this purpose.
#7N5 (720)
Rethinking Peer and Self-evaluation in Medical Education

Natasha Parkin, Deakin University, Geelong, Australia

**Background:** Peer and self-evaluation in medicine facilitates teamwork and safe practice. In medical curricula, reflecting on and evaluating the performance of oneself and others is not routinely practiced. It frequently involves a limited two-step process that is attached to learning activities without comprehensive integration into curriculum design.

**Summary of work:** A seven-step peer and self-evaluation (PaSe) process was developed following review of multidisciplinary literature concerning peer and self-evaluation. The process comprises: learning about PaSe and feedback, group-work activity, rubric-based evaluation of self and peer(s), review of peer feedback, planning for future change, and review of educator feedback.

**Summary of results:** The PaSe process was trialled as part of a second-year medical student group-work assessment task. Implementation was labour intensive for staff. Student performance demonstrated achievement of learning objectives and students commented positively on the activity.

**Discussion:** The seven-step PaSe process appears useful as it provides learning materials to inform understanding of and participation in the process, and a series of integrated actions enabling deeper reflection and development of skills in feedback formulation. In future, a software program is expected to ease logistical burdens for staff.

**Conclusion:** Informed by educational theory and research concerning self and peer evaluation within student and professional settings, the PaSe process offers scope for the enhancement of medical students’ skills. Empirical evaluation of the process is required to determine efficacy and inform improvements.

**Take-home message:** Effective training in peer and self-evaluation depends on robust curriculum design. The seven-step PaSe process is a promising example of multifaceted learning to develop health professional skills in critical evaluation, self-reflection and self-awareness.

#7N6 (251)
The Differential Utility of a Tool for Reading Written Reflections: Debriefing Vs Assessment

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Alan Taniguchi
Michelle Howard
Denise Marshall
Lawrence Grierson, McMaster University, Hamilton, Canada

**Background:** The prevalence of reflective writing in medical education portends an increased interest in the assessment of reflective writings. In this study, we explore the differential utility of a rubric designed to facilitate the reading of reflective writing for the purposes of assessment and debriefing.

**Summary of work:** Raters evaluated trainee reflections using a tool designed to support narrative reading. The rubric presents a matrix wherein criterion characteristics of written narrative are assessed. Reliability and construct validity were assessed. Consistency of feedback facilitated by the tool was evaluated to determine the degree to which the tool facilitated debriefing.

**Summary of results:** Inter-rater agreement was moderate overall (K = 0.56) but only slight for sub-domains. However, analyses revealed that the tool facilitated similarities in the raters’ determination of the writer’s underlying mental models despite considerable differences in the generated assessment score.

**Discussion:** This study highlights the difficulties in assessing reflective writing but illuminates the way a tool may facilitate the debrief process and help educators identify the relationship between learner mental model and gaps in performance.

**Conclusion:** It is difficult to assess the quality of narrative writing for evidence of learners’ reflective capacity or proficiency, but rubric-based tools may facilitate educator and learner understanding of the most relevant aspects of clinical performance.

**Take-home message:** Reflective writing is a form of debriefing that allows learners to reflect privately about performances as a way to foster deeper critical analysis of clinical and patient perspectives. The loud calls that written reflections should not be formally assessed are appropriate.
Assessing reflection: Experiences with a new workplace-based assessment method

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Helle Ibsen, University of Southern Denmark, Haderslev, Denmark
Niels Kristian Kjaer, University of Southern Denmark, Sonderborg, Denmark

Background: Being a well-functioning doctor requires the ability to reflect on one’s own practice as well as on complex issues, but so far we lack methods to assess reflection in postgraduate medical training. A new method to assess reflective ability has recently been introduced in the Danish GP training programme.

Summary of work: In this present study we used a 5-point scale derived from the SOLO taxonomy to assess the level of reflection in structured conversations from recorded assessments. Previously the new method has been assessed regarding feasibility and face validity among 857 trainers and trainees in total.

Summary of results: Eight recorded assessment conversations were scored by two researchers and the results were combined to a final score. The average score was 4.7 on the 5 point scale. All conversations included reflective elements.

Discussion: This new feasible assessment method consists of a preparation phase in which the trainee produces a mind map or similar written product. This is the basis of the following structured conversation with the trainer aiming to assess the trainee’s ability to reflect on complex issues and identify new learning goals.

Conclusion: The method is designed to assess trainee doctors’ ability to reflect on complex issues. The method can generate a conversation between the trainer and the trainee, which includes reflective elements. More studies are needed to further investigate the method’s potential for assessing reflective ability and improve learning for doctors.

Take-home message: This new method provides a way to assess trainee doctor’s ability to reflect on complex issues in a workplace-based context.
#7O1 (137) Challenges to Achieving Equivalence in the Early Years OSCE

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Shajahan Yasin, Monash University Malaysia, Petaling Jaya, Malaysia

**Background:** Monash University’s Bachelor of Medicine Bachelor of Surgery programme is conducted at three different geographical sites - Clayton and Churchill in Australia, and Sunway in Malaysia. Route of entry and duration of the programme differ - undergraduate entry (Clayton and Sunway; 5 years) and graduate entry (Churchill; 4 years).

**Summary of work:** In 2014, the medical faculty started to work towards an equivalent Summative Objective Structured Clinical Examination (OSCE) for early year students at all three sites; called the Year 2A OSCE. The journey to achieving equivalence took three years to allow identical exams to be conducted concurrently in 2017.

**Summary of results:** From 2014 - 2016, annual collaborative workshops and video-conferencing sessions were held amongst the OSCE coordinators. ‘Pilot’ OSCEs were conducted and reviewed. Accurate planning was important since the year 2A OSCE involves about 550 students; 90 examiners and 70 simulated patients with a 3-hour time difference between Australia and Malaysia.

**Discussion:** Challenges were myriad, and led to some difficulties agreeing on scenarios and scoresheets for examination. Additional challenges included differences in layout of exam venues, procurement of equipment and equipment set up; recruitment and training of simulated patients and training of examiners.

**Conclusion:** The process to equivalence in the year 2A OSCEs conducted at multi-sites with different entry requirements and settings is challenging. It requires mutual understanding on the constructive alignment between learning outcomes and assessment; in addition to addressing local issues.

**Take-home message:** The process to implementation of an equivalent early year OSCE at multi-sites for different medical programmes of variable duration is complex but surmountable.

Key words: equivalence in OSCEs; multi-site; graduate entry; undergraduate (direct) entry; MBBS programme

#7O2 (534) Is it worth it? Experiences of delivering formative Objective Structured Clinical Examinations (OSCE) in the early years of medical education

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**Background:** Formative OSCEs give novice students confidence and structure for preparing for summative OSCEs but have little association with pass rates or performance. We set out to explore further the value of the formative OSCE and whether it impacts on summative OSCE performance, hence justifying a resource-heavy assessment.

**Summary of work:** A bespoke questionnaire combining open and closed questions was distributed to students before and after formative and summative OSCEs to assess perceptions of the value of the experience. An initial quantitative analysis of student cohort performance data (N= 510) on formative and summative OSCEs over a 2-year period was conducted.

**Summary of results:** Students reported the formative OSCE was effective at reducing anxiety, relieving uncertainty and guiding preparation for the summative OSCE. No significant difference was found in overall performance although students that failed >3/5 stations at the formative were more likely to fail >5/10 at the summative (6.07% and 14.3% (p= 0.001)).

**Discussion:** Our analysis found little relationship between overall performances except for those failing over 60% of stations at the formative. The formative could therefore be useful in identifying students who require additional support. Students continue to report valuing the formative as an educational experience. Further results will be presented and discussed.

**Conclusion:** Although formative OSCE performance does not correlate highly with summative performance, it does help identify students who potentially require additional support. Formative OSCEs are well valued by students and their educational benefit may lie in students having a better understanding of the structure and format ahead of the summative OSCE.

**Take-home message:** The purpose of a formative OSCE should be to provide students an opportunity to experience the structure of the exam, and to reduce uncertainty and anxiety ahead of a high-stakes summative OSCE. This study supports its inclusion within the early years of medical education.
**#7O3 (3261)**
How can OSCEs help build general medical competencies in an undergraduate Ophthalmology-based curriculum?

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Daniel de Oliveira, Federal University of Rio Grande do Norte, Natal, Brazil  
Larissa da Costa, Federal University of Rio Grande do Norte, Natal, Brazil  
Eduardo de Faria, Federal University of Rio Grande do Norte, Natal, Brazil  
Rosiane Diniz, Federal University of Rio Grande do Norte, Natal, Brazil  
José Diniz Junior, Federal University of Rio Grande do Norte, Natal, Brazil

**Background:** Ophthalmology is regarded by most undergraduate students as a specific discipline, with the boundaries between specialist and general skills often blurred. Using an objective structured clinical examination (OSCE) has generated interesting inputs on how to emphasize which skills are required for general practitioners in a curriculum flooded with medical specialties.

**Summary of work:** Two OSCEs were performed at the end of the undergraduate training in Ophthalmology during 2016, approaching 107 students, regarding themes such as fundoscopy and visual acuity examination. Students provided their feedback by answering a questionnaire with closed and open-ended questions. A thematic analysis identified key recurrent themes.

**Summary of results:** Many students acknowledged their satisfaction with the OSCE by stating that this evaluation brought situations which are "applicable to a general practitioner reality". However, they also emphasized the need for more training on basic ophthalmologic skills, which enabled to identify which competencies are not being properly addressed during undergraduate training.

**Discussion:** Through the analysis of quantitative and qualitative data, an inverse correlation between degree of satisfaction and level of difficulty in each station was identified, suggesting that students need to be better trained in skills which are considered challenging for them in order to increase their confidence in performing these skills.

**Conclusion:** This is a preliminary study about students’ viewpoints on how OSCEs impact undergraduate training within an Ophthalmology-based curriculum. Students recognised that this kind of evaluation method is not only summative, but has also a strong formative role, and called for more practical training on important skills for general practitioners.

**Take-home message:** Assessing clinical competencies through structured clinical examination methods, such as OSCEs, can provide educators with an interesting information on which skills are seen by students as core competencies for a general practitioner and to what extent these skills are being properly approached in undergraduate training.

**#7O4 (2780)**
Evaluation of the Collaborator Objective Structured Clinical Examination

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Jennifer O’Dea, Memorial University of Newfoundland, St. John’s, Canada  
Jim Farrell, Memorial University of Newfoundland, St. John’s, Canada  
Adam Reid, Memorial University of Newfoundland, St. John’s, Canada  
Bryan Curtis, Memorial University of Newfoundland, St. John’s, Canada

**Background:** Postgraduate medical education in Canada is structured around the CanMEDS Physician Competency Framework, which outlines seven competencies essential to the practice of medicine. This project involved the creation and evaluation of a Collaborator-OSCE at Memorial University of Newfoundland to assess Collaborator competency development in postgraduate medical education.

**Summary of work:** The COSCE involved 7 stations mapped to the CanMEDSs Collaborator competencies, including: Patient Discharge; Handover; Transfer of Care; Shared Decision-Making; Caregiver; Collaborative Care Plan; and Disclosure. PGY1 residents rotated in small groups through each station, with each resident expected to demonstrate collaborator competency development in at least one station.

**Summary of results:** Evaluation of the Collaborator-OSCE encompassed a mixed-methods design including a pre- and post-test of self-reported team skills development, faculty and peer assessments using a standardized Collaborator-OSCE performance rubric, a resident satisfaction survey, and an evaluation survey of simulated actors and faculty examiners.

**Discussion:** Resident performance was formatively assessed by a faculty member and other residents in the group. The majority of residents were satisfied with the Collaborator-OSCE and actively engaged in providing peer feedback.

**Conclusion:** The Collaborator-OSCE provide to be a useful addition to the PGY1 resident half-day. The development and evaluation of the Collaborator-OSCE will provide insight into the effectiveness of such an approach for the formative assessment of non-Medical Expert roles and can inform similar initiatives in postgraduate medical education.

**Take-home message:** Non-Medical Expert or "intuitive" competencies, like Collaboration, are essential for medical practice. A CanMEDS Collaborator-OSCE can assist medical educators with formatively assessing residents and providing constructive feedback for developing inter-professional collaboration skills.
**Background:** Can evaluation of the medical competence of students be done with direct observation and assessment of their clinical performance in a competency-based setting? Can it be enhanced over time through immediate feedback from the standardized observations? Faculty members were trained as assessors employing the adapted mini-CEX with a 5-point scale.

**Summary of work:** We adapted the mini-CEX in the direct observation of third year students to assess medical competence during 8 months of mandatory clerkship rotations. There were 57 men and 51 women with a mean age of 26.3 years; 27 assessors for a total of 837 assessments (mean = 7.75/student; range: 1-13).

**Summary of results:** The mean time for assessment was 25.24 min, feedback=19.22 min. The mean communication score at the initial assessment was 3.02 peaking at 3.50 at the time of the final measurement (240 days); for professionalism the scores were 3.27 and 3.58, respectively; clinical reasoning 2.62 and 3.21; patient management 2.60 and 3.21.

**Discussion:** Communication, professionalism, clinical reasoning and medical competence scores increased as a power function as theoretically expected. Entrustability for professionalism on average was achieved by 20 days, 50 for communication, 112 for clinical reasoning and 150 for patient management. Student comments about the assessment and feedback were generally positive and constructive.

**Conclusion:** Increase in overall medical competence (2.77 to 3.29) resulted in a large effect size (Cohen’s d = 0.96). Direct observation with structured, immediate feedback by faculty assessors rapidly improves student skills to entrustability in communication, professionalism, clinical reasoning and patient management - evidence of effectiveness of direct observation and assessment

**Take-home message:** Standardized direct observation with immediate feedback in a clinical environment results in students improvement on clinical skills, patient management, communications, and professionalism. The assessment system is feasible; works effectively, has evidence of reliability and validity, and has had at least a short-term impact on student learning, professionalism and clinical skills.

**Discussion:** Communication, professionalism, clinical reasoning and medical competence scores increased as a power function as theoretically expected. Entrustability for professionalism on average was achieved by 20 days, 50 for communication, 112 for clinical reasoning and 150 for patient management. Student comments about the assessment and feedback were generally positive and constructive.

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Learning by Osmosis: Leveraging crowdsourcing and student created content in a spaced-repetition formative assessment platform

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Background: Students can search anything and information is everywhere. How can health professional schools evolve to make use of these technologies? One way is to “crowdsource” for content, gathering small amounts of content from a large number of individuals (even across countries) to create something greater than possible through traditional methods.

Summary of work: Osmosis provides its own vast content library, but also enables “peer-to-peer diffusion” of medical knowledge. Students are encouraged to teach each other through contributing flashcards, questions, and other learning objects under a Creative Commons license, facilitating ease of access. Innovative quality control techniques have been developed to validate student contributions.

Summary of results: In 2016, the Osmosis learning platform reached more than 75,000 medical & allied health students in 217 countries. Upon writing this abstract, 3,313 students had created 1,407,000 questions and flashcards containing >225,000 images and videos. These items have been answered more than 20 million times.

Discussion: Creating high quality medical education content through student-crowdsourcing is feasible. This content may be freely accessed by learners in low-resourced global settings, such as Somalia, Namibia, and Syria, thus potentially reducing the cost of medical & health education.

Conclusion: Crowdsourcing in medical education could lead to an optimized content collection through continuous curriculum peer-review and revision by students and faculty alike. Future efforts include easier sharing of resources, contextualizing crowdsourced content, ensuring individuals who make the greatest contributions receive proper recognition, and evaluating impact this content has on learning.

Take-home message: Medical and health professional schools should consider adding crowd-sourcing and peer-to-peer education to their pedagogies. This will contribute to both individual student learning as well as global medical education. Crowdsourcing can convert today’s digital native medical & health professional students into future professional contributors to health professional education.
How do virtual teams collaborate in online learning tasks without a tutor?

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Annemarie Spruijt, Maastricht University, Netherlands
Amber Dailey-Hebert, Maastricht University, Netherlands
Herco Fonteijn, Maastricht University, Netherlands

**Background:** Problem-Based Learning is an effective, widely used learning format, but in the traditional format it depends heavily on face-to-face meetings and tutor guidance. In online or blended, often post-academic programs, neither of those might be feasible; maybe not even desirable for adult learners looking for freedom to self-direct their learning.

**Summary of work:** We observed 21 international, virtual teams working on four PBL tasks in the context of a MOOC. The teams had an online shared workspace but freedom in how to collaborate. Observers used weekly observation sheets, and collected team products. Five teams were selected for detailed analysis; their interactions were coded.

**Summary of results:** Five themes were identified: team formation and drop-out, team processes (organization and leadership), approach to task work (task division and interaction), and external factors (interactions with others and MOOC design). Explicit discussion of roles and tasks, a positive atmosphere, and acceptance of unequal contributions seemed to be positive factors.

**Discussion:** It is clear that some teams do succeed in learning in virtual, fully online environments even if the team members have never met before. The group products support this conclusion. Explicit conversations about the group process are helpful, but relatively rare. Group products are, however, often collections of individual contributions.

**Conclusion:** A team charter may help to stimulate teams to consciously decide and follow-up on how they want to collaborate. For participants with limited knowledge of technology examples of how to use (combinations of tools) may help. Options to stimulate interaction and elaboration are explicit guidelines or training, or worked examples.

**Take-home message:** It is possible for online, virtual teams to collaborate on learning tasks without a tutor, but this requires additional skills and support, e.g. to stimulate explicit conversations about how to collaborate, how to divide roles and tasks, and how to deal with diversity in the team.

Massive open online courses: are social learners more likely to complete the course?

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Emily Player

**Background:** The FutureLearn ‘Clinical Supervision with Confidence’ massive open online course (MOOC) was launched in March 2015. Course participants report having enjoyed interactions, sharing of narratives, etc often as much as the course materials themselves. We explored the association between social learning and course completion among MOOC participants over 2015-16.

**Summary of work:** Data were obtained from FutureLearn learner surveys, course measures and learner perceptions of course content, delivery and experiences, from discussion boards. ‘Social learners’ are those who post ≥ one comment on any course step and ‘fully participating learners’ are those who completed ≥ 50% of course steps and attempted assessments.

**Summary of results:** Of 11,929 registrants, 5,426 started the course. Of these, 35.4% were social learners and 34.1% completed the course. Over the seven course runs, completion rates mirrored social learner rates. Learners suggested that the high quality interprofessional discussions made the learning environment more engaging, and a good source of relevant resources.

**Discussion:** The notion of social learning potentially leading to high MOOC completion rates is supported by educational theories proposed by Bandura (1977), Lave&Wenger (1990) and Vygotsky (1978). These ‘communities of practice’ share a common interest in developing/extending their supervision skills and learning from more experienced supervisors when faced with challenging situations.

**Conclusion:** Social learning appears to be associated with completion rates (aggregated data) in each of the seven runs of our MOOC. Further analysis is needed to test this hypothesis at the individual level, and to assess how learners use the new knowledge and skills in their workplace settings.

**Take-home message:** Social learning added a new dimension, and provided the interaction possible within face to face courses, whilst being delivered in an online environment, potentially leading to higher course completion rates. Course participants enjoyed the inter-professional discussions, sharing of narratives, etc often as much as the course materials themselves.
Learning to lead group work in an online course

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Background: Creating learning encounters initiating practice of group leadership in online learning is a challenge. Without real experience and application of group leadership it is hard for the learner to capture the meaning. In the online Master’s programme in medical education at Karolinska Institutet an approach to practice leadership was implemented.

Summary of work: The participants practiced in turn group leadership and meta-tracking. The meta-tracker participated, observed, initiated reflection and reported about learning processes. The content of course was leadership and educational development and framework and assignments were planned. The facilitators acted as advisers to the group leaders and provided feedback on meta-tracker reports.

Summary of results: The participants took on the challenge with great responsibility. They learned from being group leader, meta-tracker and led and observed by peers. The meta-trackers’ reports provided a good basis for reflections on the group work and also to apply the content they were studying about leadership and collaborative learning.

Discussion: Some group leaders acted similar to the leadership they had experienced previously, while others were innovative and tried new ways of communicating. The participants had worked online and practiced self-directed learning for about one year before this course. This is probably one reason why it worked out so well.

Conclusion: It is possible and a good learning opportunity for participants to practice group leadership in online courses. A meta-tracker role is crucial to succeed but the combination of studying group leadership and at the same time introducing reflection on a meta-level requires continuous attention from facilitators.

Take-home message: Peer leading in groups online seems to create solidarity among the participants. This can enhance the engagement and presence online and the will to complete assignments on time. It is important to consider what kind of preparation the participants need to take on this challenge to practice leadership.

A survey of short and modular courses for an e-learning program

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Background: There is a growing tendency towards offering e-learning programs in medical education. This is due to the substantial potential of e-learning for covering a large number of self-directed learners intending to track the changes in their field of study. Respectively, online short course and modular courses are very beneficial.

Summary of work: The purpose of this mixed-method study, conducted in Iran University of Medical Sciences, was to review short courses and modular courses for developing a model which could be used for e-learning programs in Virtual University. To this end, an expert panel’s idea and Google forms were used.

Summary of results: From a list of 500 top universities, offering online courses, 100 universities and 25 centers were selected. The team of the search of the study provided us with details on features of online modular and short courses. The data analyzed by descriptive statistics showed the features necessary for model development.

Discussion: The results were thematically analyzed, classified and presented for an expert panel that came to a consensus for the model. The list of courses was sent by Google Forms to medical education faculties deciding on the priority of offering the courses. On the basis of the results, a model was developed.

Conclusion: Short-term and modular e-learning programs in medical education provides an opportunity for learners to direct their learning towards life-long learning and track the changes. The model developed on the basis of the present survey should be taken into consideration when offering modular and short courses in e-learning programs.

Take-home message: On the basis of the model provided by the expert panel, and the findings obtained by Google Form, a guideline was developed for policy makers of Virtual University of Medical Sciences. The findings of the review revealed a list of online short and modular courses which are highly demanded worldwide.
#7Q Short Communications: Community Oriented Medical Education

Location: Room 207

#7Q1 (1835)
The Social Responsibility of Medicine – principles and emerging directions for the “Change A World” program: innovation, leadership through community engagement in Israel

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Alon Tibika
Atalia Tuval

Background: Service Learning provides ample opportunities for active engagement with communities, while identifying needs, engaging in prioritization, enhancing skills, and increasing civic engagement. The “Change A World” program was developed both as a university course and as an NGO, designed to address health disparities while stimulating civic responsibility.

Summary of work: Thirty first-year medical students were selected through an application and interview process and divided into four groups, each assigned with student mentors (advanced years in Medicine), faculty and community mentors. Groups investigated four areas: Sexual health, Oral health, Mental health and Refugee health and developed programs addressing community-identified priorities.

Summary of results: Four projects were developed: “Window to the Soul”: designed to reduce mental health stigma; “Or-health”: oral health promotion and treatment including diversion paths for youth engaged in prostitution; “Safe and smart”: sexual health education with at-risk youth; “Little Me”: refugee children’s health focused on eradication of Tinea Capitis.

Discussion: Students were able to explore themselves first and apply entrepreneurship, public health and community engagement principles in order to “change self and the world” and develop long-term projects. The partnerships provided students ample opportunities to meet real-world challenges, consider stigmas, and work together with community members and leaders.

Conclusion: Service Learning pedagogy and action learning can be implemented in medical schools assisting in fostering goals of medical education: developing active, informed and skilled graduates who considers, responds and engages effectively with communities to address civic challenges. The course elicited commitment translated into time and effort beyond expectations.

Take-home message: Creating spaces for students to engage creatively is exciting! Centering communities and forming interprofessional teams can help build the foundations for a safe and more collaborative healthcare practice. The presentation will elaborate on the process, principles, and new aspects of the four programs.

#7Q2 (2819)
Transformative teaching in the community to break negative stereotypes of first year medical students at the FMUL

Madalena Patricio, Institute of Introduction to Medicine and Department of Medical Education, Faculty of Medicine of the University of Lisbon, Lisbon, Portugal
Miguel Barbosa, Institute of Introduction to Medicine Faculty of Medicine of the University of Lisbon, Lisbon, Portugal
António Pais de Lacerda, Institute of Introduction to Medicine Faculty of Medicine of the University of Lisbon, Lisbon, Portugal
António Barbosa, Institute of Introduction to Medicine Faculty of Medicine of the University of Lisbon, Lisbon, Portugal

Background: Students’ stereotypes are frequently wrong namely when contacting with handicapped/vulnerable people. Each stereotype has associations/scripts which influence what people say/decide when interacting with others. To change subconscious negative stereotypes (conversion model) small groups (4-6/students) were sent for disconfirming evidence to community institutions considered excellent in the way they support vulnerability.

Summary of work: Back to FMUL, at the ‘Seminar for Sharing Experiences’, students share the ‘main message they got as future doctors’ after visiting institutions supporting handicapped people, mothers with AIDS, prisons, refugee centres, etc. Content analysis was used to classify the messages from 62 groups and near 350 final students’ written evaluations.

Summary of results: Messages focused on accept diversity/difference/prejudices (17), social support (16), integration/inclusion/prejudices (17), vulnerability (9), living again (9). The visits allowed students to change attitudes after discovering a new ignored reality right next door. Average of last 5 year impact on personal/professional development and importance of humanized medicine was 4.4/5 and 4.7/5.

Discussion: The educational strategy used to break students’ negative stereotypes appears to be effective. Although we have no objective results (only students’ perceptions which will be exemplified at AMEE Conference through some videos presented at the Seminar) we expect the visits will impact on current and future students’ attitudes and behaviour.

Conclusion: Changing students’ negative stereotypes is of crucial importance as they subtly biases their decisions, attitudes and ultimately actions. Results show the stereotype conversion can be achieved (at least at conceptual level) through students’ contact with vulnerable reality supported by excellent community institutions. More opportunities should be offered throughout the course.

Take-home message: Faculties should invest in Transformative Education as proposed in 2010 Lancet Report but for this they must invest in converting students negative into positive stereotypes. This is of fundamental importance if schools want to develop students'
leadership attributes so that they may act in future as enlightened society change agents.

#7Q3 (1760)
Community Health Center-Based Outreach Clinic: gained competences and learning experience

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Terhi Karaharju-Suvanto, University of Helsinki
Battsteg Tsevenjaav, City of Helsinki

Background: Outreach enables teaching dental clinics to provide students with a sufficient range of procedures and provide the opportunity to work in real-life situations. This study aims to summarize the experiences of the students who participated in the Outreach Clinic (OC) of the Helsinki University Dental Clinic, with a dedicated teacher.

Summary of work: This work is based on procedures carried out by the third to fifth year dental students, extracted from the patient record system. The students’ self-perceived benefits and free-text comments, of the OC were collected as part of the questionnaire survey at the end of each academic year.

Summary of results: The OC especially complemented learning pedodontic procedures, which are sparsely available at the University setting. The majority of the students were very motivated to participate in the training, and reported that the OC was a supportive environment for learning to gain and broaden clinical experience.

Discussion: These positive experiences are partly explained by the work in real-life context, with a constant assistance by a chairside nurse. This also means that this learning model is more resource intensive than that at the university setting. Thus the learning objectives have to be carefully selected and efficiently carried out.

Conclusion: OC is beneficial for dental students to gain satisfactory clinical experience and self-efficacy beliefs, and provides procedures that are hard to get otherwise.

Take-home message: OC offers meaningful clinical experiences to students but cannot substitute for university clinical training.

#7Q4 (1323)
How to engage medical students in interprofessional care by home-care visits

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Helena Salminen, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Huddinge, Sweden

Background: Teamwork and multiprofessional collaboration are essential in home-care. It is a well-suited environment for medical students to increase their knowledge and skills in those areas. We developed a new activity: students performing a home-care visit and interviewing the patient, care givers from the community service and other health professions involved.

Summary of work: Students’ task: 1. To explore how the patient's needs were taken care of and what professions contributed to it. 2. Write a reflection about the role of their own and other professions involved. Students answered a survey about how the activity influenced their understanding of different professions' roles in home-care.

Summary of results: From September 2016 the activity was compulsory on the fifth term of the medical programme; 138 students performed the activity, 131 handed in reflections and 87 answered the survey. Students reported that the activity developed their understanding of other professions' roles and provided useful knowledge for their future professional work.

Discussion: The majority of students performed the home-care visit together with a district nurse. This made them switch perspective from their own profession. It seemed to be important in order to increase their understanding of teamwork in home-care. Students seldom meet a patient in their home environment, which they appreciated here.

Conclusion: Home-care visits in primary care performed together with different professions can be an effective teaching and learning activity for medical students in order to deepen their knowledge about other professions' roles in home-care and learn about collaboration and teamwork in a real clinical setting.

Take-home message: The opportunities for medical students to learn about teamwork and collaboration between different professions in home-care are rare. An activity with home-care visits together with other professions is appreciated by students and promotes their learning about different professions’ roles. Such an activity can be implemented as part of the curriculum.
#7Q5 (2507)
ETGAR – Training students to tackle health inequalities.
Evaluation of a novel student-delivered service that bridges transition between care settings

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Sivan Spitzer-shohat, Faculty of Medicine in the Galil, Bar Ilan University, Zef, Israel
Michal Schuster, Department of Translation and Interpreting Studies, Bar Ilan University, Amat-Gan, Israel
Mary Rudolf, Faculty of Medicine in the Galil, Bar Ilan University, Zef, Israel

Background: Effective ways to train medical students to address health disparities are yet to be found. Most attempts are conducted during the pre-clinical years, community or primary care rotations. The ETGAR course aims to increase competence in dealing with health inequalities through experience-based learning in hospital and home settings.

Summary of work: The student-delivered service includes recruiting patients in hospital, a post-discharge home visit, checking treatment, a simplified personalized discharge letter and liaison with community services. A structured report-form guides students to examine social determinants of health (SDH). Peer and tutor feedback complete each learning session. Post-visit phone interviews explored patients’ views.

Summary of results: Forty students served 158 patients, most >60 years with chronic conditions. Evaluation indicated significantly increased student confidence in handling encounters, and appreciation by patients of visits. Qualitative analysis of reports revealed good identification of SDH with themes regarding patients’ circumstances, the hospital-community gap and ability/willingness to learn from patients.

Discussion: Meeting in both settings, home and hospital, exposed students to patients’ cultural and social world ensuring patients are not seen as just "someone with a patient gown, ID and a disease". Home visits raised awareness of the role/importance of community services. Preparing simplified letters and feedback meetings encouraged clinical reasoning.

Conclusion: ETGAR is a feasible student-delivered service, with potential to contribute to encouraging a holistic perception of the patient, understanding of social determinants in health and patient centeredness, and gaining skills to assist disadvantaged patients.

Take-home message: An experience-based educational program during the clinical years is a feasible and powerful tool to teach social health determinants, cultural competence and community-based medicine.

#7Q6 (3215)
Learning psychiatry in primary care settings, from the perspective of fourth year medical students

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Mary Clarke, RCSI, Dublin, Ireland
Ching Ee Loo, Penang Medical College, Malaysia
Arokiamary Bharathy, Penang Medical College, Malaysia
Elaine Byrne, RCSI, Dublin
Susan Smith, RCSI, Dublin

Background: The potential of primary care as a locus for undergraduate learning in psychiatry has been recognised, especially in recognising common mental disorders, but rarely evaluated. Our study aimed to determine the educational value of clinical psychiatry placements in primary care settings, from the perspective of fourth year medical students.

Summary of work: 113 students, in small groups, accompanying an academic psychiatrist to two primary care centres, performed supervised history-taking and diagnostic assessments. Learning experiences were evaluated through an anonymous questionnaire and four focus groups, each with 8-10 participants. Quantitative and qualitative analysis used Stata (version 13) and focus group transcripts were thematically analysed.

Summary of results: Of 93 (82%) questionnaire respondents, 79 (85%) felt the primary care experience exceeded their expectations. Focus group thematic analysis revealed advantages over other learning settings arising from contact with patients with undiagnosed common mental disorders with medical comorbidities. Students reported improved confidence in diagnosing mental disorders in primary care patients.

Discussion: Academic psychiatry has been criticised for its overreliance on secondary and tertiary care settings in undergraduate clinical teaching. Our findings suggest that undergraduate supervised clinical placements in primary care are feasible and provide added educational value, from the student perspective, in comparison to those offered in traditional psychiatric care settings.

Conclusion: Active participation in a primary care psychiatry consultation/liaison service provided added value, as perceived by medical undergraduates, in recognising common mental disorders mental disorders that present as co-morbid conditions in primary care and general medical settings and are often undiagnosed or masked by physical symptoms.

Take-home message: As only approximately 4% of medical graduates pursue psychiatry as a career, undergraduate learning opportunities should prioritise the recognition and management of common mental disorders. Our findings suggest that supervised learning opportunities, on-site, in primary care settings should be provided as a routine component of the undergraduate psychiatry curriculum.
#7Q7 (913)
Nursing students’ perceptions of community care and other areas of nursing practice – A review of the literature

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Corine HM Latour, Amsterdam University of Applied Sciences, Amsterdam, Netherlands
Rien de Vos, Centre of Evidence Based Education, Academic Medical Centre, Amsterdam, Netherlands
Paul A Kirschner, Open University of Netherlands, Heerlen, Netherlands
Wilma JM Scholte op Reimer, Faculty of Cardiology, Academic Medical Centre, Amsterdam, Netherlands

**Background:** Healthcare is changing from care delivery in institutions to community care. Despite increasing labour market shortages of well-educated community nurses, few bachelor nursing students orientate on this area for a future profession, as they do not see this area as an attractive line of work.

**Summary of work:** We systematically reviewed recent literature on student nurses’ perceptions of different healthcare areas between January and August 2014, using the databases PubMED®, CINAHL®, ERIC® and PsychInfo®. A synthesis of 39 included articles was performed.

**Summary of results:** Students prefer hospitals as workplace, regarding mental health and elderly care as less appealing. Perceptions of community care vary widely, the most common being that it is unattractive because of its chronic care profile. However, another view is that it offers challenging, varied and meaningful work.

**Discussion:** Many nursing students begin their education with a layperson’s conception of the profession, shaped by media representations such as Grey’s anatomy. Gaining experience through education and during work placements reduces stereotyping by allowing nursing students to develop a richer and more nuanced view of the variety of work settings.

**Conclusion:** Students are not fully aware of the challenges involved in a community nursing career. They have a limited and often mistaken view of community care, especially underestimating the field’s complexity because it is less visible than in the environment of acute care in the hospital.

**Take-home message:** Understanding students’ perceptions of this field is key to positively influencing their willingness to consider community nursing as a future profession. Providing them with specific curricular content and employing a structured approach to preparation for work placement might help build a positive perception of community care.
**#7R  Round Table: Surgery**

**Location:** Room 210

**#7R1 (3398)**

**Establishing a simple scale for defining a good surgical teacher**

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**Background:** Despite receiving no formal training in teaching, surgeons are expected to teach. Some surgeons are more effective teachers than others. Given considerable change in modern hospitals, the aim of this research was to distil the major factors making a good surgical teacher and to devise a simple scale for measurement.

**Summary of work:** An 8-item instrument on a 4-point descriptive scale was constructed reflecting perceived essential factors for effective teaching. The survey was conducted in a state-based training program with each trainee rating multiple surgeons over at least 10 weeks. A factor analysis was undertaken, followed by item-response theory using the Rasch model.

**Summary of results:** There was a 93% response rate to the survey. Factor analysis showed two factors (6 items and 2 items). The Rasch rating scale model showed that the 6 items in Factor 1 formed a robust unidimensional scale. Further 3-way analysis was undertaken to consider items X trainees X surgeons.

**Discussion:** Face validity had been established previously. Use of the Rasch model demonstrates that the 6 items identified in the factor analysis form a unified scale. The other two items provide useful additional information. The analysis produced outcomes which allowed for greater understanding of the items as well as participants.

**Conclusion:** A simple scale has been developed to measure surgeons’ teaching effectiveness. The analysis provided information on trainees’ approaches to using the scale and identified suitable minor adjustments to the scale. The long-term objective is to provide feedback to surgeons and to facilitate faculty development.

**Take-home message:** In the modern operating room there are many threats to the important task of teaching surgery. Opportunities to learn must be optimised. This scale provides a quick and effective method for identifying the existence of factors which make a good surgical teacher, leading to the facilitation of learning.

**#7R2 (1713)**

**Improving the surgical clerkship environment - Feeding back to the teachers**

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Mataroria Lyndon, The University of Auckland, Auckland, New Zealand  
Tzu-Chieh Wendy Yu, The University of Auckland, Auckland, New Zealand  
Andrew Hill, The University of Auckland, Auckland, New Zealand

**Background:** During clinical training medical students are attached to clinical teams within teaching hospitals and immersed in their clinical environment. This clinical learning environment (CLE) is highly variable and unpredictable. In surgery, this is particularly important given the time constraints, heavy workload and large clinical teams that students are exposed to.

**Summary of work:** Over the course of 12 months, 4th year medical students at the University of Auckland were surveyed during their General Surgery clerkship. The survey used was adapted from a previously validated learning environment questionnaire. After obtaining 6 months of data, a feedback document was prepared and returned to surgical consultants.

**Summary of results:** Surgical consultants at one teaching hospital were provided with feedback while other clinical sites were used as controls. The survey measured two overarching dimensions – experiential learning and social participation. While providing feedback did improve social participation scores, there did not seem to be a significant improvement in experiential learning.

**Discussion:** Providing feedback to surgeons can improve medical student perceptions of their CLE. There are also other team members – surgical trainees, junior doctors – that are involved in crafting the CLE. It is also difficult to know whether surgeons constructively used the feedback to improve the CLE for future students.

**Conclusion:** Feedback derived from learning environment questionnaires can help improve medical student perceptions of their CLE. Feedback in this format provides a novel method for students to feedback to their surgical teachers – a chance that students are infrequently offered. Such feedback could help improve teacher performance and enhance student learning.

**Take-home message:** Providing feedback and information about how medical students perceive their learning environment could help surgeons craft improved clerkship experiences.
Surgical teaching: integrating clinical and surgical learning through operative anatomy

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Alon Barash, Department of Anatomy, Bar Ilan University, Safed, Israel
Evgeny Solomonov, Department of Surgery, Ziv Medical Center, Safed, Israel

Background: Advances in surgical technology are changing the clinical surgical environment, the environment in the operating theatre and the way in which we educate medical students. Teaching has to keep pace with advances in surgical technology, such as advanced laparoscopy and, where possible, use this technology to enhance surgical education.

Summary of work: With patient consent, videos of laparoscopic and open surgical procedures, and morbid anatomy dissection are being edited and formatted to emphasise important clinical and surgical anatomy of, for example, the inguinal canal. These videos are routinely used for teaching and to prepare students for the operating theatre.

Summary of results: Previously, operative videos have served as a substitute for students uncomfortable in the environment of the surgical theatre but, over the last 12 months, these videos have been requested by all students in order to revise surgical anatomy and prepare for procedures they may expect to see in theatre.

Discussion: Digital software to edit these videos and really turn them into learning tools suitable for both preclinical and clinical learning has improved. The videos provide important clinical correlations and emphasise the clinical relevance of structures and their anatomical relations. Students are increasingly involved in the production of these teaching tools.

Conclusion: The use of surgical technology to enhance surgical and anatomy teaching is one of many objectives we wish to pursue as we seek to make surgery more accessible to preclinical and clinical students. We plan to integrate this teaching into simulation and practice for procedures such as chest drain insertion.

Take-home message: Surgery as a specialty needs to be made more acceptable to students uncomfortable in the operating theatre and struggling to integrate basic science into their clinical learning. Learning should also integrate clinical signs and symptoms and radiological and operative findings. We plan to develop these teaching videos further.

How to maximise learning in theatre? Bridging the gap between the students’ demands and the surgeons’ expectations

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Rohit Chitkara
Ameen Jubber
Saroj Das

Background: Theatre learning is a well-established practice for medical students (1). Many surgeons consider this method as a vital part of training (2). However, anecdotal evidence suggests that current students hold different views. This study explores perceptions and expectations of both stakeholders with the view of maximising learning in theatre.

Summary of work: Social constructionist view was adopted in the study design. Data was collected using semi-structured interviews with 12 medical students and 10 surgeons and analysed using a thematic analytical approach. Another quantitative questionnaire was given to all volunteer students to capture the wider statistics. Ethical approval was obtained. (MEEC1617-15)

Summary of results: Despite spending significant amount of time in theatre, the majority of students were dissatisfied with their theatre learning. Multiple reasons were identified and categorised into factors pertaining to students, surgeons and theatre culture. Surgeons believed multiple learning opportunities exist in theatre and despite practical challenges, many catered for students’ needs.

Discussion: For surgeons, the dichotomy between their desire to teach and the demands of service provision and some students’ behaviours result in poor teaching. Underpinning reasons behind students’ dissatisfaction ranges from a lack of awareness of opportunities, unfamiliarity of theatre culture, to a lack of recognition when learning has actually occurred.

Conclusion: Theatre learning is variable depending on the student and the surgeon. Both parties can play a huge role in maximising the learning gains. The overarching theme was the lack of awareness of students into many aspects of theatre learning and the surgeons’ lack of awareness into students’ experience and expectations.

Take-home message: Induction at the beginning, on theatre culture, and expectations of the surgeons; Signposting learning particularly on pre-op and post op; A stepwise guide as a booklet or an app; Developing specific learning outcomes by the medical school; Feedback to surgeons about students’ experiences; Creating a “student corner” in the theatre.
Trainees with an interest in PeriOperative Medicine (TriPOM) - a new cross-speciality educational collaboration in perioperative medicine

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Background: Perioperative medicine (POM) has developed both as a concept and as a medical speciality in direct response to the ever-changing needs of our increasingly complex surgical population. Fully-fledged models of POM care are in their infancy in many UK hospitals meaning resources and training opportunities are not universally available.

Summary of work: To meet the growing demand, the Trainees with an interest in Perioperative Medicine (TriPOM) educational collaborative was established to give access to resources, support and opportunities required to meet training requirements. Although established by anaesthetists, the community now encompasses trainees from general surgery, elderly medicine, orthopaedics and intensive care.

Summary of results: The TriPOM collaborative is based around a philosophy of free open access medical education with the aim to develop a range of educational resources. Core content aligned with training curricula will be delivered across several platforms - centred on a free-to-access website but including Twitter, YouTube and email.

Discussion: Website content includes a monthly POM 'journal watch' and journal club summaries from hospitals UK-wide. A peer-reviewed monthly POM tutorial will feature prominently. Numbers of POM fellowships are growing and we aim to create a fellows network to share experiences of developing and delivering POM locally with available resources.

Conclusion: Creating this group has brought an enthusiastic focused group of trainees together. It is hoped that trainees involved in setting up this group will develop skills in collaboration, responsibility and teamwork, whilst benefiting clinically. We are creating a network of regional leads amongst trainees to co-ordinate local activities and meetings.

Take-home message: While future physical TriPOM meetings are currently being organised, the vast majority of our present interaction occurs over the internet, making participation free and easy to access. We want to promote a progressive and practical attitude to learning in POM - sharing the resources that we as trainees find helpful.
#7R7 (1493)
Teaching Surgery using High Definition CCTV system – beyond the class size limit

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Background: Small group teaching with ample clinical exposure is the core mode of education in many top-notch medical schools. However, with increasing number of medical undergraduate intake, the conventional way of surgical knowledge transfer in the operating theatre becomes inefficient due to a loss of teacher-student interaction.

Summary of work: Senior medical students attended a weekly 3-hour seminar observing elective surgical operations transmitted through a HD-CCTV system. Students presented the history, examination findings, investigations and perioperative management of the patient during the seminar. Interactive discussion and illustration of operative details were conducted by designated modulators without disturbance to operating surgeons.

Summary of results: Most students agreed that the teaching program had benefited them in acquisition of surgical knowledge with better understanding of disease pathology, surgical anatomy and relevant perioperative care. The overall satisfaction score exceeds 92%. Pre- and post-course MCQ tests also confirmed significant effectiveness in conveying critical surgical concepts to the students.

Discussion: There are several advantages in this new format of surgical teaching: 1) Minimized risk of contamination to the operating environment. 2) Reduced distraction to the operating surgeons. 3) Clearer operative picture to be observed by medical students. 4) Active participation and engagement of students in the process.

Conclusion: The use of latest audiovisual technology combining with enhanced teacher-student interaction improved the learning experience of medical students at senior class. The CCTV transmission with HD quality image display overcomes the problem of ever-increasing class size in our medical school, and homogenizes the clinical exposure of medical students.

Take-home message: This new teaching format should also be applicable to other procedure-based medical disciplines, such as therapeutic endoscopy and interventional radiology. They are of high educational value to medical students but also require intense concentration of the operating physicians. The modulated CCTV transmission allows teaching of these procedures being performed safely.
Background: There is a growing movement to increase diversity among health professions trainees given evidence that students from under-represented minority (URM) groups serve these populations in greater proportion than those from well-represented populations. Interventions designed to increase diversity within health professions schools have not been subjected to formal review or synthesis.

Summary of work: We aimed to determine features of interventions designed to promote URM students recruitment/admission to health professions education (HPEP). We prospectively registered a BEME systematic review protocol. Health databases/grey literature searches were completed and systematic methods applied. Included studies reported outcomes for diversity within HPEP.

Summary of results: Of 6,498 studies identified, 75(1%) studies met inclusion criteria. Interventions included: admissions (29%), enrichment (21%), outreach (15%), curricular components (4%) and mixed interventions (31%). Most were single center studies (76%), conducted in the USA (83%), in medicine (43%)/dentistry (25%) programs. Ethnicity/race (39%) was the diversity dimension most commonly considered.

Discussion: The majority of studies (80%) found positive effects on intended diversity outcomes (15% neutral, 5% negative). Heterogeneity of interventions, study design and outcomes precluded meta-analysis. Qualitative analysis identified key features of interventions: points systems and altered weightings for admissions; academic, application and exam preparation and workplace exposure for enrichment studies.

Conclusion: Most studies reported positive results suggesting any intervention type may increase diversity over status quo. Authors identified limited applicant pools as rate-limiting, suggesting efforts prior to admission processes are needed. There is a need to examine underlying cultural/external pressures that limit HPEPs’ acceptance of initiatives to increase diversity.

Take-home message: The following should be considered when designing/implementing/evaluating future interventions: expansion of the URM applicant pool prior to admissions processes; expansion of scope beyond race/ethnicity, medicine/dentistry programs, and studies conducted within the USA; wider stakeholder consideration of the culture of academic institutions around perceived risks of increasing diversity.

#7S2 (955)
Defining clinical reasoning: findings from a BEME scoping study

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Background: Clinical reasoning (CR) is foundational across the health professions (HP). Given its central importance, one would assume that consensus exists regarding its definition. Teaching and assessment of CR necessitates explicit consideration regarding what CR ‘is’. A BEME review set out to document definitions of clinical reasoning in HP.

Summary of work: A scoping study was conducted to identify conceptualizations and definitions of CR and associated terms across HP literature. Experts reviewed titles and abstracts of articles culled from seven databases searched using MeSH terms and keywords. Calibration and usability testing refined inclusion criteria and design of the extraction form.

Summary of results: Among 635 studies (77% coded) spanning 1968-2014, in 155 journals, across 12 HPs, 64% reported original research. Of the 169 (35%) articles that used the term CR, 4 included an explicit definition of CR. Terms used for CR reflected focus on: skills, outcomes, purposes, explanatory processes, and contextualized reasoning.

Discussion: A variety of terms were used – often interchangeably – to refer to or describe the phenomenon of CR. These terms appeared to cluster into different understandings and conceptualizations of clinical reasoning (e.g. as a skill, as a means to an outcome, etc.). Explicit definitions of CR were rarely provided.

Conclusion: Lack of clarity and precision in defining and describing CR likely leads to unclear communication amongst authors within the CR community, and difficulty operationalizing CR for teaching and assessment. Varying definitions and terminologies are common problems in the literature on CR, likely reflecting different conceptualizations of CR.

Take-home message: CR is a complex, multi-dimensional concept, informed by several conceptual frameworks,
theories and disciplines. We advise authors to make their conceptual frameworks and definitions of CR explicit in their work in order to increase efficiency and clarity of communication regarding CR.

**Conclusion:** More work is needed to determine whether a combination that effectively measures the whole reflective process, in the reported utility of the tools; only two tools self-reflection were identified, with considerable variation.

**Take-home message:** Optimal approach.

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**Background:** The ability to self-reflect and respond with insight is considered a core skill within the training programmes of many disciplines, including medicine, nursing, education, dentistry, the ministry, business and management. Identifying suitable assessment tools is important in order to quantify baseline levels of these skills and the impact of training.

**Summary of work:** A BEME Review was undertaken and involved searching nineteen electronic databases (1975-2015) to identify tools used across a range of disciplines to measure self-reflection. Two reviewers appraised the quality of evidence and the reported utility (reliability, validity, feasibility, cost effectiveness, acceptability and educational impact) of tools used.

**Summary of results:** 106 studies from 16 disciplines met the inclusion criteria. Five types of tool measured the ability to self-reflect: assessment of student reflections using rubrics, observation, thematic coding, global rating scores and self-report surveys. Two types of tool additionally measured insight.

**Discussion:** The literature suggests that different tools may be appropriate to assess different stages of the reflective cycle. Whilst the information required to fully evaluate the utility of the tools was not available in every study, it is clear that there is wide variation between tools.

**Conclusion:** The review did not identify an individual tool that effectively measures the whole reflective process. More work is needed to determine whether a combination of tools to measure the reflective ability of individuals, such as healthcare professionals, may therefore be an optimal approach.

**Take-home message:** Five types of tool used to measure self-reflection were identified, with considerable variation in the reported utility of the tools; only two tools specifically measured the ability to respond with insight. This review will support educators in selecting a tool appropriate to their assessment needs and resource constraints.

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**#754 Workplace Learning through Collaboration in Primary Healthcare: A BEME Realist Review of What Works, for Whom, and in What Circumstances**

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**Background:** Changes in healthcare practice toward more proactive clinical, organisational and interprofessional work require primary healthcare professionals to learn continuously from each other through collaboration. This systematic review uses realist methodology to consolidate knowledge on the characteristics of workplace learning (WPL) through collaboration by primary healthcare professionals.

**Summary of work:** Following scoping searches, five electronic databases were searched from 1990 to 2015. Reviewers worked in pairs for article selection. A set of statements was used as a coding tree for analysis.

Interpretation of the results was done in alternating pairs, discussed within the author group, and triangulated with stakeholders’ views.

**Summary of results:** 42/6930 publications, qualitative and quantitative focusing largely on WPL of general practitioners and nurses. No striking differences between different professionals, often unaware of the occurring learning. WPL happened prominently through informal patient case discussions and other professionals’ modelling. Professionals could both learn and facilitate others. Diverse outcomes endorsed contextualised knowledge.

**Discussion:** Primary care professionals’ WPL is multifaceted. Existing social constructivist and social cognitivist learning theories form a framework from which to interpret these findings.

**Conclusions:** Professionals should have access to protected time, to engage in reflection, learn new ways of interaction and develop new habits within clinical practice. Professionals can both learn and facilitate others’ learning. Acknowledgement of others’ expertise and awareness of others’ specific contexts, especially when hierarchy is involved, reduces barriers to learning.

**Take-home message:** Unplanned learning activities provide more opportunities for ‘just-in-time’ learning than planned sessions. Curricula should emphasize the importance of informally asking questions and requesting feedback. Knowing and valuing others’ expertise is essential, yet more difficult in interprofessional settings. Interprofessional modules, focusing on collaboration, should be included in undergraduate education.
#7S5
Assessing the behavioural and social science curricula components for undergraduate medical students: A BEME Systematic Review

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**Background:** Behavioural and social science (BSS) topics are crucial for modern medical practice. Assessment of BSS topics should be valid, reliable, generalisable, feasible and fair, with demonstrable educational impact, but evidence is that such assessments are used is lacking. There are no reviews of assessment that relate to BSS subjects.

**Summary of work:** We conducted a BEME systematic review of assessment of BSS topics in undergraduate medical education. Initial search terms were broad, to include papers which did not use assessment as their primary focus but did describe it. Assessment content was defined by the General Medical Council’s Outcomes for Graduates and CanMEDS.

**Summary of results:** 3337 potential papers were identified, reduced to 62 after initial triage. 7 met all inclusion criteria. The majority of excluded papers did not focus on assessment, or described assessment for course evaluation. Each paper described a different format of assessment so no generalisations can be made. Study quality varied widely.

**Discussion:** Spanning 50 years of medical education, and all main forms of assessment, the only consistent themes from the papers are the importance of BSS topics, and the need for assessment. Comparing assessments is difficult as performance data is not consistently provided, and content is not necessarily similar.

**Conclusion:** The published work on assessment of BSS is scant, and there is no definitive evidence that any format for assessment is validated or applicable in wider settings. There is an urgent need to create an assessment for BSS topics which meet both content and psychometric requirements of modern medical education.

**Take home message:** With increasing standardisation of assessment, including the introduction of national exit exams, assessment of topics like BSS pose a dilemma: use an unvalidated method of assessment, or be squeezed from summative assessment. The inevitable consequence is decreased curriculum time for these topics, despite the negative impact on the final graduate.

#7S6
Utility of selection methods for specialist medical training: A BEME (Best Evidence Medical Education) Systematic Review

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P Khanna
L Rigby
et al.

**Background:** While there is substantive literature focussing on selection into medical schools, there is a gap around selection into specialty training which is a high-stakes and resource-intensive process. This reviews synthesised the evidence concerning selection system design as well as the utility of individual selection tools in postgraduate training environments.

**Summary of work:** Using a systematic protocol (relevant databases, study criteria, coding sheet), five coding pairs extracted, analysed, and synthesised findings from 89 high quality articles in three key areas: underlying frameworks, principles and methods of selection; effectiveness of existing methods in terms of the utility index; predictors of success in subsequent performance.

**Summary of results:** Frameworks defined by locally-derived selection criteria, often prior academic performance, are giving way to competency-based selection in some areas. Multiple mini-interviews, situational judgement tests, and clinical problem solving tests have favourable psychometrics. Evidence on predictors of future performance was largely limited to academic criteria, with a shortage of long-term evaluations.

**Discussion:** Selection is a rapidly developing research area. Whilst much has been gained in understanding the utility of individual selection methods, some of which is equivocal, the underlying theoretical and conceptual frameworks require further investigation. There is also a need for consensus on methodology to allow comparison across multiple contexts.

**Conclusion:** Current selection frameworks, appear largely reductionist, privileging predictive validity of certain criteria, and misaligned with competency-based developments in the curriculum, including assessment. Given the complex nature of specialist training, this review highlights the need for consensus from a broad range of stakeholders around holistic, integrated, and equitable selection systems.

**Take-home message:** Locally-defined systems are heavily weighted on academic parameters, many with limited psychometric evidence. Competency-based approaches to selection are evolving though the evidence is contextualised. Multiple selection tools in such systems were found to have favourable evidence. Predictive validity mostly limited to academic criteria with methodological issues, and few long-term evaluations.
#7T Workshop: Young medical educators' workshop: Advancing your career in medical education (2577)
Location: Room 203b

Sören Huwendiek, Department of Assessment and Evaluation, Institute of Medical Education, Bern, Switzerland
Zubair Amin, Medical Education Unit, National University Hospital, Singapore
Charlotte Ringsted, Centre for Health Sciences Education, Aarhus University, Aarhus, Denmark
Stewart Mennin, Mennin Consulting and Associates Inc., Albuquerque, New Mexico, USA
Monica van de Ridder, College of Human Medicine Michigan State University, Grand Rapids, Michigan, USA

Background: The number of young medical educators is increasing. Advancement of careers in medical education are more constrained in comparison to careers in other areas like biomedical research and clinical care. The proposed workshop will explore successful frameworks and strategies for career advancement for young medical educators.

Who Should Attend: Young medical educators with interest in a career in medical education.

Structure of Workshop: After a brief introduction to principles of career advancement in medical education, the facilitators will give a short presentation in which it will be explained how they developed their career in medical education and will share tips on what is important to do. Participants will develop their own concepts and questions and discuss them with other participants and facilitators.

Intended Outcomes: At the end of the workshop participants will be able to: (1) identify practices and principles for career advancement in medical education; (2) apply these practices and principles to their own needs.
Level: Introductory/Intermediate

#7U Workshop: New Models of Clinical Teaching in an Era of CBME: Supervision, Observation & Coaching (3329)
Location: Room 204

Jason R Frank, Royal College of Physicians & Surgeons of Canada, Ottawa, Canada
Denyse Richardson, Royal College of Physicians & Surgeons of Canada, Ottawa, Canada
Anna Oswald, University of Alberta, Division of Rheumatology, Department of Medicine, Edmonton, Canada

Background: Competency-based health professions education (CBME) is an emerging approach to designing clinical training that is gaining worldwide acceptance. CBME generally involves defined outcome competencies, defined progression of learners, a programmatic approach to assessment and tailored teaching and learning. Clinical supervisors sometime struggle in traditional curricula to teach and assess trainees while still performing all their other duties. Now, clinical supervisors and preceptors will be asked to take on new observational tasks and display new teaching skills.

Who Should Attend: This session is open to all clinicians who have a teaching or supervisory role in the health professions, whether contemplating a CBME curriculum or already experienced in CBME. Health professions trainees with an interest in clinical teaching or CBME would be most welcome too.

Structure of Workshop: This session will be weighted active discussions and role playing in small groups. Didactic information about CBME and common clinical teaching tasks will be a springboard to discussion and applications of supervision, observation, and coaching in a CBME era.

Intended Outcomes: By the end of this session, participants will be able to: 1. Define CBME, competencies, stages, teaching, supervision, observation and coaching; 2. Describe a model of the traditional teaching tasks of the clinical supervisor; 3. Describe a model of clinical coaching in a CBME curriculum; 4. Describe how to begin using these new behaviours in a busy clinical setting.
Level: Intermediate
**#7V Workshop: Elucidating the Enigma of Assessment in Interprofessional Education: An Introduction to the Role of Structure, Function and Outcome (3279)**

Location: Room 205

*Brian S. Simmons, Department of Pediatrics, Faculty of Medicine, University of Toronto and Staff Neonatologist, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada*

*Susan J. Wagner, Department of Speech-Language Pathology, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada*

*Scott Reeves, Centre for Health and Social Care Research, Kingston University, London and St. George’s, University of London, London, UK*

**Background:** The interprofessional education (IPE) literature has expanded significantly to provide rich evaluation studies, however, efforts to produce rigorous assessment of learning continues to be a challenge. Most IPE assessment is focused on learner self-assessment that only provides a perception of what the learner thinks s/he may have learned. This reliance on weak forms of assessment undermines the quality and fails to engage key principles of assessment that should be part of any IPE learning activity.

**Who Should Attend:** Health profession educators interested in assessment, competencies and interprofessional education.

**Structure of Workshop:** The processes of designing and implementing an IPE assessment focusing on structure (individual), function (team) and outcome (task) are considered. This clinical competency continuum model uses milestones and entrusted professional activities in a performance framework.

Introduction (10)

Group Discussion (10) – IPE Assessment

Didactic (10) and Reflection - Discussion (25) – Assessment of IPE Learning (DVD)

Didactic (10) and Group Discussion (25) – Milestones and EPAs Application

Group Discussion (15) – Application Strategies to Own Contexts

**Intended Outcomes:** • Identify key issues related to assessing performance in IPE; • Describe a new Structure-Function-Outcome Model of IPE assessment; • Reflect on the application of milestones and entrusted professional activities (EPAs) to this model

**Level:** Introductory

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**#7W Workshop: Simulation Journal Club**

Location: Room 209

*Lars Konge and Debra Nestel, co-chairs of the AMEE Simulation Committee along with members of the committee*

Do you want a quick update on the most recent literature regarding the use of simulation in medical education? Please join us for the Simulation Journal Club where members of the AMEE Simulation Committee have identified the newest simulation literature and handpicked the most influential, innovative, provocative, and interesting papers. We will present these papers and where possible invite the authors to comment on their impact. The format of the Simulation Journal Club will be interactive – allowing time for questions and participant voting for the Premier Paper on Simulation in Medical Education 2017. This paper will win a £1000 award from the Copenhagen Academy for Medical Education and Simulation. This is an excellent opportunity to keep up to date with the increasing amount of research published on this very important topic in medical education.
**#7X Workshop: Use of Generalizability Theory in Designing and Analyzing Performance-Based Tests (3111)**  
*Location: Room 215*

David Swanson, ABMS, Chicago, IL, USA and University of Melbourne Medical School

**Background:** Performance-based testing methods (e.g., OSCEs, oral exams, workplace-based assessments) are commonly used in health professions education. Because these methods involve multiple sources of measurement error (e.g., examiner stringency/agreement, case/task difficulty, content specificity), classical reliability theory does not furnish the tools needed to investigate their measurement characteristics. Generalizability theory (g-theory) provides the necessary tools for estimation of reproducibility (reliability, precision) of scores and evaluating alternate approaches to test design.

**Who Should Attend:** The intended audience is health professions faculty involved in designing and implementing assessment procedures, particularly those involving performance-based testing methods. The workshop does not assume any familiarity with generalizability theory or classical test (true-score) theory. However, to get the most out of the workshop, participants should be comfortable with multi-factor analysis of variance.


**Intended Outcomes:** At the conclusion of this interactive, seminar-style workshop participants will be able to: 1. Identify advantages of g-theory over classical test theory. 2. View assessment situations from a g-theory perspective. 3. Describe statistical procedures/software for conducting generalizability analyses. 4. Interpret commonly used indices of reproducibility. 5. Decide whether they want to learn more about g-theory.

**Level:** Intermediate

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**#7Y Workshop: The Role of Virtual Patients in the Development and Assessment of Entrustable Professional Activities Leading to Competencies in Undergraduate Medical Education (368)**  
*Location: Room 216*

James B. McGee, University of Pittsburgh School of Medicine, Pittsburgh, USA  
Nancy Posel  
David M. Fleiszer

**Background:** Entrustable professional activities (EPA) are increasingly critical in undergraduate medical education (UME). EPAs include essential knowledge, specific skills, attitudes and behaviors that enable learners to become competent physicians. While clinical experiences are considered fundamental to the development of EPAs, other instructional methodologies, including simulation are also integral. Virtual patients (VPs) are often overlooked within these simulated clinical learning environments. This workshop emphasizes the opportunities provided by VPs in the development of EPAs.

**Who Should Attend:** This workshop is directed towards and will benefit medical and health sciences educators, instructional and curriculum designers, simulation specialists, and members of curriculum committees working on the development of competency-based curricula with associated EPAs within UME.

**Structure of Workshop:** Within an interactive whole group setting, workshop facilitators and participants will critically review VPs specifically developed to align with UME EPAs. Group discussions will focus on (a) whether these VP cases align adequately with specific EPAs and what modifications might be required, (b) how and when their own VPs could be integrated within UME curricula, and, (c) where individual participants could utilize VPs to support learning of EPAs within their own simulation centers.

**Intended Outcomes:** Upon completion of this workshop, participants will have: 1. Explored the potential of VP cases in the context of EPAs and competency-based curricula; 2. Considered the role of VPs in assessment of EPAs. 3. Analyzed VP cases that support specific EPAs and their situation within a blended UME curriculum. 4. Reflected on potential challenges faced by individual participants’ schools. Finally, a whole group debrief will share perspectives and experiences.

**Level:** Introductory
#7Z  Workshop: Case-by-Case Remediation: using a theoretical framework and personalised case manager approach to analyse and rehabilitate professional lapses (748)

Location: Room 217

Susannah Brockbank, University of Liverpool, Liverpool, UK
Paula Byrne, University of Liverpool, Liverpool, UK
Viktoria Joynes, University of Liverpool, Liverpool, UK

Background: With an imperative to identify and remediate unprofessional behaviour among medical trainees, strategies for scrutiny of this behaviour must follow. We will share experience of using the Theory of Planned Behaviour – a model incorporating norms, attitudes and perceived behavioural control to analyse behavioural intention – to identify and address determinants of unprofessional behaviour. We will also present our use of a case management approach to address the challenge of impaired insight into unprofessional behaviour.

Who Should Attend: This workshop is designed for anyone involved or interested in addressing unprofessional behaviour across the continuum of medical education. We envisage that participants may have a wide range of prior experience from both undergraduate and postgraduate contexts, including the identifying and investigating lapses in professionalism, designing and supporting remediation processes, and ensuring that remediation has been successfully achieved.

Structure of Workshop: Round-table discussions will give participants the opportunity to share and reflect upon their own examples, before applying the described model to these experiences. The facilitators will demonstrate how the model’s inclusion of factors as social norms allows for an examination of the wider context in which unprofessional behaviours have occurred. Participants will then operationalise the analysis of each situation to design tailored remediation for their cases, both at a personal and institutional level.

Intended Outcomes: Participants will gain familiarity with theoretically-grounded tools for analysis of unprofessional behaviour and subsequent construction of a tailored remediation plan. Furthermore, facilitators will provide practical, take-home suggestions of how this approach can be implemented within participants’ own institutions, including the role of the personalised case manager. In addition, this workshop will provide a vital opportunity to share experiences and challenges faced by participants around the world.

Level: Intermediate

#7AA  Workshop: Medical Education in Difficult Circumstances - a one-year follow-up workshop (125)

Location: Room 218

Michelle McLean, Faculty of Health Sciences & Medicine, Bond University, Gold Coast, Australia
Judy McKimm, Swansea University Medical School, Swansea, UK
Trevor Gibbs, AMEE, Dundee, UK
Ewa Pawłowicz, Medical University of Lodz, Lodz, Poland

Background: During 2016, we canvassed the medical education community in various ways to identify examples of what constitutes a ‘difficult circumstance’. At the Barcelona conference, the notion of ‘difficult circumstances’ was explored through the various plenaries, symposia, a workshop and oral and poster sessions. We followed up our 2016 AMEE experiences with a Medical Teacher commentary introducing the January-March 2017 MedEdPublish edition and to summarise the range of ‘difficult circumstances’ that had been identified to date.

Who Should Attend: Health professionals, academic faculty and students who have identified ‘difficult circumstances’ in their different contexts. In particular, individuals or groups of individuals who have been able to work through their difficulties are encouraged to share their experiences.

Structure of Workshop: An interactive workshop, commencing with a summary of the 2016 data collected in terms of the difficult circumstances identified. Working in small groups, participants will have an opportunity to discuss and develop potential strategies and solutions to some common issues and challenges that have been identified.

Intended Outcomes: While 2016 focused on defining what constitutes a ‘difficult circumstance’ and identifying examples of such circumstances, the 2017 workshop will focus on developing solutions to some of the commonly identified difficulties based on personal experiences or through planning future collaboration. We hope that during the workshop we will be able to generate strategies and solutions to some of these ‘wicked’ problems.

Level: All
#7BB  Workshop: Impact of Chaos, Boids, Wicked, and Swarming Theories on Medical Education (1430)
Location: Room 306

Davinder Sandhu, RCSI Bahrain, Adliya, Bahrain

Background: Learning is developing new knowledge and skills. Students and faculty have to deal with uncertainty, complexity and that organisations hit ceilings and head towards chaos. Educationalists therefore need to learn from organisation change theories and from nature through BOIDS and Swarming concepts in handling and functioning within the paradigm of wicked problems. The workshop will focus on the envisioning of the future educationalists who can develop coping strategies through a greater understanding of the above.

Who Should Attend: All interested in learning and education and who believe education is the reorganisation of experience, and leads to reflection which is actually a dynamic process and involves changing oneself to help patients, students and faculty.

Structure of Workshop: This highly interactive workshop will initially summarize the development of chaos theory and wicked problems. This will be followed by interactive group work on the concepts of complexity in delivering education and training and how they can be overcome. What can we learn from organisation development theory? Jointly through discussions and direct engagement work on how nature copes through BOIDS and then bring in swarm theory. Finally, recap the learning and take home messages.

Intended Outcomes: Understand the relevance of chaos theory, wicked problems, swarming and BOIDS to medical education. Grasp principles of coping with change such as impact of demographic changes, increased demand of health care within budget cuts. Refine the thinking from the experiential learning of the workshop. Take home the new learning and implement them in their own organisations through constructive deliberations and revise the learning through copies of the presentations and key supportive literature.

Level: All
Faculty perceptions of a new education program in the primary health centers for novice undergraduate medical students

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Alison Carr, College of Medicine (CMED), Qatar University, Doha, Qatar  
Ayad Al-Moslih, College of Medicine (CMED), Qatar University, Doha, Qatar  
Fawzia Alhor, Primary Health Care Corporation (PHCC), Doha, Qatar  
Hisham Elmahdi, College of Medicine (CMED), Qatar University, Doha, Qatar

Background: Clinical placements in Primary Health Care (PHC) have proven to be beneficial for both students and trainers-2. The literature provides evidence that early exposure to general practice increases confidence of students in talking to patients, and gives them a better understanding of the doctor-patient relationship3.

Summary of Work: The aim of this paper is to address Family Medicine Faculty (FMF) perceptions about students’ placements from early years of training.

Summary of Results: An anonymous online survey with open-ended questions was provided to all FMF involved in this new program. Currently 12 Faculty from PHCC are enrolled. 7 (58 %) faculty provided feedback. Faculty highlighted the benefits of combining early placements in PHCs with debriefing sessions.

Discussion: The Family Medicine Faculty highlighted the benefits of combining early clinical placements in PHCs with debriefing sessions and their importance in helping students learn about patient care, population health and associated ethical and professional issues. Such benefit is resulted from having clear objectives and prior preparation of the supervising faculty.

Conclusion: Faculty feedback suggests early clinical PHC placements with debriefing sessions are essential for beginner medical students. Exploration of students’ learning needs and the development of learning outcomes based on those needs was recommended by faculty to improve students learning experience.

Take-home Message: Early clinical placements at primary healthcare settings are highly beneficial for beginner medical students. Such placements should be complimented by debriefing sessions were students get to reflect on their learning and their supervising faculty ensure that educational goals are met.

#7CC01 (413)
Using CanMeds framework to provide a tool for the first year medical students to reflect upon early patient encounters

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Maarit Nevalainen, University of Helsinki, Department of General Practice, Helsinki, Finland  
Tuire Salaranta, University of Helsinki, Department of General Practice, Helsinki, Finland  
Helena Karppinen, University of Helsinki, Department of General Practice, Helsinki, Finland  
Kaisu H Pitkala, University of Helsinki, Department of General Practice, Helsinki, Finland

Background: CanMeds framework provides internationally endorsed objectives for physicians’ competences. Early patient encounters are considered an effective way increasing motivation during preclinical years. CanMeds was used to enhance critical thinking prior early patient encounters. Competence of a good physician was used as a tool to observe physician’s work in primary care.

Summary of Work: Medical students formed six “jigsaw groups” to the brainstorm qualities of a good physician on each six petals of CanMeds. Each group had a messenger to snowball the information to other groups. After all small group discussions, a general discussion leads to the consensus of ideal physician’s competences.


Discussion: First-year medical students have surprisingly vast intuitive knowledge about physician’s competences. This CanMeds framework and results of students’ brainstorming and discussions are used when students observe primary care physicians’ work and their patient encounters. They are writing reflective diaries on these encounters and their observations.

Conclusion: This study increases understanding about first-year medical students’ perceptions of their training objectives and purpose of the education. Students bring up the core meanings of the interaction, professionalism and physician’s psychological features.

Take-home Message: It is important and meaningful to medical students to reflect upon physician’s abilities: “what is a good physician?”. The CanMeds framework provides a feasible means to enhance discussion on this topic. Small group discussions encouraged the students’ active learning and reflective thinking of CanMeds framework.
Patient care by coaching and role modeling. This is the provide a unique educational experience and excellent experience in the ED. Experienced clinician educators can who have minimal patient experience a rich and safe.

Take-home Message:

Effective student education.

Conclusion:

Successful method of providing real-time patient care and supervised by experienced clinician educators is a of care of the patient. Selected interactions in an ED, develop proficiency while protecting the safety and quality assessment to identify which aspects helped students.

Discussion:

It is possible to provide students who have minimal patient experience a rich and safe experience in the ED. Experienced clinician educators can provide a unique educational experience and excellent patient care by coaching and role modeling. This is the kind of experience that results in confident and competent students.

Background:

As medical education moves toward earlier exposure to patient care, instructing students how to assess a wide variety of patients without increasing risk becomes the call to action. There is a paucity of evidence on assessment of extremity fractures and dislocations in Emergency Department settings early in medical school training.

Summary of Work:

Randomized, non-blinded study of 10 early second year students. 5 had preceptor-lead shifts in the ED, splinting lab, in-person and video demonstrations and readings. 5 had only current curricular exposure, mainly readings. Both had pre and post knowledge tests and experience surveys, standardized patient test, and post study debriefing.

Summary of Results:

We found significant differences (p <0.05) between the intervention and control group on the post-study knowledge test, overall standardized patient skills evaluation, history taking and discharge planning. Cohen’s d ranged from .630 - .962. Intervention students also felt more confident, experienced and satisfied based on post-pilot surveys and debriefing sessions.

Discussion:

Although this study only had a small sample size, the results suggest that the new curriculum is more effective than the more traditional lecture and problem based learning model. Students demonstrated improved knowledge, skills and confidence because of exposure to real patients and extensive faculty role modeling.

Conclusion:

We used several modalities of instruction and assessment to identify which aspects helped students develop proficiency while protecting the safety and quality of care of the patient. Selected interactions in an ED, supervised by experienced clinician educators is a successful method of providing real-time patient care and effective student education.

Take-home Message:

It is possible to provide students who have minimal patient experience a rich and safe experience in the ED. Experienced clinician educators can provide a unique educational experience and excellent patient care by coaching and role modeling. This is the kind of experience that results in confident and competent students.

#7CC03 (978)
Younger and Younger: Teaching 2nd Year Students Emergency Department Assessment and Care of Fractures and Dislocations, a New Curriculum

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Sally Santen, University of Michigan School of Medicine, Ann Arbor, MI, USA
JM Monica van de Ridder, Michigan State University College of Human Medicine, Grand Rapids, MI, USA

Background:

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It is possible to provide students who have minimal patient experience a rich and safe experience in the ED. Experienced clinician educators can provide a unique educational experience and excellent patient care by coaching and role modeling. This is the kind of experience that results in confident and competent students.

#7CC04 (1489)
Mistreatment of clinical students by patients/families: empowering our future doctors

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Guili Zhu, SingHealth Anesthesiology, Singapore
Mara McAdams, Duke-NUS Graduate Medical School, Singapore
Sok Hong Coh. Duke-NUS Graduate Medical School, Singapore

Background:

Medical students rely on patients and their families as teachers during the learning journey. However, during illness, patients and their families may not welcome having students participating in their care and anecdotal instances of verbal abuse against clinical medical students are not uncommon.

Summary of Work:

E-mail link to anonymized electronic survey form sent to clinical students, sought information on frequency, circumstances surrounding mistreatment, students’ reactions and understanding their coping. With this information, medical school administrators may be able to create formal framework for training students to avoid mistreatment and what to do during and after. Summary of Results: 14.3% of 92 clinical students surveyed reported mistreatment (based on standard definition) by patients/families. Immediate reaction was to remain quiet, move away and/or call for help. Emotions ranged from fear, humiliated/embarrassed and apologetic. About 43% of students knew who or where to turn to for help during and after incident.

Discussion:

There are few studies of student mistreatment by patients/families. The students’ confused response about mechanism of official reporting, how and where to seek help during and after such stressful incidences, was worrying. A third of respondents were briefed on how to handle mistreatment. Students wanted closure, investigation, support and anonymity.

Conclusion:

The reported incidence was similar to other studies. We need to clarify, offer swift, safe and assuring official reporting mechanism, while strengthening training in difficult conversations/communication. We wish to investigate incidences in larger sample of medical schools to better understand and propose methods for handling such student mistreatment.

Take-home Message:

Mistreatment of students by patients/families is common, and negatively impacts training and future performance. Mistreated students report psycho-social consequences. Our study informs the need for vigilance to this problem, to improve support and reporting structure. Staff working with students must be trained to intervene and provide support.
#7CC05 (1700)
A mobile platform for organisation and learning in practice placements of student nurses

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Carlos Martinez Gaitero
Mercedes Muñoz Gimeno
Tamsin Treasure-Jones
Raymond Elferink

Background: How can mobile technology support practice-based learning of nursing students in complex health care settings and create a bridge to their formal education? We report on the first stage of an exploratory study at Universitat Gimbernat (Barcelona) involving 10 volunteer students, their tutor, and the department’s placement coordinator.

Summary of Work: A mobile app was developed to support students, tutors, and coordinators in various aspects of practice placements, including: selection of placement centres; provision of workplace-related activities to students; and end-of-placement evaluation. At the end of the study, feasibility and usefulness of the app were evaluated using semi-structured interviews.

Summary of Results: The students used the mobile app to varying degrees. Making placement information and selection available on mobile was seen as a plus. Having to switch to a social media group for reflection was seen as a disruption. The coordinator found it useful to make administrative forms available on the mobile.

Discussion: Mobile apps lend themselves for practice placements when students are not using laptops or PCs at the workplace. They work well as a channel for information and to give students context-related tasks. Tutors and coordinators see added benefit in the support of administrative processes and the feedback on student progress.

Conclusion: The study suggests areas where the practice placements app can be improved. To increase ownership, students should be allowed to modify the app and add content easily. The app should gather feedback to offer teachers and coordinators insights into student progress. The app should integrate with existing learning systems.

Take-home Message: Practice-based learning applications that bridge formal classroom settings with informal learning at the workplace face lower adoption barriers if they offer convincing value to all actors: students, teachers, coordinators, and training supervisors at the workplace. They should function as a communication, sharing, and learning aide all in one.

#7CC06 (1734)
Illuminating the job shadowing experience of medical students in an orthopaedic posting: learning about the roles of Allied Health Professionals (AHPs)

Abigail Lum, Tan Tock Seng Hospital, Singapore
F.L. Loy, Tan Tock Seng Hospital, Singapore
C. Krishnasamy, National Healthcare Group, Singapore
S.K. H. Tan, Tan Tock Seng Hospital, Singapore
K.Y. Tham, Lee Kong Chian School of Medicine & Tan Tock Seng Hospital, Singapore

Background: At our hospital, medical students learn about AHPs’ work primarily through on-the-job training with medical teams. Requests for shadowing of AHPs from medical faculty are sporadic and without clear learning objectives. This resulted in uncoordinated execution of inter-professional education by AHPs, with lack of evaluation of the effectiveness of shadowing.

Summary of Work: 5 AHPs (Physiotherapists, Occupational Therapists, Medical Social Workers, Podiatrists, Prosthetists and Orthotists) piloted a structured shadowing programme for 15 Year 3 medical students in an orthopaedic posting. The programme integrated classroom activities with observing and interviewing AHPs and aimed to develop students’ understanding of AHPs’ roles and determining appropriate referrals.

Summary of Results: All students reported better understanding of their future role as doctors within inter-professional teams. 13(87%) strongly agreed that “observing and interviewing” AHPs helped them better understand AHPs’ roles. Case studies scores on purpose and appropriateness of AHPs’ referrals improved from 27.9±4.8 before shadowing to 33.1±4.2 after shadowing (Total score=40).

Discussion: Our structured shadowing programme utilised the unique interaction between doctors and AHPs i.e. providers and receivers of referrals respectively, and their inter-dependence for patient outcomes. This approach could have provided authentic contexts to develop students’ understanding of AHPs and themselves within the multi-disciplinary orthopaedic team through observation, reflection and discussion.

Conclusion: Shadowing, with a variety of educational activities like pre-readings, formative quiz, lecture, case studies and role play, contributed to students’ understanding of inter-professional roles, responsibilities and the unique culture of a multi-disciplinary team. Opportunities to observe and interview AHPs in authentic contexts were highly valued by medical students.

Take-home Message: A structured shadowing programme, with complementing active learning activities, could be an effective mode of educational delivery for inter-professional education in healthcare. Programme content focusing on authentic everyday work activities for specific practice areas or patient groups, could enhance learners’ understanding of roles of others and themselves in patient care.
Clinical Skills Passport App: Feedback on the go

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Background: University of Leeds MBChB Students must evidence their ability to complete a defined set of clinical skills according to the General Medical Council (GMC) requirements to pass their undergraduate medical programme. The Medical School needs to be able to clearly show the students competency with their clinical skills accordingly.

Summary of Work: Enabling students to flexibly and safely capture and monitor skills learning on placement via a bespoke Clinical Skills Passport app. Skills are logged and mapped against requirements so students can evidence their development and use the app as proof of competency to access further learning.

Summary of Results: App enables students to log all skills learning not just competency sign off. Continuously monitoring students on placement using completion rates as an indicator of engagement enables better support of students. Capturing extensive data on learning environment, initial results show multi-professional teaching with students keen to learn more than required.

Discussion: This is an opportunity to review the levels of clinical skills training we provide and student advancement through the course. We are looking to see if longer term easy access to skills monitoring encourages greater learning and earlier skills competency in students enabling us to develop more clinically competent graduates.

Conclusion: We will see how quickly our students learn allowing us to re-calibrate at what level we expect them to develop to. Students will continue to capture their skills throughout their medical degree and this data will enable the students to chart their progress and more easily identify areas for development.

Take-home Message: It is important that students have the ability to fully evidence their skills and capture feedback in a way which enables holistic reflection on their development as a medical student. Promoting the continued requirement to properly evidence skills and personal development is preparation for regular re-validation as a medical professional.

Anticipatory health education animation enhances medical students’ learning in pediatric clerkship

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Background: Due to time pressure and many competing learning topics in pediatrics, medical students may not have enough knowledge about guidance for anticipatory children’s health care. Therefore, we hypothesized that by introducing animation videos covering items of anticipatory children’s health care to them will enhance their learning on this important topic.

Summary of Work: At the end of pediatric rotation, we assessed student’s health care knowledge with a 30 questions quiz, then, arranged them watching 10 animation videos and retested them with the same quiz. Their pre- and post-intervention test scores were compared and student’s opinions on the intervention were collected by a questionnaire.

Summary of Results: 73 medical students were enrolled. The mean number of questions (correct rate) they correctly answered was 22 (73%) in the pretest and 26 (87%) in the post test, p<0.001. The percentage of students agreed that the videos were educational was 71%, enhance self-learning was 63% and worth learning was 74%.

Discussion: Although every medical student has already had a Booklet of Guidance for Children’s Health Care for learning in pediatrics. Their knowledge on these topics could be enhanced by watching the related animation video clips. It is a complementary learning resource without restriction of time and space and could enhance self-learning.

Conclusion: Traditional clinical curriculum in Pediatrics may not offer medical students enough opportunities for learning particularly in the topics of children’s health care. By providing animation video clips covering the related items of anticipatory children’s health care, we could enhance medical students’ learning in these topics and may facilitate their self-learning.

Take-home Message: Given the time of rotation in pediatrics, it is a challenge for medical students to learn all the core topics of pediatrics. By providing animation video clips covering the items of anticipatory children’s health care, we could enhance medical students’ learning in these topics and may also facilitate their self-learning.
#7CC09 (81)
Flipped classroom: Interactive CAI gives better result of learning than reading textbook

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**Background:** Flipped classroom (FC) has been used for better understanding on medical lecture. Traditional pre-classroom reading does not interest students and brings ignorance. In academic year 2015 the new way of FC, interactive computer-assisted instruction (CAI) on hypertext markup language (HTML) platform is utilized for pre-classroom epistaxis topic media.

**Summary of Work:** The retrospective study was conducted. Nineteen students using FC with interactive CAI was studied. Twenty students that used pre-classroom textbook reading was served as a control. The difference of pre-posttest score was compared between groups using unpaired t test. Satisfaction questionnaire of interactive CAI was evaluated in the study group.

**Summary of Results:** The grade point average (GPA) and pretest score of both groups were similar. The change of pre and posttest scores was greater in the interactive CAI group (4.89±1.9) than the control (2.35±1.7), p<0.001. Of 5 point Likert scale, the students’ satisfaction of interactive CAI was 4.61 ±0.2.

**Discussion:** The interactive CAI may motivate students to get prepared before class or it may be more understandable, compared to other traditional FC methods.

**Conclusion:** Both interactive CAI and pre-classroom reading are useful as FC for improving lecture understanding.

The interactive CAI is more effective for bringing higher posttest scores, compared to pre-classroom reading.

**Take-home Message:** Interestingly, interactive media effectively encourages medical students to prepare themselves before class.

#7CC10 (512)
Learning experiences of dietetic students with technology enhanced teaching and learning

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**Background:** Demands for technology use has become evident during past 5-10 years; teachers are still skeptical about use of technology in the classroom. Traditional teaching methods fail in engaging generation-Y students in discussions. New, effective teaching-learning approaches should be developed, tested and implemented according to student-needs, course content and learning philosophy.

**Summary of Work:** Methods used in the flipped classroom approach to engage and test students’ learning experiences were derived from a blended learning technology, generations, personality types, learning styles, and cognitive science including the following: feedback and reflection; talk and chalk; multi-media; videos versus print; and games.

**Summary of Results:** Most students found completion of MCQs as preparation for class to be helpful (91%). More than 75% of the class indicated that class activities and mini-games are a fun way of learning. Electronic-guides with embedded games and material aided class preparation. You-tube or video material didn't aid in learning/knowledge transfer.

**Discussion:** These approaches seemed positive that new technology aided learning. This mainly student-focused approach can be implemented successfully by determining the teaching philosophy of lecturers. Activities planned had to be linked to the teaching philosophy. Trying to incorporate student needs had to be blended with the teaching philosophy of the lecturer.

**Conclusion:** Each lecturer should develop a proper teaching & learning philosophy for the constructivist multi-modal learning model to work. To simply turn the classroom into a blended format will not provide students with more flexible and interactive learning experiences and careful analysis of students, contexts and technologies are needed to succeed.

**Take-home Message:** Many researchers and educationists are advocating the constructivist approach. However, this approach needs to form the core of a lecturer’s own teaching philosophy. Adding technology for the sake of technology does not add to the learning experiences of students and should be thought through well before implementation in classroom settings.
#7CC11 (1138)
How flipped-classroom concept influences learners' perception and competency of evidence-based practice

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**Background:** While lectures remained the mainstream of EBP teaching in Taiwan, recent studies suggest that such general instruction do not provide learners with enough exposure or guided practice for these concepts to be retained sufficiently. We developed a pilot flipped program that sought to improve learners' abilities to choose adequate evidence.

**Summary of Work:** Learners completed online modules in an assisted learning system. During subsequent in-class sessions, the faculties adopted the role of facilitators while learners led the session as peer educators, working in teams to deliver brief presentations on assigned modules. The outcomes of pilot program were evaluated with several methods of assessment.

**Summary of Results:** The written test score (0-100) increases from 67.8 to 78.1. Problem-solving time to clinical scenario decreases from 56 minutes to 26 minutes. Questionnaire survey satisfying rate (0-5) increases from 3.7 to 4.6. In-and-after class discussion duration increases from 8 to 21 minutes. Longer preparation time needed to faculties was mentioned.

**Discussion:** Learners had better understanding to the correlations between evidence and clinical practice, as well as to utilization of resources in evidence-based practice. In terms of perceptions to the program, learners showed more interests and had far stronger sense of participation during class session that may result in improvement on performance.

**Conclusion:** Through well designed online modules, the flipped information literacy program improves evidence-based practice performance, facilitates resources utilization and most importantly, helps learners realize how to work as a team and stimulate strong motivation and sense of participation toward active learning. In-and-after class discussion process could be another important learning facilitator.

**Take-home Message:** The concept of flipped information literacy program and online learning modules engage learners' attention and induce interests which result in better understanding and performance to evidence-based practice. Active learning is essential to increase participation and experience needed to utilize and interpret most current clinical evidences.

#7CC12 (1644)
The Effectiveness of a Pre-class Video in Gaining the Knack of Laparoscopic Suture for the Novice Undergraduates

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**Background:** This study was conducted to evaluate the efficacy of a pre-class video for learning laparoscopic suture(LS) among the novice medical students of Taipei Medical University Hospital (TMUH). Pre-class videos for gaining the knack of clinical skills will be broadly promoted in our medical education curricula.

**Summary of Work:** This study reviewed records of 59 medical students participating in a 3-hour LS workshop. Twenty-nine students hadn't received the instruction video, whereas another thirty students had watched it before the workshop. All students were appraised regarding their performance at the end of the workshop through an observational assessment form.

**Summary of Results:** Pre-class video group (group-v) completed more stitches than the conventional group (group-c), t=3.330, p=.002. The performance of suture qualities in the group-v was also higher than the group-c, t=3.399, p=.001. The quality evaluation showed that the group-v executed better than the group-c significantly, especially in the items 7 to 11.

**Discussion:** This result is similar to the recent studies that employing instruction videos could improve medical student performance of clinical endocrinology skills (Hibbert et al., 2013), and could affect OSCEs learning (Jang and Kim, 2014). However, more detailed investigation are mandatory to be analyzed.

**Conclusion:** Based on the results, the pre-class video is potentially a more effective way to improve medical students’ skills of laparoscopic suture than the workshop participation only. The pre-class video could be incorporated and employed to instruct the surgical skills for medical students in the future.

**Take-home Message:** A pre-class video is an effective way to improve LS learning. However, it takes more detailed analysis to evaluate the effectiveness of each steps in the LS procedure.
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**Background:** Fundoscopic examination with direct ophthalmoscope is important for medical students. Skill is the factor that leads to success for fundus examination. The aim of this study is to compare the teaching of direct ophthalmoscope between community-based and outpatient department (OPD) and to develop the teaching plan in the future.

**Summary of Work:** All fifth-year medical students of Thammasat University, Chumphonketudomsakdi Hospital campus were enrolled in this study. All twelve medical students have divided into two groups and were learned the skill of direct ophthalmoscope with patients in both community and OPD. Focus group discussion was done to assess each group.

**Summary of Results:** Hundred percent of students have concluded that the community-based learning is better than OPD in every point. The skill, self-confidence, place, timing, patients, and knowledge management are superior in community-based than OPD. Only 8.34% has no difference in the skill between community-based and OPD.

**Discussion:** The community-based is superior to OPD because the patients have been willing to examine. Therefore, students can spend their time to improve their skill. The darkness of examination room is inferior in community-based than OPD. However, light control has to adjust in community-based next period.

**Conclusion:** Medical students were improved their skill and confidence with direct ophthalmoscope in community learning more than OPD and have used their knowledge in VA testing. Therefore, these results may use to develop the teaching plan for medical students at Chumphonketudomsakdi Hospital in the future.

**Take-home Message:** Learning with patients is not restricted only in the hospital. Community-based learning with direct ophthalmoscope will add in the teaching plan because learning in community-based has more advantage than OPD. Finally, medical students have more learning experience in community-based.

**Public Mind Activity of 6th year Medical Students on Basic Life Support Training Workshop has Helped Increase the Pride and Confidence of the Students' Life Support Skills**

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**Background:** Mahidol Day, we were planning to hold a reforestation event with medical students' participation. However, reflections from students that it seems boring due to excessive distance of journey and lack of concrete relevance in public health service and their professionalism. Therefore, organized a Basic life support training session instead.

**Summary of Work:** We prepared BLS manikins and divided 24 students into three groups. Each group has one hour rotation on the training session as public serving. We then monitored and reviewed steps of BLS practices and observed the training organization of the medical students. We evaluated the results by using questionnaires.

**Summary of Results:** Most students (79%) believed that they still have sufficient knowledge of basic CPR after four months away from training with a value of approximately 75-100%. They exhibited extremely high confidence in training session to public. They also believed that trained public can certainly be able to bring theory into practice (58%).

**Discussion:** The students were mostly proud and impressed. They had a chance to review the knowledge for themselves once more and suggested that this activity should continue in the next years for later student generations because it was a creative and practical activity as oppose to the former annual reforestation event.

**Conclusion:** Basic life support training workshop to general public has helped increase the pride and confidence of medical student's life support skills while at the same time it benefited the public since they were able to actually use it in the time of need.

**Take-home Message:** This activity should replace the reforestation event for next generations of medical students in later years.
#7DD03 (915)
Skeletal Model Enhanced Medical Student Knee Joint Aspiration Skill

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Background: Knee joint aspiration is one of minimal requirement procedures for Thai medical student. However, some students apparently lack of visualization and are unable to do this procedure precisely. Visual imagery is essential for memory, we hypothesized that supplement anatomic skeletal model in knee joint aspiration teaching can enhance student learning.

Summary of Work: Thirty students in year 2015 were assigned to the traditional group (lecture and practice with manikin). Thirty students in year 2016 were assigned to skeletal model group (lecture, practice with manikin and hands-on workshop using skeletal model). We evaluated students’ competencies by oral examination and knee joint aspiration technique.

Summary of Results: The mean oral examination score in the traditional group was significantly lower (84.7 vs 93.3, P<0.05) and mean number of error was higher (3.0 vs 1.2, P<0.05) than those of the skeletal model group.

Discussion: Anatomical skeletal model provided visual imagery and enhanced knee joint aspiration skills as well as cognitive domain among medical students as shown by the higher examination scores and less number of errors in the skeletal model group.

Conclusion: The addition of anatomical skeletal model can enhance students’ knowledge and precision of knee joint aspiration skills.

Take-home Message: Anatomical model is useful for teaching procedural skills, especially those that need imagery visualization.

#7DD04 (2142)
Outcomes of Current Resuscitation Training: Do We Achieve Guideline Targets?

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Background: Robust assessment is crucial in resuscitation training to determine whether participants have achieved learning objectives with little or no variation in their overall outcomes. We aimed to analyze the consistency of current checklist approach to the pass/fail judgments with the adherence of guideline recommendations.

Summary of Work: 185 Cardiac Arrest Simulation scenarios for ACLS certification exam were retrospectively examined. Three objective parameters, chest compression free no-flow fraction (NFF), time to initiating chest compression and time to first shock delivery, were measured via video review and were used to understand the association with their original checklist pass/fail results.

Summary of Results: While time to chest compression was no difference between groups, time to shock and NFF were marginally greater in the checklist "fail group" than those in the "pass group", 84±29 seconds (Mean±SD) to 63±21 seconds, and 37±8% to 30±8%, respectively (p<0.05). Notably, each parameter varied widely across and within groups.

Discussion: Direct observations and checklists are useful tools for assessing incorrect or omitted maneuvers during simulations; however, we found that these tools were less valuable in the evaluation of parameters measuring the impact and quality of several time-critical interventions. Assessing these objective parameters is equally important in the overall outcome evaluations.

Conclusion: Rater observation using checklist-based tool could capture various specific performance tasks in a simulation scenario, however, it can overlook some important resuscitation quality parameters with the potential of influencing evaluation accuracy and consistency.

Take-home Message: Continuing rater training and standardization as well as the development of valid tools for real-time assessment adjunct toward a more consistent outcome measures still seems necessary in the ACLS training system.
**#7DD05 (1944)**

A smart intraoperative instruction on surgical procedure on Google Glass

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**Background:** Within a pilot study, we evaluated (1) the feasibility and usability of Google Glass (GG) during a complete unilateral cleft lip repair (CUCLR), and (2) the utility of a smart intraoperative instruction on this surgical procedure (SIISP), and its subjective contribution to resident assisting and operating skills.

**Summary of Work:** GG with a developed stepwise instruction on surgical technique of CUCLR was used by two junior residents during assistance, two senior residents during performed surgery with supervision and one young staff member during surgery without supervision at the department of Plastic and Reconstructive Surgery (Medan, Indonesia).

**Summary of Results:** Successful acquisition of GG was reached in 82% (n=9) of CUCLRs. In contrast to junior residents, senior residents along with plastic surgeon considered SIISP helpful and agreed that it contributed to their overall operating skills. All participants agreed that they would like SIISP to be incorporated into their professional training.

**Discussion:** Such a ‘procedure specific’ teaching method is best suited for standardized procedures and requires preliminary anatomical and procedural knowledge of a trainee. As an additional tool, it provides guidance through the surgical procedure rather than problem solving situations regarding complications, complex cases and/or anatomical variations.

**Conclusion:** Our preliminary data suggest that residents would benefit from a smart intraoperative surgical assistance, and therefore be able to improve their operating skills on a long term. Google Glass is a feasible tool for this intraoperative teaching method. We are currently designing a larger study to validate our results.

**Take-home Message:** There is apparently a great need for supportive intraoperative training tools among residents, especially in cases of limited access to medical education. Wearable technology has a great potential to be implemented as part of educational resources in order to facilitate surgical training.

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**#7DD06 (817)**

Smartphone for fundus examination by medical student

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**Background:** Fundus examination leads to definitive diagnosis of retinal disease. Now the standard method in fundus examination by medical student is direct ophthalmoscope, and smartphone has rapid advance in technology for capturing the picture. This study aims to fine concordance between smartphone and direct ophthalmoscope in fundus examination by medical student.

**Summary of Work:** Dilating patients’retinal disease eye by 1% Mydriacyl eye drop, exam by 5th year medical student at Mahasakham Hospital in Mahasakham province, using a direct ophthalmoscope or smartphone with a +20D lens, then testing using multiple choice test. Descriptive statistics were use to analyze data.

**Summary of Results:** All of 5th year medical student completed the fundus examination by 2 methods. We found that they used smartphone correct diagnosis same as direct ophthalmoscope. All students satisfied, confident with both instruments and concordance rate 95%.

**Discussion:** In fundus examination is important that leads to definitive diagnosis of retinal disease. From the result, we found that the medical students can use smartphone for fundus examination as well as direct ophthalmoscope. In the future, the smartphones, easy, cheaper, ubiquitous for fundus exams than direct ophthalmoscope in medical studies.

**Conclusion:** This study found that the 5th year medical students at Mahasakham Hospital  correct, confident diagnosis and satisfied with 2 instrument. (smartphones, direct ophthalmoscope)

**Take-home Message:** No difference, stylish smartphone or dowdy direct ophthalmoscope for fundus examination in medical students
#7DD07 (328)
Development and evaluation of a learning resource on sterile fields for MBBS students

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**Background:** Following analysis of feedback from students and tutors on the difficulties of teaching catheterisation we decided to create a sterile field learning resource. The aim was to create an e-learning resource that would help students prepare for sessions that require a sterile field to be set up or understood.

**Summary of Work:** A video and quiz were created and placed in our student virtual learning environment (VLE). A whole year group attended a teaching session on catheterisation, half with prior notification of the resource. Their evaluation of the resource and it’s impact on their learning was collected and analysed.

**Summary of Results:** 178 student responses were collected. 66% reported using our VLE at least weekly. 25% of students had found the resource, and 10.6% completed it. Of those, 89% would recommend it to others. Receiving an email about the resource increased completion from 26% to 54% among those who used the resource.

**Discussion:** We evaluated this as an adjunct to our normal teaching, hoping to focus classroom teaching time on practical skills. 99% of those completing the resource said it made them more more prepared for the session. Emails increased resource discovery from 23% to 26%, suggesting other factors influence student learning choices.

**Conclusion:** This project has created a learning resource users found valuable. We now need to find ways to increase student use of it; through emails, notification in handbooks and better design of our VLE. As flipped classroom approaches increase, this has been a first step for our clinical skills department.

**Take-home Message:** Clinical skills can embrace e-learning resources despite our practical focus, with pre-work making students feel more prepared for their skills teaching. Student engagement with resources remains a challenge as we change our approach to teaching, with learning styles needing to be addressed and specifically challenged, as we also develop resources.

#7DD08 (1039)
Our student-centered Basic Life Support (BLS) education is improved by computer-based evaluation

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**Background:** To establish effective education for clinical techniques, we have been exploring a new BLS training method since 2007. Our “Roofing Tile Method for Undergraduates” is based on “Teaching is Learning.” Clinical clerkship students who have already acquired BLS skills (CC-students) directly instruct first-year students (1st-students).

**Summary of Work:** We introduced an objective evaluation method using computer software that measures the quality of BLS training (Resusci Anne QCPR, Laerdal). We used the method during both instructor-review of CC-students and instruction of 1st-students by CC-students. Finally, we analyzed the differences with our conventional training by questionnaire.

**Summary of Results:** First, CC-students could review the BLS technique more surely before instructing 1st-students, and thereby advance their instruction more confidently and efficiently than with our conventional method. Second, 1st-students could handle their BLS skill insufficiencies more directly after seeing their evaluation.

**Discussion:** Since the CC-students could review the BLS performance measurements such as compression rate and depth during instruction, CC-students provided technical guidance to 1st-students more efficiently and closely than in our conventional training. Therefore, improvement in our BLS training method after introducing the computer evaluation was shown.

**Conclusion:** Our student-centered BLS training resulted in equivalent proficiency to our instructor-led training. Since the training is managed by CC-students, BLS skill level of CC-students is the most important factor in the training success. Based questionnaire results, the computer evaluation was more effective for ascertaining the BLS quality of CC-students.

**Take-home Message:** Our “Roofing Tile Method for Undergraduates” can be applied to various skill-up programs in clinical clerkship. We wish to acknowledge the Support Center for Medical Research and Education, Tokai University, for help with instruction.
**Summary of Results:**

Performance and part tasks.

(2015-2016). Analysis was made on BLS overall students form the 1st to 5th year on two consecutive years of Health Science, Covilha, Portugal.

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**Background:**

Studies show deterioration of basic life support (BLS) skills over time. Previous study evaluated BLS skills' retention among medical students throughout the years, and confirmed that the number of students that perform BLS correctly is very low, and its retention decay even more throughout the years.

**Summary of Work:**

Strategies to improve BLS performance after initial training are needed. Annual assessment of all medical students' BLS skills was programmed. A BLS-OSCE station was designed to assess students form the 1st to 5th year on two consecutive years (2015-2016). Analysis was made on BLS overall performance and part tasks.

**Summary of Results:**

The study included 549 students–2015 group (1st:164,2nd:143,4th:113,5th:129), and 735–2016 group (1st:168,2nd:155,3rd:153,4th:148,5th:110). Overall, only 8.4% would have passed the BLS practical assessment (100% correct check-list) in 2015 group vs 16.2% in 2016 group. All years that repeated the test improved evaluation score and percentage of students with 100% correct check-list.

**Discussion:**

BLS competency is important for all health care professionals. Unfortunately, performance deteriorates throughout the years. Strategies that include re-certification are known to “refresh” the skill, but takes more time and human resources. Including annual BLS assessment in OSCE seems to be feasible and overall improved medical students performance.

**Conclusion:**

Strategies to improve BLS skills retention are needed. Regular assessment seems to have a positive impact on BLS competency retention among medical students. Take-home Message: BLS annual assessment seems to improve medical students' overall BLS performance.
**#7DD11 (3238)**

Airway management by medical students in simulated resuscitation scenario

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**Background:** Resuscitation education is mandatory to medical students. To reach ALS level demands recurring practice. Multiple skills must be learned and then mastered in a stressful situation. Intubation needs to be trained over hundred times to achieve certainty of success. Supraglottic airway devices (SGD) are easier to learn and perform.

**Summary of Work:** We studied performance of 3rd year medical students in a simulated resuscitation scenario. Each student was leading the resuscitation and had to secure manikin’s airway. Choice between SGD and intubation was student’s own. We measured the no-ventilation time and no-flow time during airway management and possible problems during the procedure.

**Summary of Results:** In 390 performances methods of airway management were 52,3 % laryngeal tube, 28,5 % laryngeal mask and 19,2 % intubation. Success at first attempt was 91,2 %, 98,2 % and 52 % respectively. Time used to intubation was significantly longer (p<0,001). All interruptions in cardiac compressions were associated to intubation.

**Discussion:** 3rd year medical students avoided intubation in a simulated resuscitation scenario. Intubation was associated with a failure at first attempt, a longer time to perform and no-flow time during airway management compared to supraglottic devices.

**Conclusion:** Intubation is the golden standard of airway management. Failure to recognize esophageal intubation in clinical situation can be lethal complication. Reliable performance of intubation in a simulated scenario is not reached during medical undergraduate studies without extensive effort. Easier supraglottic devices should be taught instead.

**Take-home Message:** Learning intubation during medical studies should not be compulsory. Easier methods for airway management should be considered.

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**#7DD12 (2907)**

From chaos to clarity - creating a film as a learning activity to standardize rounds

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**Background:** Medical students as well as nurse-and physiotherapist students have their inter-professional training at the Clinical Teaching Department (KUA) at Karolinska University Hospital. Student rounds have experienced unstructured and timeconsuming. Different care management styles at round introduction has contributed to various opportunities for students to achieve round skills.

**Summary of Work:** The project idea was based on a clinical need identified by teachers. The main topic in the film was to introduce the round checklist containing 9 areas used at the clinic. Creation of scripts have been implemented with the support of film technician. Recording took place in an authentic environment.

**Summary of Results:** The film was divided in two parts; the suboptimal round and a roundmodel used in clinical setting. The film was presented to teachers working with interprofessional education. Students are now shown the film at their first day a the clinic and the film is also used by new employees.

**Discussion:** To ensure that certain learning activities will be standardized for all students a film can be used. The process of creating a film is not yet enclosed in normal learning activity. There is a need to meet the desires from students to have more e-learning activities such as films.

**Conclusion:** Film is a useful pedagogic tool for teachers to create a standardized learning activity in work place training and can also be used in an interprofessional setting. Teachers need support to be able to develope e-learning activities such as films. Filmcontent can be further developed by students.

**Take-home Message:** Film can be used to standardize a learning activity in work place training and the authentic environment can be used for recording. Film is an online learning activity possible for the students to use everywhere and also be developed by the students.
#7DD13 (1439)
Perceptions and abilities related to patient engagement in diabetes care among primary health care providers in Malaysia

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Background: Malaysia seeks to transform its public health sector to manage the growing number of people with diabetes. Patient engagement is a critical clinical competency for HCPs treating people with diabetes. We investigated perceptions of and ability to practice patient engagement among doctors and nurses in Malaysia’s primary health care system.

Summary of Work: Semi-structured interviews were conducted with nine non-specialist doctors and ten nurses working in primary health care clinics. Further, 12 key informants with specialist knowledge about diabetes care in Malaysia were interviewed. The interviews were analysed using qualitative content analysis.

Summary of Results: Three main themes emerged: 1) limitations in understanding barriers to self-care and treatment especially from a psychosocial perspective, 2) substantial variation in health care providers’ skills within patient engagement and empowerment, and 3) organisational and environmental challenges to the practice of patient engagement.

Discussion: The study suggest a need to enhance HCPs’ understanding of the patient’s situation. Strengthening of the HCPs’ skills within patient empowerment, and patient engagement is warranted. Identified challenges may be improved through training, however improved knowledge holds limited value if the clinical context offers little opportunity to demonstrate new skills.

Conclusion: Underdeveloped patient engagement competencies in combination with environmental challenges are important factors that limit health care providers’ ability to place the patient at the center of all therapeutic decisions.

Take-home Message: Future efforts to improve self-care should seek to develop competencies within patient engagement especially strengthening understanding of psychosocial barriers to self-care. Organisation of care and time are also important considerations when designing interventions to enhance patient engagement.

#7DD14 (1141)
The features of role models in “The Wisdom of Medical Experts” program

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Background: Role modeling is one of the most important ways for trainees to learn from experts and develop the clinical competencies and values of the medical profession. We designed, implemented and evaluated a program to explore the trainees’ perception and reflection about role modeling.

Summary of Work: We designed a program “The Wisdom of Medical Experts” including six 45-minute lessons. The trainees directly contacted with outstanding physicians from diverse specialties and absorbed their professional development, experience, outlook on life, etc. Questionnaire to analyze the trainees’ perception about what the features of role models should have was collected.

Summary of Results: The importance of the features of the role models was evaluated using a 3-point rating scale. The excellence in clinical performance was rated as a mean 2.7, character 2.5, teaching skills 2.5, and academic ability 1.9. 50% trainees expected themselves to have excellent clinical performance, academic ability, and teaching skills.

Discussion: The clinical performance was considered the most important factor to be a role model. All trainees agreed this program could help them to shape the professional identity and commitment, and enhance the values of medical profession.

Conclusion: The trainees’ perception about features of role models are excellence in clinical performance, character, and teaching skills. Direct interaction with role models provides a driving force to enhance the self-expectation of the trainees to become excellence in clinical performance, and be willing to strengthen their capabilities.

Take-home Message: Outstanding physicians as role models to share their experience in clinical development, values and attitudes of medical profession can not only improve the trainees’ learning but also provide them positive thinking of the future professional development.
#7DD15 (2752)
Thoracic imaging learning by concordance of perception

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Background: Learning by Concordance capitalizes on the benefits offered by information technology to provide students with cognitive tasks embedded in real-life clinical situations. In teaching of thoracic imaging, it is sometimes difficult to know if the students see what the instructor is showing them and whether they interpret the images correctly.

Summary of Work: At the Université de Montréal, each 2nd year medical students has been submitted on line to 10 chest X-Rays. He had to delineate the lesions he observed, then chose the terms that described those abnormalities. As soon his answers submitted, a feedback prepared by the instructor, appeared on his screen.

Summary of Results: In 2016, the majority of the 300 medical students who participated to the activity and answered to a survey, agreed that the exercise was useful to develop their perceptual skills and clinical reasoning. Data analyses are in progress to computerize the correction of the perceptual skills of the cohort.

Discussion: The development of digital assessment method of visual perception will allow the instructor to quickly identify: 1) the imaging giving difficulties to most students, and 2) the students with obvious problem of perception. (demonstrations will be given at AMEE 2017 congress)

Conclusion: Learning of thoracic imaging by concordance of perception is a useful and innovative e-learning strategy. The choices of the images submitted, linked to "clinical vignettes", are also good exercises of clinical reasoning. A digital assessment method of the visual perception of our 300 students is in progress.

Take-home Message: Thoracic imaging learning by concordance of perception is very appreciated by the 2nd year medical students of Université de Montréal. A digital assessment method of the visual perception is in progress.

#7DD16 (1869)
Medical skills training for undergraduate dental students

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Background: Medical emergencies can happen at any time. All dental schools in Iran provide dental emergency management course but it is rather theoretical, and students don’t find the opportunity to learn it practically. In this study we investigated the necessity of learning medical emergency management skills by asking undergraduate dental students.

Summary of Work: 84 participants were asked to fill out a questionnaire about the necessity of learning certain clinical skills including injection and establishing IV line access, blood pressure measurement, CPR and first aid skills then we held practical training workshops. Subsequently Likert questionnaires were used to assess the workshops training method.

Summary of Results: Almost all students agreed on the necessity of teaching the mentioned skills to them and believed that this education should be mandatory and be included in the curriculum. Nearly all believed that holding practical workshops would be useful and the majority said that they would participate in similar workshops.

Discussion: Analyzing the data shows that there might be a gap in this part of dental educational curricula and students need to learn skills like: injection, practical CPR, airway maintenance maneuvers and first aid. Similar surveys have been conducted in other countries indicating similar results.

Conclusion: Our results showed that most of students believe learning mentioned skills is necessary and should be included in the educational curriculum therefor we suggest a revision in dental education curricula to include practical medical skill training courses. Our pilot evaluation suggests that workshops would be effective to achieve desired goals.

Take-home Message: We suggest a revision in dental educational curricula to include practical medical skill like: intravenous, intramuscular and subcutaneous injection, practical CPR and airway management and first aid, training courses that can be held in the form of practical workshops for the students.
“See me, feel me, touch me, heal me...” – Teaching abdominal examination

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Background: Medical practice has been criticized for lack of personal contact, high cost and medicalization. Slow Medicine movement proposes the classical medical practice, with intimist relationship between doctors and patients, a detailed anamnesis, careful physical examination and use of an approach that aims the benefit, the health.

Summary of Work: The teaching of physical examination, as the medical practice, has been under pressure from technology, information, haste, in a way that many despise old semiology techniques to the detriment of dolls, anatomical pieces, and simulators, imaging tests or virtual reality.

Summary of Results: We believe the teaching should be in human beings because the "touch" is fundamental to "feel" the body and establish a diagnosis. For 30 years, we teach abdominal examination using the students themselves. The approach, ethical issues, methodology is previously discussed and with the agreement, the dynamics is performed.

Discussion: Male students volunteer the most and the entire group has a good perception of importance of this method among them. The approach also helps to break down personal barriers that some students demonstrate in touching and feeling the human body. We emphasizes the sensitivity.

Conclusion: We conclude the teaching of abdominal examination with the students themselves harmonizes and clarifies the situation of what is to "being examined" within the teaching process. It demystifies a behaviour and by touch, by feeling, provides a more humane attitude.

Take-home Message: Slow Medicine requires that in addition to fully consultations, accurate diagnosis methods and treatments, we need to be more human with our patients. Teaching to see, feel, touch and heal requires much more than dolls, models, simulators or virtual reality.

Improvement in the understanding of ophthalmologic emergency using trauma bedside teaching

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Background: Ophthalmology is one of the most unique and complex fields for medical students, especially in emergency conditions. Each ophthalmology rotation lasted only three weeks makes the teaching even more challenging.

Summary of Work: Students were divided into 2 groups; group A attended traditional classroom teaching and outpatient clinic while group B attended classroom teaching, clinic, and trauma bedside teaching rounds. The primary outcome was emergency ophthalmology exam scores (EOS) using 10 multiple-choice test questions. Total ophthalmology scores (TOS) and GPAX were also analyzed.

Summary of Results: Comparing groups A (n=23) and B (n=59), there were significant differences in the mean EOS, TOS, and GPAX (p <0.001, p <0.001, and p=0.014, respectively). Using multivariate analysis, trauma bedside teaching and GPAX correlated with higher EOS (95% CI, 0.7-2.3, p < 0.001; 95% CI, 0.02 to 2.3, p=0.045, respectively).

Discussion: During ophthalmology rotation, the addition of trauma bedside teaching rounds to the traditional classroom and outpatient clinic teaching improves medical students’ test performance. However, the different exam scores may be due to difference in period of studying time.

Conclusion: Bedside learning from real trauma patients is a valuable educational tool during a short ophthalmology rotation and should be incorporated into the curriculum.

Take-home Message: Bedside teaching rounds using real trauma patients enhance students’ learning experience in ophthalmologic emergency. This is not merely benefited the students’ knowledge, but also skills from observing qualified ophthalmologists.
**#7DD19 (1860)**

**Performance improvement with repetition of hands-on courses has its limits**

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**Background:** ACLS is a program provided by American Heart Association where students have hands-on practice on cardiac arrest and other emergency simulations. Students must score at least 84% on the written exam and pass two practical tests. For all assessments, a second opportunity is usually provided during the course itself.

**Summary of Work:** Retrospective analysis of a Training Center database with the purpose of examining if repeating ACLS course improves written and practical performance. ANOVA was used to compare scores in the written test and Chi-square to test differences among proportions of students approved in written and practical tests at first attempt.

**Summary of Results:** 3,867 professionals participated in 4,618 trainings; 3,412 took the course once and 455 up to 5 times. Performance improved from course 1 to 3, but not after that. Respectively for 1, 2, 3, and ≥4 courses: written score: 88.5/89.7/89.9/88.8, p=0.04; passed written (at 1st attempt,%): 77.2/80.2/83.7/80.4, p=0.10; passed practical (at 1st attempt,%): 66.4/77.8/83.7/85.7, p<0.0001.

**Discussion:** Improvement in written test and, especially in the practical test assessment, does not mean that the knowledge and ability learned will be maintained indefinitely after the third course, but may indicate that the potential of the course to improve theoretical and practical skills may have been achieved.

**Conclusion:** In this retrospective analysis, repeating ACLS training up to 3 times allowed a progressive improvement in written and practical evaluation performance. Additional training did not bring further improvement.

**Take-home Message:** Practical courses that use simulation of real cases improve theoretical and practical performance; The improvement is greater in the acquisition of practical skills; Repetition beyond 3 times does not improve performance; Repetition may be helpful so that cognitive and practical skills are not lost.

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**#7DD20 (1980)**

**Provision of Physical Examination Courses in the UK (PECUK)**

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**Background:** Little is known regarding the teaching provision of physical examination at UK medical schools. Evidence based physical examination is a new approach to physical examination making sure, that the student takes into account the accuracy, and precision of the clinical examination in order to secure a high diagnostic outcome.

**Summary of Work:** A questionnaire was sent to all 34 Medical schools in the UK enquiring about the provision of the physical examination course (duration of course, provision of course material e.g. online resources, booklets and the provision of teaching evidence-based - physical examination and the use of simulated or real patient.

**Summary of Results:** Traditional examinations seem to be still part of the physical examination courses, where examination stands in isolation without taking into consideration the precision and accuracy of each clinical sign. Evidence-based physical examination does not seem to feature in all of the traditional examination courses of the traditional curriculum.

**Discussion:** Evidence based physical examination is a new approach in teaching the physical examination in a way, where precision and accuracy of each sign of the physical examination is taken into consideration in order to secure high diagnostic outcome and avoid clinical pitfalls.

**Conclusion:** Evidence based physical examination is an important concept in preparing future doctors for their clinical practice in giving the student the opportunity to realise the limitation of the physical examination and to reflect on the accuracy and precision of the clinical examination in order to secure a high diagnostic outcome.

**Take-home Message:** Evidence-based -physical examination is an important part of the diagnostic process to establish a diagnosis, to prognosticate and outline an appropriate management plan which includes avoiding unnecessary costly diagnostic testing, initiate treatment as well as preventing diseases. Evidence-based physical examination should be integrated into the curriculum.
“Double jump” assessment as an alternative way to improve clinical reasoning in undergraduate medical students

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Background: “Triple jump” assessment is an option for evaluating clinical reasoning in undergraduate medical students, composed by a tree stage exercise: in the first step, a clinical problem enables prior knowledge exploration; the second is for conducting information search and the third is for oral discussion.

Summary of Work: We proposed a simplification for this assessment, named “double jump”, in which the evaluation of the student only reflects the initial problem interpretation, without oral discussion. This work evaluated the correlation between “jump” assessment and multiple-choice summative final examination grades, before and after the simplification proposed.

Summary of Results: Grades of 426 students were included. Both “jump” assessment were effective (p<0.0001), “Triple jump” approval correlate with mean final exam score 7.23 +/-0.05 while reproved ones obtained mean 6.86 +/-0.07; “double jump” approval correlate with mean final exam score 7.59 +/-0.06 while disapproval ones obtained mean 6.94 +/- 0.05.

Discussion: “Jump” type assessments are important for evaluating individual reasoning outside the group context in which PBL students usually deal. Eliminating the third step reduces subjectivity of oral discussion and evaluation, which students and teachers consider as a stress factor.

Conclusion: This study showed that shifting the “triple jump” test to “double jump” did not compromise the reliability of the assessment instrument and simplified the evaluation process.

Take-home Message: “Double jump” assessment is an alternative way to improve clinical reasoning in undergraduate medical students, without the complexity and stressful conditions of the original “triple jump” one.

The impact of case-based clinical reasoning (CBCR) on the development of medical students’ diagnostic skills

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Background: Elaboration of diagnostic skills has been considered a main competency in undergraduate medical education. Since 2013 CBCR course has been introduced for pilot group of 3rd year students at Tbilisi State Medical University. CBCR cases were designed by guidelines elaborated by Prof. Olle ten Cate at University Medical Center Utrecht.

Summary of Work: To investigate the effectiveness of CBCR we compared results of integrated clinical examination (Internal Medicine, Surgery and Obstetrics/Gynecology) of 6th year students previously taught with CBCR (80 students) to the results of students taught with traditional curriculum (120 students). Examination scores for both groups were compared by Student's "t" test.

Summary of Results: Our study showed that students who were taught CBCR during preclinical studies had significantly higher score in clinical examinations (37.5±1.14 out of 40 score) compared to students who were taught by traditional curriculum (30.2±0.97, p<0.01). This comparison shows that introduced CBCR led to the improvement of clinical reasoning of students.

Discussion: Our study showed that students who were taught CBCR during preclinical studies had significantly higher score in clinical examinations (37.5±1.14 out of 40 score) compared to students who were taught by traditional curriculum (30.2±0.97, p<0.01). This comparison shows that CBCR led to the improvement of clinical reasoning of students.

Conclusion: Introducing CBCR for medical students at preclinical stage has significant positive impact on the development of the diagnostic thinking ability in clinical subjects. Therefore, CBCR might be considered as an useful teaching tool for mastering students in differential diagnosis.

Take-home Message: Introduction of CBCR course in traditional curriculum is considered to be an important method for improvement of teaching and learning, enhancing students’ clinical reasoning ability.
**#7EE03 (895)**
Implementation of an online course to teach and assess clinical reasoning with virtual patients and concept mapping

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**Background:** Clinical reasoning is a complex set of skills healthcare students have to acquire during their education. Virtual Patients (VPs) support the teaching of clinical reasoning skills in healthcare education. However, it remains unclear how VPs can optimally foster clinical reasoning. Our aim was to develop a research-based clinical reasoning course.

**Summary of Work:** Based on a framework developed in a grounded theory exploration, we conceptualized and implemented an online course to teach clinical reasoning. The course consists of short videos explaining basic concept of clinical reasoning, 50 short VPs combined with a concept mapping tool, and process-oriented feedback based on learning analytics.

**Summary of Results:** A pilot study with 4th year medical students shows that it is challenging for students to distinguish findings from diagnoses or identify relevant problems from the narrative. Some students did not interact at all with the concept mapping tool. Results of the main study will be presented at the conference.

**Discussion:** The results of the pilot study indicate a need for more individualized and adaptable scaffolding for creating the concept map. In the main study we will analyze usage patterns focusing on what the learners did and their development over time and across VP sessions.

**Conclusion:** VPs can offer a safe environment to develop clinical reasoning skills before seeing patients for example during internships. Therefore, we plan to expand the current VP collection to include more VPs. We will develop a concept about how to integrate the course in a blended learning setting into healthcare curricula.

**Take-home Message:** Virtual patients can be more specifically tailored to foster clinical reasoning, by combining VPs with concept mapping approaches and providing process-oriented feedback based on learning analytics.

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**#7EE04 (363)**
Case representation scaffolds improve diagnostic efficiency in 4th-5th year medical students: results of a randomized controlled study

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**Background:** Representation is an important cognitive action in the diagnostic process and correlates with accuracy. We hypothesized that representation also influences diagnostic efficiency as both are process variables. As intermediate students have problems with correct case representations we tested whether representation scaffolds during case processing improve diagnostic efficiency in medical students.

**Summary of Work:** Clinical cases were provided in an electronic learning environment. The scaffolding group wrote down case representations while diagnosing cases in the intervention phase. Both groups processed further cases without scaffolds in the assessment. Diagnostic efficiency was operationalized as the number of correct diagnoses divided by the time needed for diagnosing.

**Summary of Results:** Diagnostic efficiency was significantly improved by the representation scaffolding (M = 0.12 correct diagnosis/total time (SD =0.07) vs. M = 0.09 (SD = 0.06), p = .045. Clinical Reasoning of the participants differed significantly between the groups regarding the sequence of clinical information and the time spent on different diagnostics.

**Discussion:** Intervention by scaffolding for case representation summaries significantly improved diagnostic efficiency of intermediate medical students as they needed less time to solve the cases. Although they spent less time on task diagnostic accuracy did not change. Upcoming studies will elucidate interplay of representation scaffolding and expertise level of the learners.

**Conclusion:** For the first time, diagnostic efficiency as part of the diagnostic process of medical students has been studied economically and standardized by an electronic learning environment. Representation scaffolds improved diagnostic efficiency in intermediate students.

**Take-home Message:** Scaffolding diagnostic actions like representation of the case is a powerful tool to improve the diagnostic process of learners. Diagnostic efficiency is an important outcome variable in clinical reasoning research as it corresponds to workplace challenges on the first day of clinical practice.
Using simulation to develop clinical reasoning in veterinary students

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Background: Veterinary graduates have been shown to have underdeveloped clinical reasoning ability. The aim of this research was to investigate the use of high fidelity clinical simulation as a method to improve the clinical reasoning ability and confidence of fifth year veterinary students.

Summary of Work: A simulated general practice consultation exercise, focusing on clinical decision-making and utilizing standardised clients and animals, was created and implemented for final year veterinary students. Clinical reasoning improvement during the simulation was determined using both quantitative (researcher-assessment, self-assessment, survey) and qualitative (focus groups) methods.

Summary of Results: The simulated consultations were shown to increase student confidence in their clinical reasoning ability. They were also found to provide situated learning; allowing practice of multi-tasking, coping with stress and being responsible for clinical outcomes. There was evidence that simulation objectively improves some aspects of clinical reasoning, including differential-diagnosis formation.

Discussion: During this study, the differences between the decision-making students practice during their time in education, and the decision-making they will use once working were highlighted. High fidelity simulation partially bridged this gap, by emulating the responsibility of making clinical decisions without a teacher acting as a ‘safety net’.

Conclusion: Within Veterinary education, simulation is currently limited to communication skill development using standardised patients, or part-task simulators. This should be expanded on within veterinary schools, as there is potential for simulation to improve higher order skills. Although expensive and time consuming, the potential benefits appear to outweigh the costs.

Take-home Message: Clinical reasoning ability and confidence in veterinary students can be developed using high fidelity standardised client simulation; a teaching method not currently commonly utilised within veterinary curricula.

SPIRALS: A New Cognitive Approach to Teaching and Learning Clinical Reasoning in Emergency Medicine

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Background: The emergency department (ED) is unique. Pace, cognitive load and scant clinical information mandate critical decisions with immediate consequences. Patient care requires, nimble course correction and disposition, considering proper allocation of healthcare resources. We do not prepare undergraduates to act as leaders in this environment. They present static “laundry lists”.

Summary of Work: Naturalistic observation of ED physicians, describing potential SPIRALS behaviours. Investigators developed this non-linear cognitive reasoning approach (Sick, Pain, Investigate, Resuscitate, Assess Again, Leaves ED), a recursive acronym and learner-centred mnemonic, potentially more appropriate in ED than currently used static mnemonics like RAPID or SNAPPY.

Summary of Results: ED observation field notes documenting behaviours of n=4 physicians. Thematic analysis of content analyzed and coded by two research team members. Preliminary analysis suggests observations of common physician behaviors: multiple simultaneous initial patient assessments, investigations, treatments, repeated patient follow-ups, course-corrections and eventual disposition.

Discussion: Preliminary analysis suggests SPIRALS behaviours exist. Physicians constantly re-evaluate patients and engage with colleagues to ensure high quality patient care. This non-linear approach is potentially more effective and efficient for the unique ED environment. SPIRALS teaching may benefit ED learners by emphasizing iterative patient review, evolving patient care and disposition.

Conclusion: ED physicians observed demonstrated SPIRALS behaviours. Subsequent study phases will explore and assess the most effective method for teaching SPIRALS. This may benefit medical students as learners and contribute to development of leadership competencies, especially for practicing in an ED or similar environments.

Take-home Message: Medical students are not appropriately taught to follow their patients over their entire journey in the fast-paced and ever-changing ED. This pilot study suggests that a SPIRALS teaching intervention/mnemonic will provide a framework for ED learning, increase students’ confidence, and help guide their patient interactions.
Developing a model for teaching and assessing critical thinking skills in medicine: a qualitative study

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Background: Despite the vested interest developed among medical colleges in improving critical thinking, evidences indicate that assessment of medical students' ability to think critically is a constant challenge. Aim of the current study was to provide a model for teaching and assessing critical thinking as a major outcome of medical education.

Summary of Work: A descriptive qualitative study using semi-structured interviews has been conducted. A purposive sampling has been drawn. 17 individual interviews were conducted with three groups of participants: faculty members, students and graduates. Qualitative data was analysed by content analysis approach. Data collection and analysis were concurrent.

Summary of Results: A total of 1049 primary-code obtained from analysis of interviews were summarized into 272 codes which were classified into 61 subcategories, 13 categories and four themes, including "critical thinking requirements: preconditions and approaches", "critical thinking initiators: internal and external stimulus", "critical thinking process: application of theory in practice", and "critical thinking outcomes: accomplishments".

Discussion: We proposed a model for teaching and assessing critical thinking in medicine. While several studies have investigated different aspects of critical thinking, this study contributes further insights to the debate on critical thinking in medicine as a context-bound concept by exploring cognitive processes and its structures.

Conclusion: Critical thinking skills in medical professions include the elements and structures whose description of their relationships based on a proposed model can be a basis for conducting educational programs and formulating an effective tool in order to assess these skills among medical students.

Take-home Message: The medical teacher should be taken a subject-specific components of critical thinking into account in their teaching and testing.

Effects of blended learning on the clinical reasoning process of Japanese nurses trained in Specified Medical Acts

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Background: In 2015, Japanese nurses began training in Specified Medical Acts (SMAs) such as artery insertion and debridement. Nurses learned the clinical reasoning process that doctors use to assess whether or not they can implement SMAs due to patient safety. However, nurses often have difficulties with the reasoning process.

Summary of Work: This study applied blended learning to clinical reasoning instruction for nurses and investigated the outcomes. Eighty-three nurses participated. The courses were designed using e-learning and required inference, active involvement, simulation in that they played the doctor's role, and clinical practice. The logs including medical reports, questionnaires, and interviews were analyzed.

Summary of Results: In the medical reports, participants were able to describe the clinical reasoning process including the doctor's viewpoint. Additionally, they acknowledged their role as nurses and the difference between their competencies and the doctors'. They also realized it was easier to have discussions with doctors.

Discussion: The blended learning process helped develop the ability of clinical reasoning because participants gradually incorporated it into their reasoning process. Additionally, the process fostered mutual understanding and collaboration among professionals since participants were able to communicate with professionals. Thus, the process extended the competencies of nurses.

Conclusion: This blended learning model is effective for nursing instruction on the clinical reasoning process. Moreover, it helps develop professionalism and mutual understanding. As nurses expand their competencies in SMAs, they can also benefit by gaining an understanding of other medical practitioners.

Take-home Message: Blended learning that includes active involvement was effective in learning clinical reasoning. In addition, blended learning includes an understanding of the mutual differences between the thinking processes of doctors and nurses, helps develop the competencies of nurses, and stimulates collaboration between professionals.
#7EE09 (215)
Accelerated learning at Masters level: Case-Based Learning of Diagnostic Reasoning skills by Physician Associate Students

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Background: In the UK the trajectory of acquiring clinical diagnostic skills for Physician Associate (PA) students is constrained within a 2 year postgraduate programme. The curriculum at Brighton and Sussex Medical School has been designed to facilitate this accelerated trajectory through use of explicit illness scripts during weekly Case Based Learning.

Summary of Work: Data collection used a mixed methods approach; Completed 3 times across academic year (Year 1). (1) Diagnostic Thinking Inventory (DTI). (2) Questionnaire: Students self reported engagement with diagnostic thinking. (3) Qualitative data (free text) provided by students describing the influence of case based learning on their diagnostic thinking.

Summary of Results: Preliminary results show PA students have a proportionally higher score in flexibility (equivalent to foundation year doctors), compared with structure (equivalent to 3rd year medical students). Early thematic analysis shows engagement with diagnostic thinking in CBL facilitates equivalent discussions in clinical placements.

Discussion: Discussion will focus upon the trajectory of learning as illustrated by DTI scores, and the students experience of CBL. There will also be discussion of themes emergent from qualitative analysis of free text boxes.

Conclusion: This will be derived from results and discussion.

Take-home Message: This study aims to understand if adopting an explicit strategy for development of diagnostic reasoning skills via case based learning can facilitate an increased learning trajectory. It seeks to apply existing knowledge about Case Based Learning as an educational pedagogy to the expanding PA workforce.

#7EE10 (415)
The teaching of clinical reasoning by senior clinicians

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Background: At our medical school, the teaching of clinical reasoning starts in a well-structured curriculum in the pre-clinical years. In the clinical years, however, teaching is less structured and delivered by multiple teachers. The aim of our study was to understand how senior clinicians teach clinical reasoning.

Summary of Work: Because there are no validated questionnaires to assess how clinical reasoning is taught, we conducted individual interviews with 14 senior clinicians to establish how they defined clinical reasoning, how they were teaching it, how they themselves had been taught, and what changes should be made to their teaching.

Summary of Results: Senior clinicians teach clinical reasoning opportunistically. They emphasised the importance of supervised practice, reflection, think aloud, focused data collection guided by the clinical presentation, and the iterative nature of reasoning. They identified teaching as a way to further develop their own reasoning. Few recall being formally taught clinical reasoning.

Discussion: Our findings challenge the notion that teachers teach the way they were taught. Though most participants reported that they had not been explicitly taught clinical reasoning they were dedicated to teaching it to their own students. Despite their informal definitions, they suggested teaching clinical reasoning in a systematic way.

Conclusion: Overwhelmingly, senior clinicians want to enhance and structure how clinical reasoning is taught in the clinical years. The teaching experiences of senior clinicians appear to be an important resource when revising the curriculum and planning for faculty development about the teaching of clinical reasoning.

Take-home Message: Senior clinicians use an apprenticeship model of workplace learning to teach clinical reasoning. This model provides them with opportunities to teach clinical reasoning to their students in a variety of clinical contexts and enables them to make this tacit thinking process as explicit as possible to their students.
**#7EE11 (2763) Effect of Clinical Clerk Ability and Station Content on Clinical Reasoning in an Internal Medicine Structured Oral Examination (SCO)**

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**Luke A. Devine, Department of Medicine University of Toronto, Toronto, Canada**

**Background:** Little is known about characteristics of clinical reasoning (CR) by clinical clerks. The influence of station content difficulty and overall student ability (as measured by final rotation performance) on CR during a summative examination will be determined - when content knowledge should be at its peak.

**Summary of Work:** Student marks (n=511) were computed for intuitive (System 1), analytic (System 2), and other CR components on 12 SCO rotation examinations over 2 years. Spearman correlation coefficients between students’ performance in these and other clerkship assessment domains were calculated. CR ability was analyzed by clerk final performance and station difficulty.

**Summary of Results:** Intuitive and analytic CR correlated with overall rotation marks (rho=.287 and .294) and written examination performance (rho=.251 and .253). Correlation between system 1 and 2 thinking increased as student ability in a station’s content weakened. In contrast, there was minimal correlation difference when stratified by students’ overall clerkship performance.

**Discussion:** Clinical reasoning ability, both intuitive and analytic, correlates independently to overall clerkship ability and to performance on a written examination. When weaker in content ability, students exhibit an expected pattern of poor intuitive thinking when analytic ability is weak, and strong intuitive ability when analysis is strong.

**Conclusion:** Clinical clerks are considered relative “novices” in clinical thinking. However when presented with content that they are proficient with, there is no correlation between their intuitive and analytical thinking ability and their performance in both tends to be strong.

**Take-home Message:** A high stakes summative structured clinical oral examination in Internal Medicine has demonstrated that content specific ability influences clinical reasoning ability in clinical clerks.

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**#7EE12 (630) Less is more: Restructuring a clinical reasoning and differential diagnosis course for 5th year medical students**

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**Sabine Schneidewind, Hannover Medical School, Hannover, Germany**

**Background:** Clinical reasoning and differential diagnostic thinking are essential skills for future doctors. Our 5th year students were taught clinical reasoning in a class of 140 hours with ex cathedra lectures being predominant. Due to constantly decreasing evaluation scores to a minimum of 6.8 out 15 points change was warranted.

**Summary of Work:** First, lectures were reduced from 140 to 60 hours which gave more space for self-study. Second, learning objectives were aligned according to the National competency-based catalogue of learning objectives (NKLM). Third, faculty members were advised to encourage student engagement by including clinical cases and fostering interactive discussions.

**Summary of Results:** Attendance during the lectures increased and remained on a high level throughout the whole course. Comments of the students pointed out that overall student satisfaction rose considerably compared to the prior course concept. The new course received a total score of 9.3 points out of 15 in the general evaluation.

**Discussion:** Initially, faculty members were resistant to reduce and to restructure redundant lecture content. Political aspects such as defending one’s teaching time as a symbol of importance had to be overcome. We argued that enhancement of student participation will rise attendance. Implementing time for self-study will foster a better learning environment.

**Conclusion:** Direct feedback from the students indicated that the free time gained was mainly used for preparation and refining the lessons. The students found the new lecture structure very helpful. The element of interactive discussions led to a higher understanding of the subject.

**Take-home Message:** A better understanding of clinical reasoning was promoted by encouraging students’ participation during the lessons. Students benefited from loosening the formerly very dense timetable so that restraints from self-directed learning were abolished. Moreover, faculty members were pleased with the actual constant high numbers of students attending the lectures.
#7EE13 (198)

**Tactfully Teaching the Teachers – a distributed model for teaching Critical Thinking**

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**Background:** Dalhousie University emphasizes Critical Thinking skills as a longitudinal theme in the undergraduate medical education curriculum. In order to alleviate faculty concerns around their competence and confidence in teaching and assessing these skills, the Teaching and Assessing Critical Thinking (TACT) program was developed.

**Summary of Work:** The program allows a distributed group of clinical faculty to access content and interact with instructors (including postgraduate trainees) via online modules, in addition to live webinars and chat forum sessions. Learners are guided through various aspects of the fundamentals of Critical Thinking over the 12 weeks of the program.

**Summary of Results:** The initial program was highly successful, with positive highly evaluations, leading to a further three iterations and expansion to allow non-Dalhousie faculty to participate across a variety of sites, including the UK and USA, and non-medical teachers to participate. A total of 48 participants have completed the program to date.

**Discussion:** Asynchronous learning is highly effective in developing skills and confidence in teaching Critical Thinking. Participants have completed four iterations of the program, with an advanced Part 2 being held for successful graduates of Part 1. Ongoing assessment will continue to inform development of future programs.

**Conclusion:** We describe a successful online program which employs principles of adult learning to train clinical faculty in the fundamentals of teaching and assessing the domain of Critical Thinking. This flexible and focused program is accessible to a range of clinical teachers over multiple locations.

**Take-home Message:** Clinical teachers can be effectively taught via asynchronous educational modules. We developed an online program that focusses on fundamental Critical Thinking skills, which we will continue to refine as we evaluate the program. We have expanded our participation to locations and clinical professions outside our initial Faculty of Medicine audience.

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#7EE14 (1731)

**Investigating Scientific Reasoning and Argumentation in Medical Education and Beyond**

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**Background:** Scientific reasoning and argumentation (SRA) is a key qualification students are expected to obtain during university studies (Fischer et al., 2014). The aspects of SRA that are domain-general remain unclear and empirical research regarding teaching concepts and methods to foster the according skills, specifically in medical education, is also unsatisfactory.

**Summary of Work:** Within the research project ForschenLernen, three studies with different methodologies are currently being conducted to clarify the conditions under which SRA skills may best be fostered. Research-based learning and inquiry learning appear to be particularly promising approaches to support students in the acquisition of these skills (Mieg & Lehmann, 2017).

**Summary of Results:** (1) The interplay between SRA and epistemic beliefs is subject of a meta-analysis. (2) A quantitative 2X2 study aims to measure SRA skills and compares the statistical literacy of medical students and pedagogy students. (3) A qualitative study with university teacher educators investigates their attitudes towards research-based and inquiry learning.

**Discussion:** With respect to medical education, clinical reasoning as a special form of SRA is a crucial skill for students that needs to be fostered. Our studies further address claims regarding the lack of statistical literacy in medical doctors (Gaissmaier & Cigerenzer, 2008) and seek to provide data for curriculum improvement.

**Conclusion:** The question of how to foster students’ SRA skills should be investigated not only in medical education but also across different domains and with different methodologies. A profound knowledge of factors influencing SRA is essential for the development of effective research-based teaching concepts that aim to foster precisely these skills.

**Take-home Message:** A broader empirical basis is urgently needed to better understand and foster SRA skills in the context of medical education along the development path of expertise and professional profiles.
To what extent do dental students engage with reflection in undergraduate clinical practice?

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**Background:** Contemporary dental curricula have a social responsibility to deliver authentic pedagogical approaches that optimise student preparation for professional practice. Reflection and reflective practice are acknowledged strategies that strengthen coherence of theory and practice through enhanced self-awareness and critical thinking. However, commentary on their utility in oral health programmes is limited.

**Summary of Work:** A mixed methods methodology was used to explore student engagement with reflective activity. In particular, the impact on learning and transition into the clinical environment of third year undergraduate dental students. Completion of a self-administered reflection questionnaire was combined with focus group inquiry.

**Summary of Results:** Data analysis identified positive student involvement with concepts and associated deeper approaches to learning. Clinical Educators were considered pivotal to the process as too the context of the reflective activity. Further, the perception that concepts are universal processes was challenged by analysis of the fabric and granularity of the phenomena.

**Discussion:** Whether undertaken individually or collectively, flexibility in approach, establishing trust and promotion of a safe environment in which to undertake reflective activities are imperatives. To de-emphasise their criticality will undermine the experiential learning that reflective skills afford and debase desired principles of lifelong learning.

**Conclusion:** The precepts of reflection and reflective practice are complex and challenging to qualify and quantify. This study contributes to the ongoing dialogue from an oral health perspective through identifying engagement with the concept and impact on approach to student learning. This affords potential through further constructive and progressive exploitation.

**Take-home Message:** Innovative and unequivocal articulation of appropriate frameworks and tools, that compliment traditional discipline specific approaches, are indicated for a generation of students exposed to unlimited technology and knowledge. This will facilitate attainment of desired learning objectives whilst minimising the potential for concepts becoming overused and undervalued teaching strategies.

Enhancing Reflection in Medical Students by Chat Application

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**Background:** The process of reflection is powerful for lifelong learning and achieving higher levels of professional medical practice. Although there are many different approaches to implement reflection in medical education, but low engagement and lack of integration in teaching and learning are still problems.

**Summary of Work:** Three medical students, extern, resident and staff/mentor together created a reflection group chat via LINE application during internal medicine rotation. Before bedtime, everybody was challenged to reflect any learning points, thoughts or problems by typing text in group chat. Staff/mentor was a key person to facilitate team and give feedbacks.

**Summary of Results:** All six questionnaires were responded with one-third did not know reflection before. Reflection group by chat application were rated 4.2 (max=5) for both satisfaction score and this activity should be maintained. They were motivated to review medical knowledges or learning points in everyday and sometimes felt no privacy to share.

**Discussion:** To improve professional medical practice for undergraduates, reflection is an important part. Social chat application is user-friendly for 21st century students and easily to be engaged. Moreover, they are able to learn each other and staff/mentor can teach or give some feedbacks anytime. Privacy is only limitation for this activity.

**Conclusion:** Reflection group by chat application can be a tool for enhancing reflection process in medical students.

**Take-home Message:** Anyone can do reflection anytime in any hands.
#7EE17 (1971)  
Gender specific linguistic analysis of reflective writing of undergraduate medical students  

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Background: Reflection forms an integral part of professional medical practice. We teach undergraduate students how to reflect during a one-week teaching skills course and this includes a written reflective exercise on something having a personal impact during the week. Our impression is that females use emotional language more frequently than males.

Summary of Work: We have investigated gender differences in use of language for the reflective work of 332 students (158 female). Using a software programme Linguistic Inquiry Word Count (LIWC2015) we analysed language within six psychological process word categories: social, affective, cognitive, perceptual, drives and time-orientation and additional subcategories.

Summary of Results: Cognitive words were most frequent; affective and perceptual categories were least frequent. Females had significantly higher word counts than males (p=0.001), and females were more likely to express anxiety (p=0.002), mention friends (p=0.008), certainty (p=0.019) and affiliation (p=0.036) compared to males.

Discussion: Use of emotional words was low between both sexes despite the relevance of ‘feelings’ to meaningful reflection. There are limitations of using a word count approach to inferring emotional content, however, as the LWIC2015 does not allow for contextual use of language. Some highly significant gender differences require further analysis.

Conclusion: Our data suggests a need for our teaching to develop to encourage written expression of feelings as well as thoughts. Interpretation of gender specific differences in word usage needs further qualitative analysis to identify meaningful gender differences in expressing thoughts and feelings, which can be used to inform our teaching.

Take-home Message: We have identified trends in word usage, which may indicate trends in approach to reflective writing. We have also identified significant gender differences in word use. Further qualitative analysis, which includes language context, will be necessary to clarify whether our data reflects meaningful gender differences in approaches to reflective writing.

#7EE18 (2749)  
Choosing Wisely in Medical School - as Soon as Possible  

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Background: It is very important to increase awareness towards high-value, cost-conscious medical decisions. In this context, it was created the Choosing Wisely international campaign. In Brazil, the list creation strategy has been applied to a specialty medical society, but participation of undergraduate medical students has not been described so far.

Summary of Work: A 12-item list of recommendations was created by an expert panel of 10 medical teachers. This list was applied to 93 pre-clinical medical students, to choose the most relevant items. Later, we promoted an event to discuss this topic. This intervention was evaluated by the students using a questionnaire.

Summary of Results: Six items were chosen as the most relevant. Those related to “shared-decision making” and “benzodiazepine prescription” were the most important. The main choosing criteria was “previous experience as a patient” and most of the students agreed about the importance of the campaign, on which cost-benefit was the perceived theme.

Discussion: The “shared-decision making” item and the main choosing criteria represent how the students relate more to the role of the patient than to the doctor. That is expected, once they are in pre-clinical phase and lack experience.

Conclusion: It is possible to raise medical students awareness about high-value medical decisions using the same strategy as the Choosing Wisely campaign.

Take-home Message: To include cost-consciousness themes in medical school curricula it is essential to improve the quality of our doctors.
Learning Anatomy through Art

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Background: Anatomy is fundamental to medical education and, traditionally, the main teaching method was Cadaveric Dissection. Although, it is still utilised worldwide, recently, some British schools have employed more novel approaches. This project explores the method of teaching medical students lower limb anatomy through sketching and art.

Summary of Work: Three sketching-anatomy classes were held at Peninsula Medical School. Students were given a short presentation on the anatomy covered and its clinical significance, before sketching the bones discussed in the lecture. Students were then tested on their knowledge and understanding. Feedback was gathered at the end of each session.

Summary of Results: Three voluntary sketching classes were held at Peninsula Medical School. There was a positive correlation between attending sketching classes and improvement in confidence of anatomy knowledge. No correlation was found between sketching ability and confidence. All of the students found the anatomy classes ‘very useful’.

Discussion: This project assessed student’s confidence of anatomical knowledge, which improved with sketching classes. Further work could explore the reasons contributing to this; nature of classes, more time studying subject etc. Additional work could evaluate the effect of art on student’s knowledge, for example through pre and post class anatomy questionnaires.

Conclusion: Anatomy knowledge can be considered the foundation for medical students to build their understanding of pathology and practice from. With some medical schools moving away from traditional dissection, alternative methods of learning anatomy are being considered. One such approach is through art, which through this project received overwhelmingly positive feedback.

Take-home Message: Alternative teaching methods to anatomy are being utilised in some British medical schools. Sketching classes, focusing on the bony structure of the lower limb anatomy with supplemental teaching and questions, provided an interactive and enjoyable method to improved students confidence in their anatomy knowledge.

Anatomy E-Tutorial on the Arterial Supply of the Human Body

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Background: Innovations in modern technologies allow students access to educational resources in very different ways to traditional teaching methodologies. As such, and as part of a Student Selected Component, we created an e-tutorial on the arteries of the human body, linked into learning objectives of the Glasgow medical curriculum.

Summary of Work: An interactive e-tutorial on the arterial supply of the human body was created using Adobe Captivate 9. The e-tutorial details the arterial supply of the body in anatomical regions. Interactivity is incorporated as quizzes, clinical items, and detailed anatomy for early stage medical training.

Summary of Results: The e-tutorial was designed by students, for students as a pilot study. We shall present the ongoing evaluation from student users from pre-and post-evaluation surveys. The methodology of how to create an e-tutorial will also be discussed.

Discussion: The unique feature of this project is that the anatomical material is validated, and has involved students creating it for their peers. A constructivist approach has also been adopted, with students as co-creators of the educational and training materials, and enhances digital skills.

Conclusion: The interactivity of e-tutorials allows an alternative teaching and learning method to lectures, books and dissections. The e-tutorial can be used in places where accessibility, or use of traditional resources may be challenging. The resource is easy to use and tailored to target students.

Take-home Message: The e-tutorial created is a valuable teaching resource created for students, made accessible and user friendly for all. The resource can be used as both a teaching resource or a learning resource.
**#7FF03 (61)**

**Digital anatomy at your fingertips: A bespoke touchscreen gateway for accessing digital anatomy resources at the dissection table**

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**Background:** There is a wealth of digital learning resources available to students in human anatomy, including in-house teaching material and externally-sourced products. However, access to these is dispersed across multiple interfaces which can be a barrier to richly-integrated learning in the operational parameters of the dissection laboratory.

**Summary of Work:** This project created a web-based interface on iPad that compiles access to multifarious digital anatomy resources into one clear and secure gateway for use at the dissection table. Students access diverse collection of learning resources during dissection exercises, including the dissection workbook, lectures video explanations, and session notes.

**Summary of Results:** Using web code, a kiosk-style menu interface was created using a Flat Design approach. The design used simple elements, typography, and colours to provide a clear interface that aids physical touch navigation. Further, QR barcodes on specimen jars provided an instant link to a full pathology history on the device.

**Discussion:** The drive to provide technology-enhanced learning in dissection came from students asking to use their own mobile devices. A successful application for a local grant resulted in obtaining 10 iPads. The team met with student representatives to plan what would be delivered on the iPads.

**Conclusion:** In order to comply with best practice, the lab-dedicated iPads are restricted to display only the gateway interface and ‘white-listed’ websites. Additionally, anatomy has a large collection of pathology specimen pots labelled with a QR barcode, which are viewed with the iPad camera. Feedback was obtained via a paper poll.

**Take-home Message:** Having a bespoke iPad interface with access a wide range of resources, makes learning more personalised to suit the learners needs.

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**#7FF04 (2647)**

**Photogrammetry as part of a multi-modal teaching model in anatomy education: a first year medical cohort perspective**

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**Background:** With increases in student numbers, changes in fees and an overhaul in the medical education curricula, higher education facilities are reviewing and reassessing their methods of anatomy teaching. Innovative approaches have been considered at the University of Liverpool, to identify effective and engaging ways to deliver anatomy education.

**Summary of Work:** Using ‘Aigsoft PhotoScan’ a 3-D ‘virtual prosection’ of a human heart was created. Following a practical anatomy session, a cohort of first year medical students (n=200) with no previous exposure to anatomy teaching or cadaveric material completed a questionnaire. Feedback encompassed opinion on virtual prosections, and considered their learning experience.

**Summary of Results:** Students were apprehensive about the cadaveric material, and felt they needed more assistance with real specimens compared to the virtual specimen. Feedback indicated the virtual prosections were of a high quality and offered sufficient anatomical detail and interaction to be used as part of an integrated teaching model.

**Discussion:** Virtual prosections can be produced, with detailed reconstruction of anatomical structures and a level of interaction that encourages more self-directed learning. Integration as part of a multi-modal approach to anatomy could ease pressures on time, as well as limited cadaveric specimens, without losing the 3-D aspect of anatomical learning.

**Conclusion:** Incorporating virtual prosections into anatomy teaching sessions for medical students could be beneficial to both staff and students, utilising limited time and facilities more effectively and providing an engaging and clinically relevant learning resource. Effectiveness of virtual prosections as a learning tool must be assessed, with more quantitative data required

**Take-home Message:** Exploring innovative approaches to anatomy teaching is necessary to identify new methods of delivery for an increasing numbers of students, in a system which is under time and space-related pressure. Student perspective is essential in designing engaging and effective learning models and ensuring a positive student experience.
Innovative Peer-Learning Activity for Neuro-Anatomy in Cambodia

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Background: In Cambodia, resources are scarce and cadaveric materials are lacking. Didactic lectures are mainly used to teach anatomy. In addition, students are often required to learn a long list of anatomical structures, which may not be relevant or useful in their future clinical practice.

Summary of Work: We used interactive activity stations, around which students rotate in small groups to learn through labelling exercises, 3D visual aids and clinically relevant cases. We present data on student perception using a survey, and efficiency of learning using a paper-based assessment, of the innovative peer-learning activity in undergraduate medical students.

Summary of Results: All 143 students completed a 79 point MCQ assessment. The overall average pre-test score was 40 (51%), which improved to a post-test score of 59 (75%), the difference being statistically significant (p-value < 0.001). Over 92% (134/145) of students found this innovative peer-learning activity enjoyable.

Discussion: This is the first report of using this method of teaching in undergraduate medical education in Cambodia. Our results support the notion that students enjoy and prefer this way of learning neuro-anatomy to lectures. Further, students' knowledge increased as a result of this peer-learning activity.

Conclusion: In the innovative peer-learning activity, neuro-anatomy will be learned in an effective, enjoyable and clinically relevant way, and this also supports self- and peer-learning. We plan to incorporate this into the undergraduate medical curriculum.

Take-home Message: We believe that the innovative peer-learning activity can transform the way students learn anatomy from a traditional, passive and teacher-centered way, to an active, student-centered and clinically relevant approach. This can be applied to a range of subjects and educational settings.

Fostering understanding of entities and professional conduct: pedagogical development of two anatomy courses in veterinary medicine

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Background: Veterinary medical education aims to move from lecture-based methods of teaching to active learner centered methods aiming to foster understanding of entities and professional conduct. The benefits of collaborative learning have been well documented in a variety of disciplines including anatomy curriculum.

Summary of Work: We examined two cadaver dissection periods of the gross veterinary anatomy curriculum. Besides the content learning aims, we addressed how the courses were developed, how students evaluated the courses, and how competences in collaborative knowledge work were learned.

Summary of Results: The very first dissection course (on muscles) highlighted particularly enthusiasm based on the practical and nature of the course, with challenges in the regulation of collaboration. The other course (topography) raised more positive aspects about understanding the learning content and learning form others, but also difficulties in collaboration.

Discussion: Doing oneself, practical application and professionalism were highlighted particularly in the first year course but concerns were raised by the need to learn numerous terms. Group work and learning from others were valued during the topography course but students also raised concerns that groups may learn different entities.

Conclusion: The main difference between courses in learning of collaborative knowledge work competences were related to the nature of the group work assignment. The topography course included element of collaboration to prepare a presentation, which advanced competences emphasized on collaboration on a shared object and integration of individual and collective efforts.

Take-home Message: We need to emphasize benefits of collaborative learning by encouraging students to share their findings not just within their own dissection group but also with other groups even when it's not written out as a learning goal. This ties collaborative learning also more closely to the concept of professional conduct.
Fresh porcine hearts in heart anatomy teaching

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Background: Misconceptions about the organization of the cardiovascular system are common among medical students, and for some students persist even after the basic course on this subject (Ilona Södervik, Doctoral Thesis, University of Turku, 2016).

Summary of Work: As our dissections of the human heart are not synchronized with the cardiovascular course, we scheduled one day for voluntary self-tuition study of fresh porcine hearts from a slaughterhouse and an opportunity for virtual dissection using a Sectra Table and assessed student feedback with a questionnaire.

Summary of Results: 95% of the participating students found the porcine heart task useful and recommended its use also next year, compared to 60% for the Sectra Table task. Of free verbal comments 22 were positive, 1 negative about the porcine heart task, 5 positive and 22 negative about the Sectra Table task.

Discussion: Participation in this pilot study was voluntary, possible excluding students most in need of this learning opportunity. The overwhelmingly positive feedback concerning fresh porcine hearts encouraged us to extend their use to the whole course in the future.

Conclusion: Fresh porcine hearts are valid and inspiring representations of human heart anatomy.

Take-home Message: Porcine hearts from a slaughterhouse are more interesting and immensely cheaper than available virtual dissection platforms.

Effectiveness of virtual modalities for teaching gross anatomy

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Background: An enduring debate around gross anatomy instruction is whether traditional human cadaver laboratories are beneficial to student learning. With the availability of computer-based instructional tools, many institutions are including these modalities into their roster of teaching tools. But how do these technology based tools impact learning?

Summary of Work: There are few studies which examine the effectiveness of computer-based, virtually augmented or simulated anatomical platforms for teaching gross anatomy. Given the growing popularity and possible role of these tools to visualize anatomy in a unique way, we obtained and assessed the effectiveness of these tools.

Summary of Results: Preliminary quantitative data of the platforms tested did not yield significant differences in effectiveness of learning over traditional formats. In the qualitative data students expressed increased confidence in understanding anatomical concepts and liked the ease of learning that the technical platforms allowed.

Discussion: While student perception regarding the utility of technology to enhance learning was deemed positive, more quantitative analysis is needed to conclude whether there are significant advantages of incorporating or replacing the traditional methods used in human anatomy instruction.

Conclusion: Computer and media based instructional tools are continuing to grow in function and technical capabilities. The incorporation of these interventions for teaching require careful review regarding their placement, effectiveness and perceived value.

Take-home Message: More evidence is needed to elucidate the role of computer based curricular changes.
Doughnut Rounds are an Effective Way to Learn Clinical Anatomy

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Background: Doughnut Rounds (DRs) are a type of Self-Directed Learning which have been shown to be effective in teaching medical students compared with lectures alone (Bultrod, 2003). The purpose of this paper is to examine the effectiveness of DRs in learning the clinical anatomy of the lower limb among pre-clinical students.

Summary of Work: Following ethical approval, 17 Year 1 students attended six weekly grouped DR sessions. Students took turns to ask clinical anatomy questions to others in the group. All incorrect/correct answers were explained. Each student took an identical MCQ test before and after each session and a mock exam 4 weeks later.

Summary of Results: Average attendance was 67%. The average post-session MCQ scores increased by 39% for all DRs (p=1.18x10^-7). Most students either agreed or strongly agreed that the sessions improved their anatomical knowledge (87%) and confidence (77%). Students also reported that their anatomical knowledge improved while preparing for the session (63%).

Discussion: There was a statistically significant improvement in the overall post-test MCQ score, indicating that the DR sessions helped students learn new material. Participants showed a greater improvement in their final examination results compared to non-participants suggesting that the benefits of DRs may extend beyond the immediate recall period.

Conclusion: Formulating, asking and answering questions during DRs significantly improves students' anatomical knowledge in an effective and enjoyable manner, while improving confidence and communication skills.

Take-home Message: This first study of the application of DRs to preclinical medical students, specifically to the learning of the clinical anatomy of the lower limb, demonstrates that this type of Self Directed Learning can be effectively extended to other medical disciplines.
#7FF11 (1866)
Clinically most relevant aspects of anatomy in current obstetrics and gynaecology practice for teaching medical students

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Background: Over recent years, wide-ranging changes have occurred in medical curricula. However, the challenge of acquiring sufficient anatomical knowledge in the given time constraints for safe and competent clinical practice remains. The aim was to identify clinically most valuable anatomy components that are relevant to current Obstetrics and Gynaecology (O&G) practice.

Summary of Work: Modified Delphi technique with three rounds involving sixteen experienced clinicians with the full spectrum of sub-specialty interests within O&G was conducted. Anatomical components applied in corresponding clinical situations were generated in the first round and their clinical importance was rated with a four point Likert scale in the subsequent rounds.

Summary of Results: Percentage agreement was utilised as outcome measure for components rated as considerably/very important with consensus of 100%. Response rates were 100% (Round 2) & 94% (Round 3). After three Delphi rounds, thirty anatomy components applied in forty-four general/specific clinical conditions and clinical assessments were identified as clinically most valuable.

Discussion: Concerns have been raised over the decline in anatomical knowledge among graduating doctors. Students need to be equipped with the required anatomical knowledge and prepared for its application as clinicians in the respective specialties. By incorporating current clinically relevant anatomy, students can learn & retain essential information for future clinical practice.

Conclusion: This study has helped to benchmark anatomical knowledge requirements that are most relevant to current O&G clinical practice, and essential in teaching medical students. It can be used to highlight the clinical relevance from early years and render anatomy teaching and learning useful for future clinical practice.

Take-home Message: The findings of this study provide clinicians opinions regarding the current required essential anatomical knowledge for a graduating medical student to apply during their O&G clinical encounters.

#7FF12 (1044)
Innovative teaching methods improve learning outcomes in anatomy and physiology: is there evidence?

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Background: Teaching anatomy and physiology undergoes changes from traditional lecture-based teaching to innovative approaches including problem-based and computer-assisted learning. The aim of this study is to examine the current literature and answer whether the students exposed to innovative teaching methods achieve enhanced learning outcomes, and which innovative methods are effective.

Summary of Work: This study is a systematic literature review. The two researchers conducted search independently of each other in November 2016, participated in the data selection process, discussed and agreed upon included articles according to inclusion criteria at every stage of the process.

Summary of Results: The innovative methods identified in the 12 included articles were grouped according to interventions used in four groups: video streaming, problem-based learning, hands-on methods and classroom performance system. The outcomes of the innovative teaching methods were variable. Assessment methods in themselves seemed to have an impact on the measured outcomes.

Discussion: Video streaming had either neutral or worse effect, problem-based and hands-on methods the same or better effect than traditional lecture-based teaching. Classroom Performance System offered better results and class attendance. This literature review points to a need for further research on applying innovative methods in teaching anatomy and physiology.

Conclusion: Applying the innovative teaching methods showed variable effect on students’ learning outcomes. Although some of the methods had promising results, those new methods should be introduced with reflections regarding potentially negative effects. This study points to the importance of assessment and relation between teaching methods and assessment methods.

Take-home Message: - When introducing innovative teaching methods attention should be paid to potentially negative effects. - There should be coherence between teaching and assessment methods. - Further research is needed to confirm effects of innovative teaching methods on learning outcomes.
Development and Validation of a minimal invasive surgery skill learning instrument: Preliminary Results

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Background: Learning Minimal invasive surgery skills is young surgeons’ major concern. Although simulators are a reference in improving surgical performance, lacking points remain. Indeed a lack in feedback, spatial abilities and cognitive load seems to hinder an efficient learning process. In consequence, engineering relevant basic skill learning instruments is needed.

Summary of Work: We designed and developed an instrument targeting the learning of basic surgical skills by considering relevant cognitive cues e.g.: psychomotor skills, spatial abilities, learning and haptic feedback, cognitive load. We conducted content and relation with experience validation process by submitting our instrument to audiences from different areas e.g. urology, visceral...

Summary of Results: 77 participants (17 experts; 12 experienced interns; 28 young interns and 20 novices) assessed the instrument. Content evidence ratings showed no significant differences (p=0.126). For relation with experience, we found significant differences between 3 levels of practice for at least two variables e.g. time (p<0.001) and motion fluidity (p<0.001).

Discussion: Homogenous and good ratings attest of the quality of the devices’ content and resemblance with reality. Results also suggest that performance on the device requires good surgical skills as the scores revealed 3 levels of practice. Experts and experienced interns outperformed young interns who in turn performed better than novices.

Conclusion: Our product is useful to different areas of MIS, because not restricted to a specific procedure. Providing haptic feedback and aiming the learning of surgical psychomotor skills through a spatial task (trajectory) was innovative regarding the literature. Perspectives would be to complete the scientifically validation procedure e.g. reliability and consequences.

Take-home Message: Future investigations need to develop basic surgical skills learning by considering current cognitive hindrances. Moreover, means enabling the Initial learning stage of surgical skills should be targeted to provide a solid background. The engineering of affordable but reliable instruments will facilitate their implementation in current curricula and their use.

“Statistic of the Month”:

Statistic of the Month: A new, interactive and engaging way to tutor trainee surgeons in statistics

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Background: Since 2007, the University of Edinburgh and the Royal College of Surgeons (RCS) of Edinburgh have launched seven successful online Masters Programmes for surgeons in training: two MSc programmes (content aligned with the intercollegiate Membership of RCS examination), and five ChM Programmes preparing for Fellowship of the RCS examinations.

Summary of Work: While all other modules (e.g. anatomy, physiology, pathology, etc.) are tutor-led, with activity graded discussion boards and a final examination, teaching statistics has been in the form of an online-Helpdesk, or links to static resources. This academic year (2016/2017) we introduced a new statistics module called “Statistic of the Month”.

Summary of Results: The Statistic of the Month is a series of web-based interactive applications created using the R statistical programming language. Students are given already visualised sample data to interact with (e.g. they can change the number of observations). For each configuration, the application displays the p-value (an indicator of statistical significance).

Discussion: On the associated discussion board, the tutor asked the students a series of thought provoking questions about how certain parameters affected the results. This level of experimentation gives the student a more thorough understanding of statistical concepts, and as such they are more likely to retain the information.

Conclusion: The voluntary uptake and impact of introducing statistics into the already heavy-workload of surgeons differed greatly between the pilot releases. More engagement was seen in the senior (ChM) versus the junior (MSc) programme, possibly indicating the late trainee stage realization of the necessity of statistical understanding in a clinical career.

Take-home Message: We are conscious that statistics as a subject is not popular amongst many surgical trainees, with many experiencing “statistics anxiety”. Thus, we adopted a constructivist approach in which hands-on activities and visualised interactive datasets enabled students to construct new knowledge and become more independent learners and problem solvers.
A Longitudinal Study on Medical Students’ Attitudinal Changes towards Cadaver Dissection in a Thai Medical School

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Background: Cadaveric dissection has been globally used as the core anatomical teaching tool for medical students including in Naresuan University, Thailand. However, dissection is being gradually reduced and even suggested or replaced with prosection. This study aims to assess the students’ attitude towards cadaveric dissection before and after exposure to dissection.

Summary of Work: A longitudinal study was conducted amongst 168 second-year medical students in 2016 at the Department of Anatomy, Naresuan University. Three questionnaires were used to collect relevant data from the students. The questionnaires were distributed in 1 week before the initial dissection and after practicing dissection for 8 and 16 weeks.

Summary of Results: About 94.65% were Buddhist. Most students displayed significantly increasing interest and excitement on subsequent, 8 and 16 weeks exposure to dissection (P<0.05). Approximately 50% considered the dissection room stressful. The negative physical symptoms were about 80% after dissection encounter. Over than 90% considered that time spent in the dissection room valuable.

Discussion: About half of students experienced the stressful during practicing dissection that may be influenced by the chemical odor and eye irritation leading to be uncomfortable. However, most of them concerned the dissection had very necessary for anatomy teaching.

Conclusion: This present study reported that the attitude of most of the Thai medical students showed interest in cadaveric dissection. The environment of the dissection room should be concerned because it could be a major factor inducing stress for medical students.

Take-home Message: Thus, human cadaveric dissection is still important and fundamental to effective learning in anatomy.
#7GG Posters: Choice of Career

Location: Hall 6

#7GG01 (2459)
Medical Education in Mississauga, Canada: Specialty choice and practice location for Suburban Based Medical Students

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Alicia Lozon, Trillium Health Partners, Mississauga, Canada
Carolyn Abrahams, University of Toronto, Toronto, Canada
Lesley Nickell, University of Toronto, Toronto, Canada

Background: Mississauga is a multicultural suburban community, just west of Toronto, with a population approaching 1,000,000. A second distinct University of Toronto medical education campus is now located in Mississauga, with a goal to increase graduating physician interest in suburban and community based generalist practice, where physician shortages have been identified.

Summary of Work: Canadian resident matching service (CaRMS) data, including specialty choice and location of postgraduate training, of the first 106 graduating medical students from the Mississauga Campus was reviewed, Additionally, data on the choice of location of practice of 89 graduating Mississauga based family medicine residents was examined.

Summary of Results: One third of graduating medical students matched to family medicine, including community and rural residency placements. 20% matched to internal medicine, and just under 20% were successful in surgical and specialty surgical residency programs. Over a six year period, 39% of family medicine residents remained in Mississauga following graduation.

Discussion: When compared to all University of Toronto medical students, match results, including specialty selection and location of residency, were similar, with a trend towards a slight increase of successful match results for Mississauga based students in the surgical specialties. A significant number of graduating residents chose to remain in Mississauga.

Conclusion: Preliminary results show a trend for residents remaining in Mississauga. Preliminary data has not shown significant differences in specialty choice and location of postgraduate training among medical students. Ongoing data collection will provide clarity regarding factors, including a suburban setting for medical training, that influence specialty choice and practice location.

Take-home Message: The proposed value proposition for training medical learners in rural settings has been to encourage generalist postgraduate training and subsequent practice in rural underserviced areas. The influence of a suburban training experience shows early positive trends in this regard, particularly related to residency training experience, and warrants further study.

#7GG02 (3147)
Private vs Public Medical School: A Comparison of Specialty Preferences of Final Year Medical Students in Pakistan

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Background: The number of physicians in any field in a country depends upon the specialty choices of its medical graduates. The discrepancy in the courses offered in private vs public medical schools in Pakistan can affect students' preferences. A narrow distribution leads to shortage or saturation of physicians in certain fields.

Summary of Work: A cross-sectional study was conducted in two medical colleges in Pakistan; one public and one private. A self-administered questionnaire was used to collect data. The respondents were asked to state their 1st, 2nd and 3rd choices of medical specialty career. Data Analysis was performed using SPSS v.21.

Summary of Results: Internal Medicine as 1st choice was significantly higher among public (25.2%) than private (16.9%). Orthopedics was picked significantly more in private (6.1%) than public (0.6%). Obs/Gyne was picked significantly higher in public (9.8%) vs private (4.2%). Private had higher variety of fields mentioned among first choice as compared to public.

Discussion: Internal medicine, pediatrics, general surgery and Obs/Gyne were the 4 highest ranked specialties which is consistent with the findings reported by other studies. There were several fields of medicine, including family medicine, that were not rarely picked choices among medical students, private or public.

Conclusion: This study supports the result of previous ones that a high proportion of medical students in Pakistan choose the same medical specialties without much variety. Hence there is a saturation in those areas of specialization and the population is under-served in other important areas such as primary care.

Take-home Message: With proper knowledge of career choices and sufficient research into factors affecting them, medical education policies in Pakistan can be structured to provide a framework for a better and wider distribution of our medical graduates especially to fields which help lower health care costs such as primary care.
#7GG03 (995)

Does manual dexterity in undergraduate simulation training affect the choice of clinical specialty?

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**Background:** We previously reported that medical students preferring surgeon showed higher self-assessment regarding manual dexterity than those preferring internist in laparoscopic simulation skills training (Kobayashi G, et al., AMEE 2015). However, little has been reported on the relationship between medical students’ manual dexterity and their post-graduate clinical specialty choice.

**Summary of Work:** The subjects were 238 medical graduates in Fukushima Medical University from 2010 to 2012. During clinical clerkship, they had experienced laparoscopic simulation-based training. Their performances were measured by 16 parameters in the laparoscopic surgical simulator (objective index). We also had a post-training questionnaire, where they self-assessed manual dexterity (subjective index).

**Summary of Results:** We were able to follow-up their clinical specialties in 159 graduates (66.8%). Seventy-seven graduates had chosen surgical fields (48.4%) while 82 graduates non-surgical fields (51.6%). There were no differences in both objective and subjective indexes of manual dexterity between the graduates in surgical fields and non-surgical fields.

**Discussion:** Other factors such as academic interests, job security, influence of teachers/friends, and personal factors may be involved in the career preferences.

**Conclusion:** Manual dexterity in undergraduate simulation training does not seem to affect the choice of clinical specialty.

**Take-home Message:** There were no significant differences in both objective and subjective indexes of manual dexterity observed in undergraduate simulation-based training between graduates who chose surgical fields and non-surgical fields.

#7GG04 (763)

Does the choice of medical school affect a UK graduate’s likelihood of becoming a surgeon?

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**Background:** In the UK there have been declining numbers of applications to surgical training in recent years, despite demand for surgeons in practice. An interest in a surgical career begins in medical school and we must investigate how to ensure surgery is still seen as an inviting career option to graduates.

**Summary of Work:** Data was supplied by the General Medical Council and Health Education England on the number of applicants to Core Surgical Training in the UK and the number of graduates from each university. The results were analysed to determine differences in the interest in pursuing a surgical career between individual institutions.

**Summary of Results:** At the upper and lower ranges there were significant differences in the percentage of graduates applying to core surgical training from individual universities. There were 9 UK universities consistently below the mean and 6 universities above the mean for years 2013-2015. There was no correlation with university ranking.

**Discussion:** Whilst some confounding factors cannot be ruled out given the data, a graduate’s likelihood of becoming a surgeon can be affected by the university they attend. There doesn’t appear to be any correlation in the proportion applying to surgical training and the institution’s educational attainment or ranking.

**Conclusion:** It is important to acknowledge that there are inequalities in the numbers of students that apply to core surgical training based on their medical school, unrelated to university ranking. Graduates of some universities are more likely to be successful at attaining a place than graduates of others.

**Take-home Message:** The availability of role models has been shown previously to affect student’s career choices and the decision to become a surgeon has been shown to be made early in medical school. All universities must facilitate these early careers choices and expose students early to surgeons and surgery to eliminate inequalities.
What predicts doctors’ satisfaction with their chosen medical specialty? A Finnish national questionnaire

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**Background:** In Finland, the lack of medical specialists varies between specialties and regions. More regulation of the postgraduate medical training is planned. If one wants to find the most suitable specialty for each doctor it is important to clarify what predicts doctors’ satisfaction with their chosen specialty.

**Summary of Work:** A random sample contained 50% of Finnish doctors. The response rate was 50.5%. Working-age specialists (n=2,612) were asked to value their motives when choosing a specialty. They were also asked if they would choose the same specialty again. The odds ratios for not choosing the same specialty again were tested.

**Discussion:** A large majority of the specialists were quite happy with their choice. However, some specialties would need attention in this respect. Motives and issues related to the work itself and the content of the postgraduate medical training best correlated with satisfaction with the specialty.

**Conclusion:** When the numbers of Finnish postgraduate medical training posts become more regulated, a renewed focus should be given to finding the most suitable specialty for each doctor. Careers advice should play an important role in this. The postgraduate training should also be improved to better correspond to the actual work-life.

**Take-home Message:** To be satisfied with their careers, doctors should be able to find a specialty that they find suitable. The role of chance should be kept as minimal as possible. Correspondence to the content of the work as a specialist should be the main target when developing the postgraduate medical training.

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‘They showed so much interest in me’ – a Swedish mixed methods study about the effect of school experiences on career preference

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**Background:** Gender-segregated specialties are a persistent pattern. However, little is known about the impact of medical school experiences on specialty preference. We therefore sought to explore what attracts and deter students from certain fields, deepen our knowledge about the effect of school experiences on career preference, and to investigate gendered patterns.

**Summary of Work:** Five classes of last year medical students at Umea University, Sweden were invited to answer two short open-ended questions: “Can you recall an event that has made you interested, and an event that has made you uninterested, of working with a certain specialty?” The narratives were analysed using mixed methods.

**Summary of Results:** Specialty-specific working tasks were often secondary to whether the students’ felt included or excluded at the workplace. Their primary interest was extinguished by negative attitudes from tutors or by lack of supervision. Considerably more women than men had been discouraged by clinics with a hostile or sexist workplace climate.

**Discussion:** The students enter clinics where gendered selection processes make them feel either welcomed or excluded. Irrespective of their interest and aptitude, this process will likely affect their specialty preference as well, e.g. a hostile and sexist workplace climate.

**Conclusion:** Although male and female students had similar incentives regarding their career, gendered selection processes at the clinics steer them in different directions. Thus, the understanding of gender as a mere background characteristic, priming women and men for different specialities, need to be revised.

**Take-home Message:** Focus in studies and debates about gender segregation in specialty choice should be shifted from the allegedly different career preferences among male and female students, and towards counteracting problematic workplace climates and gendered selection processes.
#7GG07 (1873)
Career-Simulation for your future - Pre-doctor experience camps make it possible in senior high school students

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Background: In the past, the career of Doctor is enviable worldwide. Actually, some medical students give up their learning because they don't like the “real life” in medical training. Therefore, we try to create an experience camp for senior high school students and help them to realize the Doctor’s job.

Summary of Work: A total 254 senior high school students participated in these camps during 3 years. The camps were held for 5 days. We arranged medical training as Interns/Residents. It includes history taking, physical examination, OSCE, duty on call, and clinical skills.

Summary of Results: During 5 day-curriculum, the results showed 254 students within 3 years have more interests to be a doctor and their target becomes clearer or more definite by Pre-camp and Post-Camp questionnaires.

Discussion: We use 4 dimensions for evaluation of the influence after this experience Camp. It included Comprehension of a Doctor's Routine/ Realization of the Skills a Doctor Needs/ The Challenges and Difficulties of Physician’s Work/ Self Expectations. The results all showed they can more clearly understand the life of a doctor.

Conclusion: If we want to choose suitable medical students, we could offer some opportunities to help them realize their job in the future. This Pre-doctor experience camp tried to create a simulated environment to let students make their best decision before they become doctors.

Take-home Message: If we want to choose suitable medical students, we could offer some opportunities to help them realize their job in the future. This Pre-doctor experience camp tried to create a simulated environment to let students make their best decision before they become doctors.

#7GG08 (1973)
The role of personality and motivational factors on students' career intentions for Primary Care and Surgery during their clinical training

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Margaret W. Gerbase
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Background: Evidence highlights the association between career intentions in undergraduate years and definitive career decision. Little is known about factors influencing these intentions. We aimed to investigate Personality and Motivations impact on career intentions for two specialties –Primary Care (PC) and Surgery (SUR)– comparing years 4(Y4) and 6(Y6) of medical studies.

Summary of Work: In 2016, 180 students (87 in Y4, 93 in Y6) were assessed on career intentions, personality (NEO-FFI-R), 5 motivational factors (MF=Lifestyle/Field-of-Action/Social-Accountability/Gains/Role-Model) for career choice (1=very important to 5=not important) and degree of motivation (1=low to 6=high) for PC and SUR. Analyses used chi-square, ANOVA and linear regression.

Summary of Results: In Y4 and Y6, about 13% of students intended to choose PC, 10% SUR. Personality and MF didn't differ by year, but by career intentions (p<.001). In Y6 Agreeableness (β=.20) and Social-Accountability (β=.20) predicted PC motivation; being a Male, Field-of-Action and negative Social-Accountability predicted SUR motivation (β=.20; β=.21; β=−.25, respectively).

Discussion: Personality and MF predicted motivation for PC and SUR in Y6 only. Students motivated for PC or SUR present specific personal and motivational features, thus confirming the differences of these 2 career tracks, previously described in the literature as socially-oriented/high-controllable lifestyle (GP) vs medically-oriented/low-controllable lifestyle (SUR).

Conclusion: Y6 confirms being a crucial moment where Personality and MF impact career choice. Social-Accountability could be an interesting factor to target in order to attract more students to PC where the proportion of students were largely insufficient to fulfill the needs of the population (about 50%).

Take-home Message: There are differences in undergraduate students’ Personality and Motivations for specific specialties. Investigating these factors could help defining keener strategies to encourage career choices meeting society needs.
#7GG09 (1509)
Are CPIRD doctors remaining in the rural environment after AEC?

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Background: Thailand became a part of AEC since it was established on 31st December 2015. A doctor can move freely among the member countries of ASEAN. The CPIRD medical students also have the opportunity to shift their workplace. This research studied the trend of mobility of these doctors among AEC.

Summary of Work: The data were collected by using a questionnaire forms in Walailak University’s CPIRD (collaborative program to increase rural doctor) medical students, in all 4th, 5th and 6th year medical student in both sections; Vachira Phuket hospital and Trang hospital MEC (medical education centre). Comparative analysis the data by descriptive statistics.

Summary of Results: 36.1% of medical students want to move to other ASEAN member countries. Country that has been targeted the most is Singapore. The reason that doctor work in Thailand is the limitation in language and the living in hometown. Choosing of country relates to its level of medical technology and knowledge.

Discussion: Rural hospital in rural area is a hometown where they're living with or near their family, but there are some problems eg, progression of working, referral problem or lack of budget support. If they have any chance to get promotion and a more comfortable life they must take it.

Conclusion: One third of Walailak University’s CPIRD medical students have a trend to move to ASEAN countries, that means we are going to have insufficient doctors in our own rural area in the future. The main factor for having a plan is the language limitation and the prosperity of the target country.

Take-home Message: - The success of CPIRD program is just 67% among Walailak University’s CPIRD medical students. - Family and hometown is the main cause for choosing. - Improve the language for working abroad and getting higher rank. - How to hold these doctor in this rural area as long as possible?

#7GG10 (2303)
Factors that influence undergraduate and postgraduate attitudes towards a career in general practice

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Background: There is a well-recognised crisis in the GP workforce in the UK. A disproportionately low number of medical graduates select a career in general practice, suggesting more could be done to promote it as an option. We wanted to understand the factors that influence attitudes towards a career in GP.

Summary of Work: Two careers evenings were co-organised by Health Education North West and Manchester Medical School. Several GP’s were invited to speak about various topics relating to general practice including application, training, specialist interest roles, and portfolio careers. An evaluation form was used to gather quantitative and qualitative data.

Summary of Results: 77 forms were returned. 56% of those who were undecided about a career in general practice beforehand were positively considering it as a career afterwards. The most positively influential factor was the work-life balance and the most negatively influential factor was fear of feeling isolated at work.

Discussion: The careers evening had some positive impact on a small number of attendees who were previously undecided about their career choice. This effect may be more pronounced in larger undifferentiated groups of students and trainees compared to this self-selected group who already had some level of interest in general practice.

Conclusion: Understanding factors that influence general practice as a career choice is crucial to recruitment of more GPs and helping resolve the current workforce crisis. Negative influences, such as the fear of feeling isolated in the clinical environment, should be discussed and addressed appropriately where possible.

Take-home Message: Understanding what influences trainees towards or away from a career in general practice, as we have done, should guide planning of GP careers events such that attendees can make more informed choices. Ultimately this should help actual recruitment at a time when there is a considerable workforce crisis.
#7GG1 (468)
Attitudinal Changes in psychiatry amongst undergraduate and graduate medical students and the effects on psychiatry as a discipline and career choice

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Background: While psychiatry clerkships improve attitudes to psychiatry, little is known about the influence of attitudinal changes on medical students’ overall views toward psychiatry as a discipline and as a potential career choice. Mental disorders are associated with significant disability and burden and there is a shortage of psychiatrists.

Summary of Work: Medical students (N=200) in undergraduate and graduate degree programs completed the modified Attitudes to Psychiatry Scale pre- and post-clerkship. Change scores in subscales: scientific merit of psychiatry, effectiveness of treatment and stigma of psychiatry, were analysed with questions on psychiatry as a discipline and choice of a career in psychiatry.

Summary of Results: Undergraduate medical students reported significantly positive changes in views of psychiatry as a discipline and career choice (ps<.001). Compared to medical students in graduate programs, UG medical students' views and career choices were significantly correlated with attitudinal improvements regarding the scientific merit of psychiatry and the effectiveness of treatment.

Discussion: Younger students in undergraduate medical programs may be more receptive to considering psychiatry as a potential career choice. Older students in graduate programs had possibly already developed opinions about the discipline, decided on future career specialties and may not be influenced by psychiatry clerkships. Stigma in psychiatry had no influence.

Conclusion: In line with past research, older medical students in graduate programs seem less keen on psychiatry compared to younger students in UG medical programs. Other factors such as lifestyle choices and future financial status may have and influence in older students’ decisions and affect interest in practising psychiatry.

Take-home Message: Attitudinal changes toward psychiatry during UG clerkships than graduate clerkships may have greater influence on views of the discipline and career choice. While graduate medical students would benefit from help in addressing negative attitudes, enhanced opportunities to attract and interest UGs to psychiatry might yield greater response for specialty recruitment.

#7GG12 (2360)
Specialization Compass for Medical Students - Tools for Finding a Speciality

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Background: The numbers of physicians by speciality will not correspond to population needs in the future in Finland. To minimize the discrepancies, the Ministry of Social Affairs and Health will implement „top-to-bottom“ changes in the speciality training selection process. Additionally, there is an urgent need for more student friendly, “bottom-to-top-approaches“.

Summary of Work: Along with comprehensive research, I have found, rethought and developed several methods that will help medical students to choose their specialty. By improving the available psychometric test, re-evaluating the need and efficacy of current career services and by designing a self-analysis method, I have created “a specialization compass”.

Summary of Results: I have focused on developing and improving methods that will help students to consciously choose their specialty. I have designed "a specialization compass"; a three-faceted model with a psychometric test, self-analysis and medical student career counselling, which encourages students to reflect upon their medical interests and suitability to different specialities.

Discussion: To alleviate the predicted imbalances of medical specialists in Finland, it is important to invest in students. With improved counselling and new tools for analytical thinking, students will be more aware of the strengths and weaknesses of different specialities and thus more apt to also favour the currently “unpopular” fields.

Conclusion: To make effective and sustainable changes in the structure of medical specialists, we need both, the administrational organs’ implementations and students’ conscious decision-making. “The specialization compass” emphasizes the role of self-analysis and reflection and will therefore help students make sound decisions that will eventually benefit themselves and the healthcare system.

Take-home Message: To alleviate the imbalances in the numbers of medical specialists in Finland, it is crucial to empower students in the process. By providing them with an adequate psychometric test, opportunities for self-analysis and personalized counselling they are apt to make sound career decisions benefiting themselves and the healthcare system.
#7GG13 (2379)
When medical students are unsure: a longitudinal study on the dynamics of indecision about specialty preferences

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Background: Many students enter medical school with a career plan but some are unsure about career aspirations throughout the degree. Little is known about why students are unsure or how they decide for a certain preference. This study characterized indecision in career preference and associated predictors in one medical school.

Summary of Work: Four student cohorts (n=217, 84.4% representativeness) were analyzed in terms of indecisions for specialty preference collected at entrance (M1) at start of clerkships (M2) and graduation (M3). Predictors of indecision at graduation were tested with binary logistic regression, using gender, age, personality, indecisions in M1 and M2 as independent variables.

Summary of Results: Entry indecisions (18.0%) increased (24.9%) and then decreased at graduation (18.4%). 53.5% of the students were unsure about a preference in at least one moment. Indecision at graduation was associated with indecisions in M1 (p=0.049, OR=2.16) or M2 (p=0.008, OR=2.62) and age (p=0.026, OR=1.16), but not with gender or personality.

Discussion: In this study, there were always at least 18% or more students who stated they had not decided for any specific specialty. Those percentages increased in the beginning of clerkships, at the conclusion of basic sciences years. Being unsure about preference at graduation was associated with being unsure previously.

Conclusion: The 3 preclinical years in this medical school with a 6 year program made students question their initial career aspirations. In contrast the 3 clinical years clarified some undecided students, but a high proportion remained undecided throughout. This seemed not to be associated with specific gender, age or personality profiles.

Take-home Message: The proportions of undecided students are high. The basic sciences years seem to make students less sure of their specialty preferences. Complementary qualitative investigations are necessary to clarify why and how the career aspirations may change. This is important as undecided students might fulfill gaps in healthcare workforce needs.

#7GG14 (1753)
Estimating the right number of medical specialists in the future: Case Finland

Johanna Rellman, Department of Neuroscience and Rehabilitation, Tampere University Hospital, Tampere, Finland
Teppo Heikkinen, The Ministry of Social Affairs and Health, Helsinki, Finland

Background: The Ministry of Social Affairs and Health has prepared an action plan to develop Finnish postgraduate medical and dental training. As a part of the preparation of the action plan, the need for specialists in all medical specialties in 2030 was estimated.

Summary of Work: The annual retirement of specialists was estimated. The specialty societies were asked to appraise the clinical development that affects the need for specialists. The regional demographic trends, morbidity and mobility of specialists were also taken into account. The annual need for new specialists in different specialities was then estimated.

Summary of Results: Around 600 specialists should graduate annually by 2030. At the same time ageing specialists should be supported to stay at work. In psychiatry, pulmonary diseases, rehabilitation medicine, and laboratory specialties the number of specialty trainees should be strongly increased and in orthopedic surgery, plastic surgery and ophthalmology reduced.

Discussion: The need for medical specialists in Finland is influenced by economic and demographic development and the on-going social welfare and health care reform. A report on needs should be produced periodically and the method should be further developed to ensure a timely response to changes in the health care environment.

Conclusion: The method used seems to be applicable when evaluating the need for new specialists in the near future. However, the final results cannot be evaluated until it can be assessed how the changes in specialist training based on this estimation actually affect the specialist work force.

Take-home Message: Regular estimation of sufficient number of specialists in the future is necessary if one wants to maintain a balanced medical work force. It can be done in a sufficient precision with quite small resources. This information also helps young doctors in their career planning.
"Pegs and Holes": How do we find best fit in the medical career jungle?

Adam Thomas, Keele University, Stoke-on-Trent, UK
Janet Lefroy, Keele University, Stoke-on-Trent, UK
Ruth Kinston, Keele University, Stoke-on-Trent, UK
Helen Thursby, Keele University, Stoke-on-Trent, UK
Sarah Yardley, Keele University, Stoke-on-Trent, UK
Robert K McKinley, Keele University, Stoke-on-Trent, UK

Background: There are many influencing factors on junior doctor career choice, and career outcomes differ substantially between UK medical schools. With an ASME/GMC Excellent Medical Education 2015 award we explored what underpins specialty choice for training of FY2 doctors from Keele and other UK medical schools.

Summary of Work: FY2 doctors were telephone-interviewed using a semi-structured schedule. We used realist evaluation to understand influences of context (focusing on placement experiences and memorable formative incidents), and the mechanisms by which the educational environment may shape career choice. In other words, “What works for whom under what circumstances and why?”

Summary of Results: Medical School affected career-thinking in two ways. One by exposure to perceived realities of a career – triggering mechanisms such as attraction/repulsion and matching/clashing with prior perceptions (determining the correct ‘hole’). The second set of mechanisms involved personal testing and understanding aptitudes for career roles (determining their type of ‘peg’).

Discussion: Participants described looking for ‘fit’ amongst senior colleagues. They are encouraged by feeling they ‘belong’ in a specialty. However, exposure to personalities and job-roles they cannot identify with can dissuade juniors from following a career path. Trade-off between career and life ideals troubles participants only after leaving medical school.

Conclusion: We suggest that in medical careers just as in life, we are continually looking for our ‘best fit’. This is best achieved in learning environments that facilitate exploration of students own personal attributes, and projecting these onto senior colleagues, all in the context of realistic immersion in varied career environments.

Take-home Message: In medical careers as in life, we look for our best ‘fit’. Learning environments can: Facilitate exploration of students personal attributes; Expose them to the realities of working life. Role models can help students perceive their own ‘fit’. Ruling out may be impulsive, testing for ‘fit’ is cautious.

You become a man in a man’s world: is there a discursive space for women in surgery?

Elspeth Hill, Washington University School of Medicine, St Louis, USA
Yvette Solomon
Tim Dornan
Renée Stalmiejer

Background: The UK set a 2009 target for a 20% female surgical workforce – in 2017, this has not yet been reached. Previous studies attributed this to the nature of surgery and women’s differing career aspirations. We explore the narratives of those women who do come to see themselves as surgeons.

Summary of Work: The study comprises fifteen individual interviews with women throughout surgical careers, from medical students aspiring to surgery, to senior and retired surgeons. Data were explored via discourse analysis with a priori themes derived from the literature on women in surgery and the theoretical framework of Figured Worlds.

Summary of Results: Discourses of being a surgeon and discourses of being a woman existed in competition. Female surgeons figured surgery as a career requiring 100% dedication, as they did motherhood; consequently these roles were not discursively compatible. Many related negative experiences where their female gender marked them out as ‘other’ within surgery.

Discussion: Women described how they were expected to show masculine traits as a surgeon, and how they were able become legitimate in the surgical world as a ‘women-surgeon’. They articulated how women and femininity could enhance surgery. Some women engaged in ‘world-making’, orchestrating discourses of surgeonhood and motherhood as mutually sustaining.

Conclusion: There is little discursive space to be a successful woman and a successful surgeon. Those who do combine the two must either be innovative in refiguring either what it means to be female or what it means to be a surgeon; or author a new space for themselves, via ‘world-making’.

Take-home Message: Discourses of being a surgeon competed with discourses of being female. Yet those women who do come to see themselves as surgeons are able to refigure these discourses, or even engage in powerful identity work more successfully combine the two.
#7HH Posters: Teaching and Learning 1

**Location:** Hall 6

### #7HH01 (1927)

**Concept Mapping: Promising Tool for Integrating Adult Learning Theories into an Educational Philosophy for Teaching**

**Antoinette S. Ungaretti, Johns Hopkins University School of Education, Baltimore, Maryland, USA**

Stephen M. Sozio, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA

Gundula Bosch, Johns Hopkins University Bloomberg School of Public Health, Baltimore, Maryland, USA

Anna Burgner, Vanderbilt University Medical Center, Nashville, Tennessee, USA

**Background:** Concept mapping is an effective tool to facilitate the development of cohesive knowledge frameworks through the identification of relationships among conceptual elements. As such, concept mapping may assist health professions educators to integrate adult learning theories with their values/beliefs into cohesive educational philosophies to further inform their teaching.

**Summary of Work:** Health professions educators wrote an educational philosophy, studied adult learning theories, and then engaged in concept mapping to integrate their understanding of the relationships of learning theories, values/beliefs, and teaching behaviors to inform revised educational philosophies. Concept maps, educational philosophies, and presentations/discussions were analyzed to identify these relationships.

**Summary of Results:** Concept maps provided evidence of participants’ ability to identify relationships between adult learning theories and personal values/beliefs in a cohesive conceptual structure. Analysis of revised educational philosophies and online presentations/discussions indicated the extent of integration of these relationships and higher-order changes in the conceptualization of teaching/learning.

**Discussion:** Findings indicated that concept mapping is a promising tool to enable health professions educators to effectively analyze, synthesize, and evaluate the relationship of varied adult learning theories to personal values/beliefs. Text analysis of educational philosophies and online presentations/discussions reflected knowledge structures that transformed their conceptualization of teaching.

**Conclusion:** Concept mapping provided health professions educators with a tool to identify relationships between concepts that impact their conceptualization of teaching. There is need for additional study of the impact of concept mapping on the resulting teaching behaviors of health professions educators and the impact on their learners.

**Take-home Message:** Effective teaching requires changes in how one conceptualizes teaching and learning. Concept mapping is a promising tool to assist health professions educators to create knowledge structures that integrate personal values/beliefs with adult learning theories to influence their educational philosophies and enhance the effectiveness of their teaching.

### #7HH02 (1655)

**Arts-based pedagogic approach for dementia awareness and training for health care professional students**

**Helen Orton, University of Liverpool, Liverpool, UK**

**Simon Watmough**

**Background:** Responding to the Prime Minister’s Challenge on Dementia 2020 and the 2015-16 Government Mandate to Health Education England, universities must develop the content of their curricula for health and social care programmes to ensure that graduates have the correct knowledge and skills to care for people living with dementia.

**Summary of Work:** An arts-based approach was adopted whereby health students attended a theatrical performance which highlighted relationships and emotions for both carers and individuals with dementia. Pre and post-performance questionnaires assessed the value of the pedagogic modality and the impact on students’ attitudes towards people living and caring for people with dementia.

**Summary of Results:** The students valued the performance, finding it both stimulating and interesting and a valuable way to learn about dementia from both the family and the individual with dementia perspectives. Furthermore, they reported improved understanding of dementia with respective increase in empathy towards those living and caring for patients with dementia.

**Discussion:** Whilst this theatrical performance was performed by professional actors, the play writer and actors had first-hand experience of dementia which added authenticity to the performance whilst also ensuring support for dementia was current. Furthermore, the post-performance discussion, facilitated by academic staff, enabled students to clarify issues raised within the performance.

**Conclusion:** Using illness-related theatrical performances in the context of health care education offers an innovative and increasingly emergent pedagogy modality. Furthermore, it increases empathy and develops insight into the students which subsequently prepares them to understand the complexities of people living with dementia and the effect on their families and carers.

**Take-home Message:** Using arts-based learning is an effective way for health professional students to explore aspects of health care that are limited to scientific phenomena and objective procedures. More significantly, it facilitates an understanding of the emotional factors that impact upon human experiences and the understanding of illness and suffering.
#7HH03 (167)
Contemporary Art and Medical Education

Shuangyu Li, King’s College London, London, UK
Lin Chung, King’s College London, London, UK

Background: This innovative educational intervention integrated participatory methods of contemporary art and experiential learning in medical medicine. It offers mid-stage medical students an opportunity for safe, critical and holistic reflection on how personal subjectivity and socio-cultural factors influence students’ perceptions of experiences and social events they participate.

Summary of Work: Three half-day workshops were given to a group of years 2-3 medical students over a week. Each workshop included an art gallery-based participatory session led by an artist and a campus-based consolidation session led by a clinical lecturer, where art experiences were contextualised in the context of clinical learning.

Summary of Results: The intervention showed advantage of developing students’ self-awareness, the ability to participate in group feedback, effective and empathic communication, active listening, and resilience. It appears to provide an invaluable safe and non-judgemental environment for mid-stage students to explore the role of students’ own sensitivity and personality in professional development.

Discussion: This intervention demonstrates both the instrumental (i.e. clinical learning) and non-instrumental (i.e. personal development) roles medical humanities play in medical education. It also highlights the significance of the crossbreeding between the artist and the clinical lecturer in collaborative pedagogical design.

Conclusion: Learning to be self-awareness is essential for mid-stage medical students to develop sensitive and personalised care for patients. The participatory reflection method of contemporary art has the advantage of supporting such development, especially when it is timely and appropriately contextualised in clinical learning.

Take-home Message: 1. Self-awareness is essential for developing sensitive and personalised care for patients. 2. Contemporary art provides an effective means for such development. 3. Teaching requires close collaboration between the artist and the clinical lecturer. 4. This labour intensive method requires further consideration for its implementation with large cohort of students.

#7HH04 (2097)
Novel Approach to Recognising ECGs: Learn by Drawing

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Gavin Brown, University of Edinburgh Medical School / NHS Lothian, Edinburgh, UK
Rebecca M. Burn, NHS Lothian, Edinburgh, UK

Background: It has been identified that students find the approach of ‘the more you see the more you recognise’ an inefficient and dissatisfying way to learn how to interpret ECGs. ECG interpretation is the ability to identify specific features of a trace, which combine to form patterns characteristic of certain pathologies.

Summary of Work: Students were given laminated ECG paper and dry markers. The cognitive process of interpretation was reversed by asking students to draw the patterns of an ECG characteristic of certain pathologies, rather than recognise and define a pre-existing trace. Differences between student-generated ECGs and reference traces were discussed to reinforce understanding.

Summary of Results: 3 cohorts of 7 students (n=21) were exposed to this teaching method. All students improved significantly between pre- and post-session tests. Likert-scale feedback questionnaires revealed that 100% of students found the learning-style more engaging than standard didactic lectures and 95% felt they had a better understanding of the material covered.

Discussion: Students felt this method superior to didactic teaching. Test scores show marked improvement however this is expected after any sort of teaching intervention: A case-control study is necessary to elucidate this further. Teachers interviewed, reflected that the method allowed them to identify and target weaknesses in understanding more effectively.

Conclusion: Students responded encouragingly to the ‘learn by drawing’ method of ECG interpretation, suggesting it to be better than standard ‘recognition and identification’ didactic teaching. Teachers equipped with this tool felt it useful in meeting students’ individual learning needs. More work is being done to realise this novel method’s full potential.

Take-home Message: This novel method of teaching ECG interpretation is effective, engaging and useful to students and teachers alike. A Case-control trial is being conducted to assess this teaching technique compared to standard lecture-based ECG teaching. A 6-week follow-up test will be included to assess long-term behaviour change as well.
#7HH05 (245)
Evaluating observational drawing as an educational approach

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Leonard Shapiro, Lateral Leap Drawing, Cape Town, South Africa

Background: The idea that observational drawing (OD) can be valuable for learning is supported by both educational theory and previous research findings. While some people claim they lack drawing ability, individuals can be taught to critically observe and make marks on paper that describe the three-dimensional form of an object.

Summary of Work: We have implemented and facilitated an OD workshop at Newcastle University for anatomy and medical educators. Participants have been trained in a specifically designed haptico-visual OD technique which involves deep multi-sensory observation including touch, manipulation, sight and simultaneous drawing of a three-dimensional object onto a two-dimensional surface.

Summary of Results: We describe an evaluation of OD though utilising experimental, survey and focus group approaches to identify the extent of the ability of workshop participants to retrieve the visuo-spatial appearance of objects from memory without actually viewing them physically, and their perceptions of the observational drawing process and its benefits.

Discussion: We aim to follow up our pilot with a wider study addressing the long-term impact of the workshop on educators in terms of their development of knowledge and skills, and by identifying the enduring effects of OD on their teaching practice and the learning of their students.

Conclusion: We have investigated the nature of specific aspects of learning with OD and identified that observational drawing can be a valuable method for developing the expertise of anatomy and medical educators and can enhance their approaches to learning and teaching.

Take-home Message: We present an evaluation of an observational drawing workshop in order to describe the extent to which our specifically designed multi-sensory observational drawing process can enhance the knowledge and skills of medical educators. We propose that these benefits can in turn be passed on to undergraduate medical students.

#7HH06 (334)
Learning by sleeping? – Sustainability of a guided training in “Learning to Learn” including sleep regulating techniques

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Background: Sleep is essential for recovery (adaptive normalisation, Heckmann and Gutenbrunner, 2013), neuronal plasticity (Tononi et al., 2014), learning (e.g., effort-recovery-theory, Meijman and Mulder, 1998), and academic performance (Curcio et al., 2006). In educational settings, sleep education programmes were developed and tested on pupils (Blunden et al., 2012).

Summary of Work: A required elective, 8-weeks guided training in “Learning to Learn” provided i.a. a learning environment for sleep regulating techniques. Aim was to foster self-regulation of sleep. Students that participated at least 6 months ago were interviewed by using semi-structured face-to-face technique to investigate sustainability. Content analysis (Mayring, 2015) was conducted.

Summary of Results: Interviews with N=8 students (aged 18-29y; 50% female; subjects of studies: medicine, psychology, economy) were coded (intercode reliability Cohen’s Kappa k= 0.88) and categorized. Students remembered and used Power Nap, adapting length of sleep, steady times going to bed and waking up, and adapting sleeping time concerning chronotype (declining frequency).

Discussion: Sleep regulating techniques were taught using knowledge input, reflection, planning, and individual decision making regarding implementation. As sufficient sleep, learning capacity and academic performance are closely linked to each other (Curcio et al., 2006), a training in sleep regulation using adequate didactics could be an essential tool for academic institutions.

Conclusion: Sleep regulating techniques can be taught sustainably in academic context. Besides academic performance, guidance in recovery by sleep regulation might be important for students and staff for maintaining health and especially for prevention of depression (e.g., Gangwish et al. 2010) or burnout.

Take-home Message: A guided training for students’ competencies in sleep regulation demonstrated sustainability for the sleep regulation techniques that were taught. Effects of this training on summative academic achievement, health maintenance and burnout prevention should be studied.
#7HH07 (171)
Working with the student in multi professional care: a psychodrama experience

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Ana Lúcia Goes, EBMSP, Salvador, Brazil
Ubton Nascimento

Background: In our school, we have an annual event that involves culture and scientific subjects focused on the student development. This year we proposed a workshop based on multidisciplinary approach, trying to create early in the health-student life a new perspective on the patient care.

Summary of Work: Three teachers from medicine, physiotherapy, psychology, offered a workshop about students' feelings and perceptions emerged after 03 movie clips as trigger for a discussion. Students have to create a new scene, based on these feelings, grounded on psychodrama theory, looking for new perceptions. They evaluated the workshop at the end.

Summary of Results: 14 students from nursing, dentistry, physiotherapy, psychology; none from medicine. Feelings as confusion, distress, anger; inquietude, identification after watching the clips appeared. After groups' presentations, one scene was remade; concepts of "listening the other" and "empathy" emerged. Students evaluated the workshop as "surprising" in a positive way.

Discussion: The reality on hospitals and clinics asks for early exposition to multi professional formation. This group, without medical students, in a workshop focused on patient care opened the discussion about other means of care in health.

Conclusion: Students need more moments during their courses to work the multi professional dimension of care. They expressed the need of developing a new view in this field, having the other as mirror. Medical students should be encouraged to attend workshops like this one.

Take-home Message: This kind of approach to the health students early and in different moments of their courses can create a reflexive professional capable to work in a multi professional team with an active method.

#7HH08 (3034)
The Perceived effectiveness of Medical Textbooks Books in targeting different Subdomains of learning

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Asem Hany, Alfaisal University, Riyadh, Saudi Arabia

Background: As medical textbooks remain an important tool used in medical education they are expected to play an important role in targeting outcomes of all the learning domains involved in medical teaching, namely the cognitive and affective domains.

Summary of Work: This study was designed to be a cross-sectional, survey-based study where the subjects (N=251) would anonymously rate effectiveness of textbooks using a 5-point Likert scale. Chi-squared tests, post-hoc tests, Spearman's correlation and Kruskall-Wallis test were all utilized in data analysis to detect correlations and significant differences between the variables.

Summary of Results: Textbooks are seen to be effective in addressing the cognitive and affective domains; Using textbooks Furthermore, using textbooks more frequently and as a primary source was correlated with, higher perceived effectiveness in many subdomains, and with achieving a higher GPA, with P values of, P<0.001 and P=0.01 respectively.

Discussion: There is deficiency in publications evaluating the use of textbooks in medical education in terms of achieving desired learning outcomes. The “the student factor” has a huge role to play in modifying textbook effectiveness illustrated by the fact that using textbooks as a primary source was correlated with a higher GPA.

Conclusion: Textbooks are effective in addressing cognitive and affective domains with varying effectiveness among their sub domains and this effectiveness is modified by “the student factor”.

Take-home Message: Medical textbooks remain effective from our students’ perspective, but medical educators should know that how textbooks are used by students can modify their effectiveness in certain subdomains.
# Mapping the Balint groups to the ACGME Family Medicine Competencies

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Albert Lichenstein, USA  
Jeff Sternlieb, USA  
Katherine Knowlton, USA  
James C Rule, University of Arkansas, USA

**Background:** Balint group discussions provide a learning opportunity for many of the competencies put forward by the ACGME. The current literature is mixed concerning the effect of Balint groups on communication skills and professionalism. Aim of study is to map the Balint discussion to the competencies put forward by the ACGME.

**Summary of Work:** In phase 1, the research team worked to refine the methodology. In phase 2, narratives of Balint discussions were solicited from the American Balint Society leaders. Four experts reviewed the 25 narratives individually and chose the milestones that the group discussion best corresponded with a learning opportunity.

**Summary of Results:** There was agreement between 3 out of 4 raters on at least one core milestone in every case. The most frequent milestones were related to communication skills and professionalism (C1, C2, Prof1, Prof3). Balint group discussions provided a learning opportunity for subset of milestones in at least 36% of the cases.

**Discussion:** Teaching communication skills and professionalism is most beneficial when it occurs longitudinally and involves multiple teaching methods in multiple settings. Balint groups help programs accomplish these aims since cases can be presented from a variety of settings and training can begin in the first months of residency and run throughout.

**Conclusion:** This pilot research suggests that Balint groups and the discussions of complex and challenging cases provide learning opportunity for multiple family medicine sub competencies, mainly communication skills and professionalism. Further research is needed to refine the methodology and the rating system.

**Take-home Message:** Balint group discussions provide a learning opportunity to communication skills and professionalism. It should not be used for assessment of these skills to protect the Balint process. Mapping the Balint group to the ACGME milestones will encourage family medicine programs to implement Balint groups activities.

# Using Different Teaching Formats During Human Physiology Course to Increase Motivation and Test Performance in Multicultural Student Population in Slovakia

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Daniela Ostatnikova, Institute of Physiology, Faculty of Medicine, Comenius University, Bratislava, Slovakia

**Background:** Culturally responsive teaching (CRT) includes knowledge, beliefs, and values that recognize importance of cultural diversity in learning. While international students in English program in Slovakia share the same educational model as Slovak students, cultural differences among them may require different approaches reflecting their cultural backgrounds.

**Summary of Work:** In our study classical formats of teaching (lectures, seminars, and laboratory and computer experiments) were first time in Slovakia enhanced by novel formats. Current curriculum was enhanced by using near-peer, problem-based and personalized teaching, team-based learning, and technology including clickers, simulation-based cases, creating mind maps concepts and flipped classroom.

**Summary of Results:** During consecutive 4 modules, multiple formats of instructions were used in randomized pilot group of 35 students with different cultural background. Likert scale questionnaires revealed cultural preferences in instructions and strategies with simulations and near-peer teaching preference. Test performance significantly increased (137.6 vs.122.9 points, p<0.05) in comparison with control group.

**Discussion:** Identifying factors of cultural needs may influence development of future Physiology course structure in Slovakia. Increasing variability of format in the same topic teaching and academic support strategies in diverse student population can help to increase motivation to study as it serves needs of broader cultural spectrum of students.

**Conclusion:** Use of various formats and strategies to enhance CRT was superior to classical approach in our study. Increased motivation to learn and better test performance were observed. For the first time in our modules of Physiology, selective cultural preference for format and teaching strategy were identified.

**Take-home Message:** Personalized learning instruction, use of variety of educational instructional approaches and academic strategies should be employed to address the distinct learning needs of individual students with diverse cultural backgrounds.
#7HH11 (1804)  
A practical skills programme in Biomedical Sciences: challenges in implementation and optimization  

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Background: The acquisition of practical skills in undergraduate training in health sciences field is crucial. In this context, the acquisition of these competencies is one of the general objectives of the Faculty of Health Sciences of the University of Beira Interior (Portugal) courses.

Summary of Work: Although laboratory practices are routinely carried out in the faculties, the degree of acquisition of related skills is not usually subject to structured training and assessment. Thus, a transversal program was developed and implemented in 2014/2015 in the Biomedical Sciences BSc degree and has been optimized.

Summary of Results: The steps of the acquisition of practical skills program are: 1) explanation and demonstration of practical procedures by a tutor; 2) a period of self-learning, and 3) the individual assessment. The program consisting of different practical skills is fulfilled when all abilities, have been acquired (approved).

Discussion: The idealization and conception of the practical skills program, as well as the added changes in order to fulfill legal and institutional requirements were challenging tasks, but rewarding. Improvements had been undertaken in order to promote the best training of students and the fairest assessment in laboratory practical skills.

Conclusion: This program ensures that all graduates have acquired the practical skills defined for their course in the areas of Chemistry, Biology and Physics / Engineering, relevant in the context of Biomedical Sciences. Consequently, they will be able to execute these laboratory procedures later in a professional context with more confidence.

Take-home Message: For a solid education in Biomedical Sciences, discipline-specific knowledge and understanding are not enough competencies. A crucial role is played by the practical skills. The setting of a structured program in practical skills allows students to learn a set of procedures and warrants the gaining this type of skills.

#7HH12 (1691)  
Breast feeding teaching by Interactive Training Method: Medical students should know and practice well  

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Background: Breast feeding (BF) teaching is essential issue for medical students. The topic consist of theory and practice for integration of knowledge and skill in BF. We study outcome of BF teaching by Interactive Training Method (ITM) in 4th year medical students who were studying at Kalasin hospital in 2016 academic year.

Summary of Work: We has performed team teaching (Tutors were medical teachers and nurses) as the following. Theory: lecture the content which consist of component & benefit of BF, BF in newborn. Practice: role play and discussion under supervision and feedback from the tutors. Formative assessment: MCQ and OSCE.

Summary of Results: Formative assessment by pretest, posttest MCQ and OSCE had average percentage point at 59.80%, 76.20% and 64.80% respectively. Medical students evaluation by rating scale (1-5) was the following: presentation technique 4.60, content 4.56, ease of understanding 4.58, opportunity for practice & interaction 4.52, tutors support & feedback 4.80, overall rating 4.56.

Discussion: The medical students had good attitude to BF teaching by ITM. Interaction, role play, participation, feedback from tutors and formative assessment were the effective technique to help medical students to learn. They has improved in BF knowledge and skill that may be sustained and useful for their work.

Conclusion: BF teaching by ITM is effective way for integration of new knowledge and skill practice in medical students and should be applied to other learning.

Take-home Message: Interactive Training Method is the effective way for learning.
Medical students' learning outcomes of Medical Resources Integration and Optimization in Family Medicine

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Background: Medical Resources Integration and Optimization (MRIO) is a teaching method, integration and optimization the knowledge and experience of both learners and teachers to promote active learning by using the set of several learning activities, beneficial for institutions with limited instructor. This study aims to evaluate the effectiveness of this program.

Summary of Work: This is a mixed-method study design, determining medical student’s learning outcomes regarding to three domains of knowledge, attitudes and skills including comments of students and teacher team staffing toward MRIO. It was operated by family medicine for fourth year medical students in January 2016 at Medical Education Center, Ratchaburi Hospital.

Summary of Results: A total of 33 medical students participated in the MRIO. All students passed the minimal passing level of knowledge and skills with the scores of 74.5±8.6% and 94.1±1.9%. Attitudes toward understanding patients and care improvement of patients were identified. The strengths of this program were interprofessional education and effective learning.

Discussion: 10-days of MRIO was established due to limited course instructor. It included course instructor and medical resources; multidisciplinary team staffing and students. All students passed the summative score with good grade. Home visit and teamwork skills of them were excellent. They understood the patient and improved attitude towards patient’s caring.

Conclusion: MRIO was an effective teaching program to integrate and optimize with limited resources in undergraduate family medicine practice. The implementation of this program in different settings may need collaborative teams to maximize the effectiveness of the program.

Take-home Message: Medical resources include the course instructor, multidisciplinary team staffing and even medical students. Everyone integrates and optimizes his/her knowledge and experience by using the set of six organized activities; (i) PCU practice, (ii) community survey and home visit, (iii) topic assignment, (iv) peer teaching, (v) feedback and (vi) self-reflection.

Theatrical improvisation as a method in Medical Education

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Marcelo Schweller
Jamiro da Silva Wanderlei
Márcia Strazzacappa
Marco Antonio de Carvalho Filho

Background: Teachers, physicians, and actors share in their professional practice the need to put themselves in another person's shoes: students, patients and characters, respectively. Not only the actor, but also the physician should respond appropriately, often in a way that cannot be planned. Thus, Improvisation may be meaningful to medical education.

Summary of Work: Improvisation has been taught to second-year medical students(n=240) by a team of physicians, actors and psychologists. Using theatrical play, role study and scene creation, students address five main themes: 1)impact of feeling ill; and how to 2)initiate a conversation, 3)make someone comfortable, 4)create a shared action plan, and 5)solve conflicts.

Summary of Results: After a warming, students divide themselves in teams to create and present a scene related to the theme of the day. A rich variety of ideas emerged, including ethical issues, doctor-patient relationship and everyday life happenings. Questions related to students' universe, such as depression, violence, and interpersonal relationships also appeared.

Discussion: Students scenes included unconscious aspects, allowing them to deal or even solve personal and interpersonal conflicts. Concepts such as empathy, improvisation, reflection in action, communication and experience were explored and used as tools to deal with medical and personal situations. Feedback from teachers and actors was crucial to guide reflection.

Conclusion: Theatrical improvisation brings meaningful experiences for second-year medical students, showing that active and multi-professional (art, education and medicine) teaching methodologies may help to develop communication skills, technical competences and humanity. Students' testimonies during feedback corroborated those impressions, pointing to the need for protected environments for reflection and debate.

Take-home Message: Theater and Improvisation may be efficient tools for the development of self-knowledge and communication skills, particularly empathy, among medical students. The participation of physicians, actors and psychologists in the same didactic intervention seems to be enriching for everyone involved, each one contributing with their own expertise.
A conversation in prison! Transformative learning for professional skill development in the first year medical students of the Joint Medical Programme

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Background: A professional development program, organized as a 4-day camp, was arranged for the first year medical students to learn about communication skills, professionalism, and Thai health care system. One of the activities is transformative learning in which the students were lead into a prison and have conversation with prisoners!

Summary of Work: Students were participated in a preparation workshop and drew an imaginary picture prior. Next day, they went inside the prison to had a 45-minute, one-on-one conversation with a prisoner. They were asked to draw another picture to reflect their feelings when over. The students filled questionnaire when the camp finished.

Summary of Results: The first pictures reflected students’ nervousness and fear. Facial expression of (imaginary) prisoners was all depressing. The students reported that they were frightened to keep the conversation last for 45 minutes. Conversely, Post-conversation drawings demonstrated more positive prisoner expression. Students rated the activity 4.14/5, being the most satisfactory among others.

Discussion: The students were initially asked to collect prisoner’s personal background, reason why the prisoner was arrested and how did they feel. When completed, they felt that they could possibly overcome their fear in terms of establishment of the inter-personal relation. Their perspectives have been changed, reflecting more empathy with prisoners.

Conclusion: Transformative learning allows the first year students to learn a humanistic side of prisoners and to show more empathy with them. Their confidences in engaging conversation with others are increase. These skills are essential during the joint medical program education (in both UK and Thailand) and in the future.

Take-home Message: Fear can modify one’s perception and prevent understanding of others feeling, thus unable to be empathized with people. Transformative learning is proven to challenge students’ mind and encourage them to overcome the fear. This is essential for medical students during their education and career in future.

Application of Differentiated Instruction to Enhance Learning Effect of Neonatal Respiratory Care Course

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Background: The Respiratory Therapy Program goal is to prepare graduates with demonstrated competence in practice. Clinical preceptors provide learner-centered teaching contents and methods to respiratory therapy students by applying Differentiated Instruction. The objective of this study was to explore the effects of the Differentiated Instruction of a Neonatal Respiratory Care Course.

Summary of Work: The Neonatal Clinical Practice Course was redesigned: first, analysis learning competency; design instruction to match students’ learning styles and to meet individual needs; develop and implement an issue-driven approach into practice, such as Auto didacticism, e-learning to Training, peer learning, clinical simulation Game-Based Learning; finally, evaluate students’ learning competences.

Summary of Results: 15 RT students participated in this study for a month. The results showed Differentiated Instruction has a positive impact on learning outcomes, including: participants’ average score of Knowledge Preparedness increased from 55 to 92.5, and average score of Skill Readiness increased from 56 to 86 for the practice of Neonatal Respiratory Care.

Discussion: Differentiated Instruction is not only learner-centered teaching practice, but also individualized education of adaptive education. Instructors should be familiar with the differentiated instruction ideas and actions, through adjustment three elements: content, process and products, teachers will be able to makes this a successful approach to instruction in the clinical settings.

Conclusion: Differentiated instruction is effective instruction that is responsive to students’ readiness, interests and learning preferences. Preceptors gather information to tailor teaching approach to match students’ learning styles and to meet individual needs. Teachers inspire the students’ interest in learning to increase the learning ability of students.

Take-home Message: Although differentiated instruction corresponds with various motivation and learning theories, few studies have examined the use of differentiated instruction in medical education as OSCE contexts. Differentiated Curriculum Model can accelerate
the trainees familiar with the care, improve respiratory technology and to ensure patients Safety and quality of care.

#7HH17 (397)
Understanding the unique factors causing the phobia of neurological localization amongst medical students - how can we aim for neurophilia instead?

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Background: Neurophobia, the fear of neural sciences, is prevalent amongst junior learners. We seek to identify the yet unknown factors that cause neurophobia in the learning of neurological localization, an essential clinical skill in neurology. This would aid in the development of future instructional methods for this skill.

Summary of Work: A cross-sectional survey of 72 undergraduate medical students was performed. Students rated their level of neurophobia for neurological localization (5-point Likert scale). They ranked factors that made them fear neurological localization and ranked methods of learning that reduced their phobia of this topic. Weighted scores were obtained for ranked factors.

Summary of Results: Phobia of neurological localization was ranked as high/very high (81.9%). Scores for causal factors in order of magnitude were organization/integration of information, inefficiency of thought process, complexity of neuroanatomy, amount of memorisation and lack of practice opportunities. For learning methods, mentoring/tutoring was best, followed by team-based learning and then textbooks.

Discussion: The main reasons for neurophobia were organization/integration of information and inefficiency of thought processes. Memorization of neuroanatomy and practice of skills which are usually important in neurology were ranked lower. Students found learning through a mentor/clinical tutor and team-based learning (TBL) were better than textbooks for reducing their neurophobia.

Conclusion: The main difficulty appears to be in the higher levels of organization and integration of information required and efficiency of this skill. These are not usually found in textbooks. Hence, the role of mentors/tutors or TBL sessions are very important in overcoming the fear of this topic.

Take-home Message: To overcome the fear of neurological localization, medical students need to develop skills of integration and organisation of information and become efficient in their thought process. Students feel mentoring/tutoring or team-based learning are the better methods to overcome this. Textbooks appear to be least helpful.

#7HH8 (945)
Visualization as a reflection technique in the learning process: A qualitative approach

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Nancy Bastías
Javiera Ortega
Ivone Campos
Eduardo Fasce
Cristhian Pérez

Background: There are several teaching strategies that promote clinical reasoning and the development of procedural competences, which emphasize clinical simulation, role playing and mental imagery. Imagery includes various mental training interventions such as visualization that promote students’ effectiveness in motor skills training.

Summary of Work: Qualitative research, with case study approach, descriptive scope. Thirteen first-year medical students participated, after informed consent process. There were 4 visualization sessions after the demonstration of drug preparation. Students were asked to describe what they had visualized after each imagery session. The data were analyzed using the content analysis technique.

Summary of Results: A total of 12 units of meanings were created prior to visualization and 19 units of significance after visualization sessions. In relation to the above, there are 3 categories of analysis. Differences between the previous and post ideas were observed regarding the progression of learning in the preparation of medicines.

Discussion: Visualization has proved to be an effective technique for the development of clinical procedures. To use it, it is important that teachers are trained.

Conclusion: The incorporation of visualization to the learning of clinical procedures can be useful as a strategy to verify the progression of student learning, as well as a useful tool to evaluate the training process planned by the teacher.

Take-home Message: Visualization is an opportunity to initiate a new line of research, to improve student learning.
#7HH19 (1146)
Effectiveness of ethical dilemmas on rare disease - Scenario-center teaching program

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Hui-Ching Yang
Shu-chen Cheng
Ching-Mei Chang
Yachung Jeng

Background: While practicing nursing care in patients with rare diseases, nurses are always facing several ethical dilemmas, which may emotionally distress themselves and imbalance relationship with patients' family. This study is designed to help nursing staff to understand a given ethical conflict and root a potential ability in smoothening conflicts.

Summary of Work: We enrolled 36 nursing staff from a teaching hospital in the middle Taiwan. We set up a scenario course focusing on a case of "infantile spinal muscular atrophy". All the attendants had to respond several ethical questions and had to finish a questionnaire before and after the course.

Summary of Results: The analysis of the questionnaires demonstrated that most attendants showed several improvements after the training course, including acquiring medical knowledge, applying empathy, comforting family, and communication skills. The comforting family was the remarkable improvement after the course.

Discussion: Nursing stuff, the first line in medical care, are the most vulnerable than others in the hospital. Therefore, it is essential to train nursing staff to promptly and timely acquire knowledge, apply empathy and conduct communication skills to comfort patients and family with a rare disease.

Conclusion: Scenario-center teaching programs can enhance nursing staff in acquiring medical knowledge, caring skills, and applying empathy to comfort patients and patients' family and build up staff's self-confidence in caring patients with rare diseases.

Take-home Message: A scenario teaching program can substantially help nursing staff to properly tackle with a given ethical conflict and comfort patients and family with a rare disease.
#7II Posters: IPE 1
Location: Hall 3 Foyer

#7II01 (596)
Knowledge and Attitude towards Interprofessional Collaboration among Postgraduate Medical Students of Bangladesh
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Adiba Tarannum

Background: Interdisciplinary healthcare teams are central to improving patient outcomes. Strong interprofessional education (IPE) is fundamental for effective team performance. IPE is also essential for a good healthcare system. But, in Bangladesh, there is lack of knowledge and process to develop a positive attitude towards interprofessional education and collaboration.

Summary of Work: A cross sectional type of descriptive study was conducted to assess the knowledge and attitude of postgraduate students of BSMMU, Dhaka towards interprofessional collaboration. 300 students were purposively selected for study. Data were collected by face to face interview from the respondents through semi-structured questionnaire.

Summary of Results: Majority of the students showed lack of knowledge (70.33%) about interprofessional collaboration. Most of the Students did not know the importance (79.33%) of interprofessional collaboration and education. Very few students enjoy team work (24.67%). Majority of them do not know how to implement (69 %) interprofessional collaboration.

Discussion: Poor knowledge of postgraduate trainees is a sequel of lack of introduction in undergraduate level. Without proper knowledge and application of IPE a good healthcare system would not be possible. Measures like classes from under graduation, campaigning, review of curriculum, collaboration with other countries, student exchange etc. should be taken.

Conclusion: It can be concluded that knowledge and attitude about interprofessional collaboration of postgraduate medical students of third world country like Bangladesh is very poor. For future doctors it could be difficult to take part in the era of interprofessional collaboration which is very important for patient care.

Take-home Message: Poor knowledge and attitude about interprofessional collaboration between postgraduate medical trainees of Bangladesh.

#7II02 (1312)
Working collaboratively to ensure safe delivery of extended roles in the hospital eye care service
Jacqueline Martin, College of Optometrists, London, UK

Background: The College of Optometrists is the professional and examining body for optometry in the UK. Optometrists form part of the group of non-medical ophthalmic healthcare professionals (HCPs). With increased demand from an ageing population a standardised level of education and training will help prepare HCPs to undertake extended roles.

Summary of Work: In a group led by the Royal College of Ophthalmologists, the College of Optometrists worked alongside orthoptists and ophthalmic nurses to develop a framework which would define the levels of knowledge, training and clinical experience required to undertake the key roles performed by HCPs in a hospital environment.

Summary of Results: A competency framework has been produced in four key clinical areas: • Glaucoma Assessment and Management; • Medical Retina; • Cataract Assessment; • Acute and Emergency care. The framework recognises different levels of training and scope of practice within the individual eye health professions. Existing training and qualifications have been incorporated into the framework.

Discussion: There needs to be a level of trust and support amongst the professions to encourage the delivery of safe and efficient healthcare. How can we encourage collaborative working amongst medical and non-medical healthcare professionals? How can we ensure HCPs have confidence in each other to provide these extended services?

Conclusion: Working collaboratively across the ophthalmic healthcare professions is vital in order to be able to support our ageing population. This framework will provide guidance and reassurance to those working within ophthalmic secondary care that HCPs can undertake extended roles safely and confidently.

Take-home Message: Medical and non-medical healthcare professionals must work together if they are to continue to deliver a safe and efficient service for patients. Standardisation of knowledge, skills and training will help support collaborative working and build confidence within the eye health professions to deliver the best care for patients.
#7103 (1383)
Assessing the Learning Needs of a Team: a practical tool to guide needs assessments for interprofessional learning

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Elizabeth McLaney, Sunnybrook Health Sciences Centre, Toronto, Canada
Mandy Lowe, University Health Network and the Centre for Interprofessional Education, Toronto, Canada

Background: An essential step in planning any effective educational intervention is the implementation of a rigorous learning needs assessment. While evidence-based approaches exist for needs assessments for single profession initiatives, there is a dearth of practical tools to assist educators in conducting comprehensive assessments regarding the learning needs of interprofessional teams.

Summary of Work: To address this, education leaders from three academic health sciences centres convened to develop a set of actionable tips for conducting interprofessional needs assessments. From this, a tool was created drawing from educational literature and best practice in interprofessional education and care, as well as a range of lived experiences.

Summary of Results: The tool articulates key considerations in planning needs assessments for interprofessional learning, including: determining unperceived or misperceived learning needs of the team; shifting the focus from multiple distinct voices to collective interprofessional learning priorities; and leveraging the needs assessment process for sustained engagement in interprofessional learning and care.

Discussion: The tool has been circulated for peer feedback with selected education experts and in workshop format, to further refine content. Responses to date suggest that the tips are helpful and actionable, with at least one local hospital site having utilized the tool in a successful interprofessional needs assessment process.

Conclusion: Given a growing focus on advancing team-based learning, educators are increasingly challenged to develop comprehensive educational interventions that optimize interprofessional learning and care. Through explicit consideration of key interprofessional features of learning needs assessments, educators can build a stronger and more inclusive foundation for team-based interventions.

Take-home Message: The interprofessional learning needs assessment tool is a practical guide for teams of clinician teachers, educators and others working to develop and implement robust, informative and actionable team-based educational needs assessments for effective interprofessional education engagement and learning outcomes.

#7104 (463)
Similarities and differences between Intra- and Interprofessional Conflicts in Healthcare: Implications for Training

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Background: Interprofessional collaboration is integral to healthcare delivery. While effective collaboration requires cooperation and a shared commitment to patient care, collaboration difficulties may lead to conflict. We sought to compare characteristics of intra-versus interprofessional conflicts in clinical settings to inform interprofessional training programs.

Summary of Work: An exploratory study was conducted through semi-structured interviews with randomly selected physicians (n=43) and nursing professionals (n=39) working in a tertiary hospital. Interviews focused on characteristics such as sources, consequences, and responses to conflicts. Differences between intra- and interprofessional situations were compared using descriptive and inferential statistics on these characteristics.

Summary of Results: Participants shared more intra- than interprofessional situations (57% vs 43%). There were significant differences among sources of conflicts: intra-professional conflicts were generated by poor relationships (62% vs 41%, p=.02), whereas patient-related tasks caused more interprofessional conflicts (48% vs 27%, p=.02). No significant differences were found for consequences and responses to conflicts.

Discussion: Patient-related tasks generate interprofessional conflicts, pointing to the need to integrate such issues into interprofessional education by referring to authentic clinical situations. Similarities between intra- and interprofessional situations for consequences and responses to conflicts stress the importance of addressing a variety of situations in interprofessional conflict management training.

Conclusion: Developing a deeper understanding of similarities and differences between intra- and interprofessional conflicts may help educators develop interprofessional conflict management training programs that reflect the sources, consequences, and responses to conflicts in clinical settings. This may contribute to making conflict management training more relevant and readily applicable in practice.

Take-home Message: There are differences between intra- and interprofessional sources of conflicts. Although both groups have similar consequences of and responses to conflicts, the results of this study stress the need to address both types of situations in healthcare education, specifically through interprofessional conflict management training.
#1105 (1554)
Challenges and strategies to develop an Interprofessional Education in a residency program

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Liv Souza, Uerj, Rio de Janeiro, Brazil

Background: Team work and inter-professional education represent one of the greatest challenges. The complexity of the demands generated by population aging implies the need for an interprofessional approach, an adequate educational process, the need to change the work processes and the construction of networks of attention to individuals.

Summary of Work: This study approaches the strategies developed by the interprofessional team of a geriatrics service built in the daily practice of its practice over 20 years. From the annual assessment of service and training, strategies to address the problems identified are discussed in planning meetings each year.

Summary of Results: The following strategies were developed: organization and management of work in council, protected time and space for meetings and socializing, organization of work by projects, construction of reference team, interconsultation, discussion of Individual therapeutic plans, integration week in the reception of students, use of information technology in communication.

Discussion: Teamwork presents clear demands that need to be developed in the training of health professionals. For this, strategies are needed that allow intervening factors such as professional relationship, procedural, contextual and organizational factors to be overcome. It involves planning in the work and pedagogical process.

Conclusion: It is fundamental that there is planning of both welfare actions and educational practices. The involvement of the team, its availability and openness to accept the challenge, the daily care with the process are paramount for this construction and consolidation of the practice and interprofessional education.

Take-home Message: The training of the team to practice collaborative teamwork and the teaching development in the field of interprofessionality, the involvement and personal investment of each one guarantee the possibility of this construction.

#1106 (1684)
The strategy and effectiveness of inter-professional education (IPE) led by non-physician medical personnel: a nursing department study

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Background: Present medical environment need inter-professional practice (IPP). Thus, medical professionals collaborative need effective inter-professional education (IPE) program. Formerly, IPP more rely on the physician as a team initiator or leader. This study shared the strategies and effectiveness of IPE led by non-physician medical personnel in nursing department.

Summary of Work: Since 2015, nursing department planned the annual IPE course and invited various fields of expertise according to the IPE objectives. Consensus meeting and review meeting were conducted before and after for all IPE programs. A meeting leader and an education leader were assigned to each program.

Summary of Results: During 2015~2016, nursing department had been held seven IPE conferences, three IPE course and a board practice with total 705 participated number. The average satisfaction score was 4.36, self-development score was 4.37. The interactive feedback in board practice showed most of the participants was impressed, they suggested increasing this curriculum.

Discussion: The emergency situations during the IPE implementation including agenda squeezed by other conference, the schedule conflict or individual differences in professionals of main speaker. The solution strategy including elastic adjustment of course or conference description and the meeting sequence, using situational performance or video playback to replace the conference.

Conclusion: Prior planning for IPE program, elastic adjustment during the implementation, post-session reviews, increasing the practical curriculum, ameliorates according to feedback and evaluation could improve IPE training program. IPE program are able to cultivate medical professionals to have the inter-professional clinical care ability in purposed to provide the integrated clinical care.

Take-home Message: Using thoughtful, well-planned and effective strategy, both physician or non-physician medical personnel could be the leader of IPE training team. The meeting leader is responsible to ensure the smooth progress of the meeting, and the education leader moderately guide the participants in thinking about IPE objectives.
Impact of interprofessional education module on attitudes of health-care providers involved in maxillofacial rehabilitation

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Background: A need assessment survey showed lack of awareness regarding scope of prosthetic rehabilitation of maxillofacial deformities amongst referring surgeons and physicians. Interprofessional education (IPE) module was developed to provide insights in maxillofacial prosthetic rehabilitation for various teams to facilitate understanding of each other’s role, limitations and expectations.

Summary of Work: Four-hour IPE module was developed involving residents and faculty from five disciplines including oncosurgeons, ENT surgeons, general & plastic surgeons and prosthodontist. The change in attitudes was evaluated quantitatively using Attitudes toward Health Care providers involved in maxillofacial prosthetic rehabilitation questionnaire before and after the module. Semi-structured interviews with selected participants provided the qualitative feedback.

Summary of Results: The questionnaire consisted of 14 questions answered on 5-point Likert scale (1–5). The mean score of pretest was 46.2 and of posttest was 51.1. Difference was statistically significant (P < 0.05). Higher mean score of posttest was 51.1. Themes emerged from structured interviews with selected participants providing qualitative feedback.

Discussion: Rehabilitation of maxillofacial deformities involves many disciplines working in unison for optimum outcome. Present IPE module provided an educational experience that can begin to foster the prerequisite competencies needed to collaborate successfully. Present module effectively changed the attitudes of team members regarding role of prosthodontist in maxillofacial rehabilitation.

Conclusion: The module well received and was successful in improving the outlook of participants regarding collaborative practice during maxillofacial rehabilitation. It enabled the professionals to understand interact and share viewpoints regarding most critical issues faced by them and find solutions to achieve best possible patient care.

Take-home Message: Brief IPE program can improve interprofessional attitudes and collaborative behavior of health-care professionals involved in maxillofacial rehabilitation. In the context of quality improvement initiatives, this module can be used as a mechanism to enhance the development of collaborative practice and improvement of services.

Discursive representations of patients in the interprofessional team meetings of a geriatrics ward

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Background: Health practitioners participate in interprofessional team meetings (IPTMs) to manage geriatric patients with co-morbidities and in need of coordinated assessments and care. Communication forms the currency of IPTMs (Bridges, Davidson, Odegard, Maki & Tomkowiak, 2011). We heed Opie’s call (1997) to explicate and critique interprofessional teams’ representational practices at IPTMs.

Summary of Work: We observed 105 case discussions on discharging patients from a sub-acute-care ward. We recorded, transcribed and analysed for interpretive repertoires—lexicons or registers of “terms and metaphors drawn upon to characterize and evaluate” actions from a position (Potter & Wetherell, 1987). The discussants comprised doctors, nurses, therapists and social workers.

Summary of Results: Members deployed interpretive repertoires: • Legitimising: Supporting assessments by couching evaluations in clinical parameters; • Exploring Options: Considering post-discharge avenues and arrangements; • Negotiating with Family: Persuading patients’ families to accept the team’s plan by providing caregiver training; or by pulling rank; • Synthesizing: Summarising discussions through profiling or taking-stock of representations at junctures.

Discussion: Team members’ repertoires are limiting when they represent patients in terms of clinical parameters; go through a checklist of arrangements; compel patients and their families to accept discharge plans. These descriptive repertoires become analytical when members incorporate and connect perspectives from themselves as health professionals; from patients and their families.

Conclusion: Interprofessional teams should realise that discursive practices influence perceptions of patients and the health professions; and healthcare practice. Our analysis reveals the limitations of interprofessional participants’ representations of patients and clinical practice. Representations can be analytical if participants included and connected one another’s perspectives as well as their patients’.

Take-home Message: Health practitioners can improve their contributions and experience of IPTMs, and consequently, patient-care by identifying habitually deployed linguistic resources, and augmenting these with more patient-oriented perspectives in their repertoires.
#7II09 (1906)
Learning in Interprofessional Communities of Clinical Practice - A Qualitative Study of Physicians and Physician Assistants

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**Background:** Limited studies have explored the impact of physician assistants (PAs) on the education of physicians-in-training (trainees). Using community of practice theory (CoP), which recognizes the informal learning that occurs when people sharing a common enterprise have opportunities to engage, we explored physicians’ and PAs’ views on trainees’ learning from PAs.

**Summary of Work:** Semi-structured interviews were conducted with 12 physician faculty and 12 PAs in one teaching hospital. Purposive sampling was used to ensure varied perspectives. Sampling continued until saturation. The interview guide was informed by CoP theory. Data was analyzed using a grounded theory approach.

**Summary of Results:** Essential factors for CoPs with trainees and PAs were identified, including PAs possessing competencies trainees need to learn and being motivated to teach and trainees understanding the role of and respecting PAs. Factors related to faculty, program structure and department culture were described as beneficial although non-essential to these CoPs.

**Discussion:** This study provides a framework of key factors that impact the development of CoPs involving PAs and trainees that was felt to impact trainee learning.

**Conclusion:** While communities of clinical practice (CoCP) have previously been reported, this study identified essential factors for these interprofessional CoCPs involving PAs. Ultimately, this framework may be used to guide the development of interventions intended to support interprofessional CoCPs and enhance learning within interprofessional clinical teams.

**Take-home Message:** Important factors may impact the development of interprofessional CoCPs with physician trainees and PAs. Those involved in leading clinical training programs should consider such factors as they seek to enhance learning opportunities among interprofessional health care providers.

#7II10 (1250)
Working multiprofessionally towards better health outcomes among patients with chronic diseases

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**Background:** In Hämeenlinna Health Services we had lack of time for high-risk patients and no knowledge of their health outcomes. In 2012 a special chronic care unit (CCU) was established for patients, with at least two health related risks and long-term diseases not in balance, and also for “health care overusers”.

**Summary of Work:** Patients whose SCORE could be counted both 0-12 months before treatment and after at least one year follow-up period were included in the study. The care coordinator nurse supports the patients in self-care. Physician is responsible for the medicinal care. If problems occur, a multi-professional team is available for consulting.

**Summary of Results:** The average SCORE decreased from 4.5% to 4.1% in an average four years follow-up. Best results were achieved in systolic blood pressure and total cholesterol. Smoking on the other hand did not decrease as hoped. The average age of patients was 55.9 yrs.

**Discussion:** The defect of this study is the lack of randomization. It would be interesting to compare the results to the results of a same kind of patient material treated the usual way.

**Conclusion:** Measuring the health outcomes is important to evaluate the effectiveness of health care and to recognize the areas in patient care that need to be improved. Due to this study the personnel also get valuable feedback from their work.

**Take-home Message:** The pronosis of high-risk patients improves, when they actively participate in their own care. Personal support is needed especially at the beginning of the care. Collecting data of patients health outcomes encourages the health care personnel to maintain good quality of working.
Marrying healthcare professionals to technologists: hackathon as a venue for interdisciplinary education

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Michael Morley, Harvard Medical School, Boston, USA
Katherine Morley, Harvard Medical School, Boston, USA
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Background: Hackathon is a unique opportunity for interdisciplinary education. Healthcare professionals bring their real-world health problems while technologists invent technological solutions to them, using continual feedback from the healthcare professionals to test and refine the products. It represents a collaborative learning opportunity that could transcend the limits of any one discipline.

Summary of Work: Khon Kaen University hosted an mHealth Hackathon with MIT Sana in January 2017, and we have conducted a phenomenological study with the participants as to how they have learned, how fitting the event was as a venue for interprofessional education, and how it could be improved.

Summary of Results: Participants found that they had learned about potentials and possibilities that were once unknown to them. They cited the exposure to different areas of expertise as the main reason for the realization. Suggestions were also given as to how a hackathon could be held in ways that would promote learning.

Discussion: It is valuable to provide opportunities for professionals to learn about other areas of expertise that may complement their work, as this broadens their perspective and expands their arsenal of solutions. Hackathon is unique in that it allows explorations of technology-based solutions to real-world healthcare problems.

Conclusion: Hackathon gave a unique opportunity for a collaborative, practical learning experience between health professionals and technologists. The event allowed people from different areas of expertise to learn from each other, complement each other and move beyond their normal scopes of work.

Take-home Message: Hackathon is a good opportunity for interprofessional education between technologists and healthcare professionals. It also carries strong potentials of creating products that could improve patient outcomes and quality of healthcare. Future hackathons should take into account the suggestions that have been given by participants in the present study.

Effectiveness of an interprofessional practice training programs in new healthcare professionals

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Background: To Nurturing collaborative practice-ready healthcare professionals, the Ministry of Health and Welfare listed interprofessional practice training program as one of the evaluation projects for accreditation of teaching hospital in 2011 In Taiwan. However, there is still few evidence study of the effectiveness of interprofessional practice training program.

Summary of Work: A quasi-experimental, purposive sampling, pretest-posttest equivalent-group, and generalized linear model, design was used. 45 new healthcare professionals entered a 6 hours program of interprofessional practice training which was designed by experiential learning theory. Participants have completed a questionnaire of interprofessional practice behavior before, after, and 6 months after the training.

Summary of Results: The Cronbach’s alpha coefficient was .96. The interprofessional cooperation behavior score of after and 6 months after, 77.24 and 74.69 (out of 85), were significantly (p < .05) higher than before (64.98) the training program. The satisfaction was 4.71 (out of 5).

Discussion: Although the score after 6 months was lower than after the training, it was still significantly higher than the before. Besides the effectiveness was still, it meant the experience of interprofessional cooperation needs to practice continuously and understand the specialties and values in other fields to avoid the gaps.

Conclusion: Recruiting at least two different medical professionals to participate training and practice of clinical situations can improve the effectiveness of collaborative practice behavior. The results of the study can provide a reference for medical institutions to plan an interprofessional practice education and training courses.

The status of interprofessional education and collaborative practice within the occupational therapy, physical therapy, and speech-language pathology professions in the Philippines

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Background: A global scan in 2010 was conducted by the World Health Organization and identified 41 countries implementing interprofessional education (IPE). Unfortunately, the Philippines was not included in the global scan for IPE. Moreover, interprofessional collaboration (IPC) remains incidental rather than deliberate within the Philippine healthcare practice.

Summary of Work: This poster presentation intends to describe the current status of IPE and IPC in the Philippines through a literature review. It also illustrates how IPE and IPC competencies are integrated in the curriculum, clinical training, and practice of the occupational therapy (OT), physical therapy (PT), and speech-language pathology (SLP) professions.

Summary of Results: The literature review revealed that Filipino OT, PT, and SLP students receive a total of 16, 13, and 19 course units (i.e., 1 unit = 3 hours) that introduce IPE, respectively with an additional 6 units for community-based rehabilitation internship. IPC competencies are also expected from pre-registration until professional practice.

Discussion: Curricula of OT, PT, and SLP programs show evidence that IPE is an intended learning outcome (ILO) in the classroom and laboratory, but the process to attain this ILO remains unclear. Professional associations mandate the demonstration of IPC competencies among members, but institutional and cultural barriers remain unchallenged.

Conclusion: This literature review is an initial step to inform OT, PT, and SLP educators and champions to promote a more deliberate, rather than an incidental, demonstration of IPE and IPC competencies in the classroom, laboratory, and practice settings.

Take-home Message: (1) In the Philippines, IPE and IPC concepts have already been introduced within OT, PT, and SLP curricula. (2) The present challenge is how to use the most effective teaching-learning strategies to design an IPE-based instruction and curriculum that will produce IPC-oriented Filipino OT, PT, and SLP professionals.

Becoming a better team player. Interprofessional team learning for medical residents to enhance collaborative care. A formative evaluation study in a geriatric medicine unit.

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Ed Spilg, The Ottawa Hospital, Ottawa, Canada
Allen Huang, The Ottawa Hospital, Ottawa, Canada
Jason MacDonald, The Ottawa Hospital, Ottawa, Canada
Prudy Menard, The Ottawa Hospital, Ottawa, Canada
Vanessa Peck, The Ottawa Hospital, Ottawa, Canada

Background: In Canada, collaboration is a key competency in physician education and training. Residents are increasingly expected to work collaboratively with other health professionals. While some medical schools are incorporating interprofessional education (IPE) in their curricula, more interprofessional learning (IPL) activities are required to better prepare medical residents for collaborative practice.

Summary of Work: A mixed methods approach involving a controlled before and after quantitative questionnaire, The Attitudes Towards Health Care Teams Scale and focus groups are being used to evaluate an IPL module and whether it will improve residents' attitudes towards teamwork. Questionnaires are administered to control and intervention resident's pre/post rotation.

Summary of Results: The study is ongoing and preliminary results from the control cohort suggest that residents’ attitudes trended to improvement on all three of the sub-scales of the survey including Team Value, Team Efficiency, and Physician’s Shared Role.

Discussion: Residents in our control group generally held positive attitudes towards interprofessional teams. This data suggests that despite their non-participation in a structured IPE module, implicitly working within a team-based model of care has had a positive impact on residents’ attitudes towards interprofessional practice.

Conclusion: Early findings suggest that structured IPE over the course of residency programs may enhance resident attitudes towards interprofessional collaborative (IPC) practice and offers opportunities to develop and strengthen IPC skills. We hope to report on the intervention cohort data by the AMEE 2017 meeting.

Take-home Message: Residency programs should include structured IPE activities to develop collaborative-ready physicians and promote teamwork among healthcare professionals.
Interprofessional Teamwork in Medical Education

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Gabriel Reedy, King’s College London, London, UK
Thomas Simpson, King’s College London, London, UK
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Background: Team communication is frequently implicated in patient safety failures. Interprofessional education around teamwork has been critiqued as descriptive and lacking in empirical evidence and clear definitions of teamwork skills. Building on human factors models of teamwork, we aim to identify behavioural markers of effective teamwork providing a language for educators.

Summary of Work: Key components of teamwork identified as critical in human factors theories are: leadership, mutual performance monitoring, backup behaviour, adaptability, team orientation, shared mental models, closed-loop communication and mutual trust. Employing behavioural analysis techniques, the behavioural markers of these components were identified and labelled in interprofessional simulated clinical scenarios.

Summary of Results: The eight teamwork components were divided into 13 behavioural categories, which were further divided into 29 verbal and nonverbal behaviours. Identifying behavioural markers of team orientation and mutual trust are challenging due to their attitudinal nature. Their absence may be signalled by markers of poor team cohesion e.g. ignoring others.

Discussion: This behavioural marker system has a number of potential applications as a teaching tool with which to discuss the concepts of teamwork. However, identifying behavioural markers of attitudinal aspects may require a more nuanced behavioural analysis approach to fully capture these features.

Conclusion: This framework provides a language for educators to use when analysing, discussing, teaching, and assessing teamwork behaviours, which has the potential to be adapted for use in real-time during training. Furthermore, it has applications to healthcare research more broadly, providing an opportunity to explore the dynamics of interprofessional clinical teams.

Take-home Message: Building on human factors theories of teamwork, we employed behavioural analysis of interprofessional clinical simulations to develop a behavioural marker system of effective interprofessional teamwork. This provides a tangible language and framework for clinical educators alongside a tool with which to explore the temporal dynamics of interprofessional working in practice.

Healthcare matrix with KAS model of thinking template as an effective model to teach interprofessional education in practice for transdisciplinary teamwork

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Hsiang-Ling Cheng, Department of Nutrition, Tri-Service General Hospital, Taiwan
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Background: Interprofessional education (IPE) is broadly recognized as the pedagogical program through which to facilitate teamwork. The aim of this study was to assess participant’s performances towards collaboration after active involvement in a Healthcare matrix (HCM) and KAS (Knowledge, attitude, skill) model for patient care.

Summary of Work: In April 2016, we started an average 250 participants of transdisciplinary conference monthly for Interprofessional practice (IPP). Clinicians choose a case and develop the HCM with KAS model of thinking template. Participants studying medicine, nursing and other medical personnel were invited compulsively to complete an identified survey during nine months.

Summary of Results: There were approximately 2000 participants join this monthly programs, including physicians (39%), nurses (46%), and other medical personnel (15%). The response rate for the questionnaire was 99% under Military Health System with e-learning feedback online. Overall, the most participants (90%) were satisfied with KAS learning and improvement of patient care.

Discussion: As HCM evolves and its scholastic grows, the KAS assessment provided valuable feedback to institutions. Participants reaction (Level 1), attitude change and collaborative skills (Level 2), expected professional practice/teamwork (Level 3) and quality improvement of patient care (Level 4) carry a positive impact on participants under our healthcare program.

Conclusion: This study explore that application of HCM to teamwork allows participants to profoundly achieve the team goals and avoiding mistakes. The development of HCM with thinking template generated participants’ satisfaction, optimistic changes in KAS, the students’ professional practice and longer-term positive impacts on the teamwork.

Take-home Message: Transdisciplinary teamwork training using HCM with KAS thinking template is a novel and promising teaching program under a stepwise process of Kirkpatrick’s four levels evaluation. Our results show that this template of IPP/IPE makes teamwork support available and the best level of patient care.
Effective interprofessional education for teamwork and communication with medical, pharmacy, and nursing students

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Summary of Work:
IPE using Simulated Patients (SPs) and the topics: asthma, diabetes and smoking cessation were conducted with medical (n=398), pharmacy (n=293) and nursing students (n=86) students. The Nagoya Teamwork Scale (NTwS), Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF), and Jefferson Scale of Physician Empathy (JSPE) were compared. Results revealed significant differences among the scenarios implying that IPE with SPs increased teamwork abilities regardless of the topics studied. Improvements in teamwork abilities can occur with group work experiences. Working collaboratively with SPs decreased students’ psychological barriers to communicate with other health professional students.

Background: Teamwork and communication are essential to collaborate effectively with other professionals. In Japan, interprofessional education (IPE) has been introduced to improve such ability, but this has not been evaluated sufficiently. This study aims to investigate factors that influence IPE effectiveness such as gender, disciplines and case scenarios.

Summary of Work:
IPE using Simulated Patients (SPs) and the topics: asthma, diabetes and smoking cessation were conducted with medical (n=398), pharmacy (n=293) and nursing students (n=86) students. The Nagoya Teamwork Scale (NTwS), Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF), and Jefferson Scale of Physician Empathy (JSPE) were compared.

Summary of Results:
The scores from NTwS, TEIQue-SF and JSPE were compared and paired T-tests performed with significant results. Nursing students scores were significantly higher than medical students. When comparing gender the females’ “role and responsibility” factor was significantly higher than male students. When comparing scenarios, there were no differences.

Discussion:
The high teamwork scores in nursing may arise from frequent groupwork within their curriculum. Working with SPs facilitates students’ collaboration, and reduces misconceptions in clinical-hierarchy. There was no difference among the scenarios implying that IPE with SPs generates discussions regardless of topic and is effective to improve teamwork and communication.

Conclusion:
IPE with SPs has a significant effect in improving medical, pharmacy and nursing students’ teamwork and communication abilities regardless of the topics studied. Improvements in teamwork abilities can occur with group work experiences. Working collaboratively with SPs decreased students’ psychological barriers to communicate with other health professional students.

Take-home Message:
IPE with SPs is effective to facilitate teamwork and communication for medical, pharmacy and nursing students.

A simple and effective teaching tool to teach good quality interprofessional handover skills

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Background:
Interprofessional clinical handovers are well recognised as situations of risk for patient safety. As yet the processes involved in handover are not fully understood. Teaching safe handover to healthcare students is a vital clinical skill. This project describes a simple and effective teaching tool to teach good quality handover skills.

Summary of Work:
A study followed the transfer of a simulated patient from a home referral to hospital and then through their hospital stay to planning discharge. The clinical handovers that occurred at each stage between professionals were analysed and a teaching tool was then developed. It was tested with newly clinical students.

Summary of Results:
This study of interprofessional clinical handovers demonstrated that the handover process is a complex interplay of external environmental and internal, often hidden, cognitive factors. It is not simply an exchange of information, but rather a reprocessing of information and aspects of forward thinking, that differs for each healthcare professional.

Discussion:
Teaching interprofessional clinical handovers is a vital skill for clinical students that impacts directly on patient safety. It is mainly taught during clinical placement where time is limited. It is poorly taught by observation, by unpicking internal and external parts of the process it can be taught clearly and speedily.

Conclusion:
Therefore a tool that helps both the understanding of interprofessional clinical handover and speeds up the teaching of this skill, would prove beneficial. This is a tool that also enables clinical tutors to understand the handover process and therefore supports their design of this aspect of the clinical curriculum.

Take-home Message:
Teaching interprofessional clinical handovers currently happens through students watching more experienced healthcare staff carrying out the process. Much of the process is a hidden cognitive process poorly taught through observation. This project describes a scaffolding tool to enable interprofessional students to understand and learn the skill as quickly as possible.
### #7JJ01 Night Float System and Medical Errors: Perceptions of Pediatric Staff in ACGME-International Program in Qatar

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**Mayra Batool**
**Mona Maarafiya**
**Eman Al Maslamani**

**Background:** Night float system (NFS) replaced the traditional call system in most residency program (NFS) enhanced resident’s wellbeing, patient care, reduced sleep deprivation, fatigue and medical Errors. NFS implemented to ACGME-I pediatrics residency program - Hamad Medical Corporation - Qatar 2015-2016. Aims: to assess staff perceptions towards NFS compared with traditional call in medical errors.

**Summary of Work:** Cross sectional survey was conducted among pediatric residents, attending and nurses at Hamad Medical Corporation. Questionnaire designed after reviewing related literatures, it offer objective answers utilizing the 4-point Likert scale which used to perform statistical analysis. It included staff demographics, factors contribute to medical errors during on-call duty.

**Summary of Results:** 110 questionnaires (47 residents, 28 attending & 35 nurses) analyzed; majority in favor of (NFS) medical errors occurred more during traditional call, due to: fatigue from lack of sleep 71.6%; nurses have higher percentage than attending and residents (77%, 74%, 66%, respectively) fatigue from excessive workload 58.7%, percentage higher in nurses & residents (60%, 62%, respectively) than attending 52%.

**Discussion:** Participants perceived that more medical errors occurred during traditional call compared to (NFS) due to: fatigue from lack of sleep 71.6%. Fatigue from an excessive workload 58.7%. Factors as; poor sign-out, delay in performing procedures and inadequate supervision were equivalent during both (NFS) and traditional call.

**Conclusion:** Pediatric staff in favor of NFS than traditional on call system because its positive impact on residents well being which is reflect dramatically in decreasing incidence of medical errors.

**Take-home Message:** NFS reflect positively on residents well being, decreasing incidence of medical errors which promote patient care and safety.

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### #7JJ02 Preparedness of Foundation Doctors in Communication Skills with Children and Parents

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**Paul Baker**, Health Education England (North West), Manchester, UK

**Background:** ‘It is essential that newly qualified doctors can competently interact with, assess and care for children and young people’ (Royal College of Paediatrics and Child Health (RCPCH), 2015). Both the General Medical Council (GMC) and the RCPCH have produced expectations for teaching of paediatric specific communication skills at undergraduate level.

**Summary of Work:** This study assessed the self-reported competence of foundation doctors in paediatric communication skills. 96 questionnaires were distributed across Scotland and England in paper and electronic form, both containing identical questions. Paper questionnaires were handed out at teaching sessions and administrators at different hospitals distributed a link to the online survey.

**Summary of Results:** 43% had completed rotations involving regular contact with children and parents. 41% reported no formal paediatric communication skills teaching and 35% felt any teaching received was inadequate. 43% reported low levels of confidence in their communication skills and higher levels were associated with longer paediatric placements and paediatric student-selected modules.

**Discussion:** Despite regular contact with children and parents, doctors report low confidence in paediatric communication skills. This may be explained by the lack of undergraduate teaching. Higher levels of confidence associated with increased paediatric exposure further supports the argument for increasing allocated teaching time for communication skills in paediatric undergraduate curricula.

**Conclusion:** Although a limited number of questionnaires were returned, this novel research should encourage those reviewing undergraduate curricula to consider the importance of meeting well established GMC and RCPCH expectations. At Royal Bolton Hospital, we plan to develop a workshop addressing the communication challenges between practitioner, child and parent.

**Take-home Message:** Foundation doctors report low confidence levels in professional communication with children and parents. In order to improve preparedness, medical schools may wish to review current curricula to ensure compliance with GMC and RCPCH expectations for teaching of paediatric specific communication skills at undergraduate level.
#7JJ03 (565)
Making consensus of Trainer-assessment in Dental Post-Graduate Year Training

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**Background:** In Taiwan, Dental Post-Graduate Year (DPGY) training program began in 2010 and the government committed it to the Joint Commission of Taiwan (JCT). This program aims to build systematic clinical training and training institutes include clinics and hospitals. We held workshops for trainers to realize training curriculum and make consensus.

**Summary of Work:** We establish curriculum working group to created assessment guide of curriculum (DOPS, CSR or mini-CEX) for trainers. The consensus workshops include introduction of training course, curriculum and assessment with the same material, playing scenario-based teaching video, pre-assess using Interactive Response System (IRS), consensus process, and post-assess using IRS after consensus.

**Summary of Results:** Taking endodontic treatment workshop in 2016 for example, 136 teachers joined. Compare scores of pre-assess with post-assess, there were significantly difference in all assessment items. It was more centralized and the differential was decreased. For example, the score of professionalism item from 4 to 6, increased from 61% to 79%.

**Discussion:** In Eastern culture, people don’t like to express their views directly to avoid destroy organization peace. In the beginning of this workshop, the process to express scores of pre-assess and post-assess was raising hand. Trainers feedback rarely because the openly process. Now through IRS anonymously, the response rate has increased.

**Conclusion:** Although there is assessment guide for trainers, many factors influenced the reliability of assessment such as new trainers, the differential among trainers and institutes. Through standardized workshop we hope to reach consensus of assessment, improve teaching quality and maintain a consistent of trainee’s performance. It’s necessary to continue the workshop.

**Take-home Message:** Using Interactive Response System (IRS) electronics is helpful to realize if the trainers reach consensus of assessment immediately. Through group and cross-institutes discussion can decrease the differentials.

#7JJ04 (1119)
What do Foundation Year 1 Trainees Perceive as Barriers to Professionalism?

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**Background:** Professionalism is key to clinical practice and encompasses a range of behaviours and skills. The professionalism of medical professionals is widely challenged following recent National Health Service (NHS) failings. Despite the emphasis on professionalism throughout medical training, unprofessional behaviours continue to be encountered. We aimed to identify barriers to professionalism.

**Summary of Work:** We surveyed all Foundation Year 1 trainees at a central teaching hospital pre and post discussions on professionalism. They were asked to identify four barriers to being professional in their roles. The group discussions involved two separate sessions - (a) introduction to professionalism and (b) unprofessional behaviour of senior colleagues.

**Summary of Results:** There were 27 and 30 responses from the first and second session respectively. The main barriers were unprofessional behaviour from seniors, high workload, time constraint, lack of knowledge and confidence, stress and tiredness. Some also described conflicts with other staffs and patients. There was increased awareness of barriers post discussions.

**Discussion:** Barriers identified included external and personal factors. A key external factor is the influence of senior colleagues, highlighting the importance of role modelling in postgraduate medical training. Personal factors such as hunger, time constraints, stress and tiredness are largely related to the increasing demand on the NHS.

**Conclusion:** This study provided valuable insights into junior doctors’ perception of barriers to professionalism. This will inform future training in reducing unprofessional traits, including focussing on positive role modelling, conflict resolution, human factors training and reflective practice.

**Take-home Message:** Professionalism is crucial within the medical profession and is not wholly innate. While some aspects of professionalism can be taught, such as knowledge and communication skills, one’s professionalism is highly influenced by others and the environment. Positive role modelling is vital in developing professional behaviours.
**Interactive Workshop for Post-graduate Medical students (Interns): The effective way of continuous medical education**

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**Background:** The Interns should have Continuous Medical Education (CME) for improvement of knowledge and clinical skill. There are many kinds of CME such as case-based conference, workshop and OSCE. We study outcome of training program by Interactive Workshop (IW) in 1st year interns who were training at Kalasin hospital in 2016.

**Summary of Work:** 7 Teaching Stations (TS), 7 small groups rotated around TS. Same process in the morning and afternoon. The tutors in each station were medical teachers and nurses taught common pediatric topics using a sequence of tell, show, do, feedback over 15 minutes. Formative assessment by short written test and practice.

**Summary of Results:** Formative Assessment (FA) in 7 TS, 14 groups. Average percentage point as the following 92.0, 91.8, 86.9, 88.6, 100, 88.5 and 88.0 respectively.

Contentment evaluation: content 81.6%, time 82.0%, presentation technique 80.0%, knowledge improvement 84.0%, place and equipments 96.0% and opportunity for practice & interaction 78.0%.

**Discussion:** The interns had good attitude to training program by IW. Interaction, feedback from tutors and FA were the effective technique for them to learn. They have improved in knowledge and skill that sustained and useful for practices. One disadvantage of IW was inadequate time for everyone to practice and feedback.

**Conclusion:** Training program by interactive workshop is effective way for improvement of knowledge and skill practice in interns and be suitable program for continuous medical education in other topics.

**Take-home Message:** Interactive workshop is the effective way for learning and continuous medical education.

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**Social engineering as a method of development of social responsibility of interns in medical school**

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**Background:** New technological processes of design, modeling, social planning need to be introduced into the practice oriented teaching process of interns. General learning skills, which are formed in the project activities, are focused on reflexive, research, management, communication, presentation skills, which are an integral part of formation of competencies of interns.

**Summary of Work:** Social engineering is aimed to formation of basic skills of interns in structuring and organizing the major components of the public health programs, which include goal setting, results forecasting and formation of criteria of their evaluation, the development of project management strategies, the concept of the project, the project programming.

**Summary of Results:** In the framework of social engineering on the course "Social and psychological bases of professional work" the interns created educational, health preventive programs on healthy lifestyle and disease prevention.

**Discussion:** The structure of the social project in the field of public health included structural elements: title of the project, description of the target group, mission and goals of the program, objectives of the program, behavioral or educational problems, educational concept, educational behavioral and logical bases, training course of the program.

**Conclusion:** The criteria-based assessment of social engineering showed that interns of the experimental group, which has done the course of the subject "Social and psychological bases of professional work", showed a good (15-20%) and excellent (70-80%) level of preparedness in formation of motivation, which aims to keep health of people.

**Take-home Message:** Social engineering is an effective method of development of social responsibility of interns at medical institute.
#7JJ07 (1358)
An annual Urology tutorial for Foundation Year doctors is acceptable to Trainees and improves emergency and on-call care of patients

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Background: Our AMEE 2016 poster showed Foundation (FY1/2) and Core Surgical Trainees (CST) perceived that they lacked sufficient Urological skills and knowledge to manage patients safely. A targeted tutorial was welcomed and improved the Trainees’ perceptions of their ability to manage on-call/emergency Urology patients. This improvement persisted at 4 months.

Summary of Work: A cohort of the original group (then FY1, now FY2s) was re-surveyed to determine how their self-perceived ability to manage emergency/on-call Urology patients changed over the year since the Urology tutorial and also to determine any additional benefit from a further Urology tutorial within the Foundation Teaching Programme.

Summary of Results: Prior to the new tutorial, 100% Trainees agreed an additional Urology tutorial would be useful. Topics requested were Emergency Urology (100%), Urological cancers (58%) and elective Urology topics (33%). Following the tutorial, all trainees felt more confident in managing Urology patients and all believed that patient care would be improved.

Discussion: We built upon our previous work, showing that although a single tutorial will improve confidence over several months, this benefit was not sustained at 1 year. However a further targeted tutorial will boost confidence again and is acceptable to trainees. Time constraints remain the single biggest perceived barrier to training.

Conclusion: Simple interventions can have marked benefit on Trainees’ perception of their ability to manage patients safely. We previously demonstrated benefit from a single tutorial. This additional work demonstrates that yearly tutorials are viewed positively by trainees and can consolidate and build on the benefit from the previous year.

Take-home Message: Consolidation of previous learning is welcomed by FY2s, who believe an annual tutorial improved patient care. FY2s requested a wider selection of topics to be covered including non-emergency topics, indicating that the perceived benefit of the annual tutorial is more than simply revision of existing knowledge.

#7JJ08 (1637)
Learning from Role Models on High Value, Cost-Conscious Care – Perspective from a National Teaching Hospital

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Background: The emphasis on the delivery of high value, cost-conscious care in a landscape of rising healthcare costs, increasingly complex medicolegal landscape and easier access to investigations is unprecedented. Studies have revealed that role modeling is an effective component in shaping the professional competency of physicians.

Summary of Work: We conducted a study in the form of a survey among Year 1 to 3 Internal Medicine residents in between 2016 to 2017 to evaluate the attitudes, perceived barriers and consequences to and observed role-modeling behaviour towards the delivery of high value, cost-conscious care in the National University Hospital, Singapore.

Summary of Results: 60 Internal Medicine Residents participated in the survey. 93% residents agreed that trying to contain costs is the responsibility of every physician. 61% agreed that there is teaching on high value, cost-conscious care during training. A majority observed positive cost-conscious role-modeling behaviour. However, residents also observed negative wasteful role-modeling behaviour.

Discussion: This is the first known study of residents’ perspectives on this topic in an Asian ACGME accredited institution. Despite a majority (64%) recognising that they have not been taught on this in medical school, many recognise that excessive testing compromises patient safety. Conflicting role-modeling behaviour was observed during their training.

Conclusion: Residents recognise the importance of stewardship and delivery of high value, cost-conscious care and there is exposure to positive role-modeling behaviour during training. They are able to identify the associated barriers and consequences. Improvement on negative and wasteful role-modeling behaviour can improve the education and delivery of desired care.

Take-home Message: Education and role-modeling are integral in the training of residents towards providing high value, cost-conscious care. Further efforts can be undertaken to improve negative and wasteful role-modeling behaviour. Physicians and faculty members do play important roles in shaping desired competencies among the trainee physicians.
# Upward feedback bias in Foundation Programme training

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**Background:** Upward feedback in training involves the trainee giving feedback to more senior staff and has been adopted in medical training as a means for quality control. However, previous research has identified multiple bias that may affect the quality and accuracy of upward feedback in both medical and non-medical settings.

**Summary of Work:** Few studies have explored which bias affect upward feedback in UK Foundation Programme training. Foundation Programme doctors were invited to participate in focus groups to discuss their experiences of giving upward feedback. Focus groups were discontinued when theoretical saturation occurred. Themes were identified from the transcripts to develop analytic concepts.

**Summary of Results:** UK Foundation Programme doctors are the most junior doctors working in the National Health Service and our preliminary results identified a range of different bias affecting upward feedback in this group, such as leniency and feedback method. The full set of results will be presented at the meeting.

**Discussion:** Upward feedback is not without bias. Few studies have explored upward feedback bias in early stages of medical training. Preliminary results identified that different bias exist in Foundation Programme doctors giving upward feedback, suggesting the potential to further develop and improve the process of upward feedback in Foundation Programme training.

**Conclusion:** Upward feedback can provide valuable information for personal development. However, bias can limit its accuracy and uses. By identifying the relevant upward feedback bias, these results can be used to develop interventions that aim to reduce the impact of upward feedback bias in Foundation Programme Training.

**Take-home Message:** Upward feedback has been used as a means of personal development for trainers and quality control for medical training. Upward feedback can be useful but can be affected by bias, including Foundation Programme doctors, therefore limiting its accuracy and uses.

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# Do Not Attempt Cardiopulmonary Resuscitation: A constructivist workshop dealing with challenging statements and questions for foundation doctors

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**Background:** The UK Foundation Programme curriculum states a Foundation doctor ‘should be able to discuss Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) decisions’. However, Foundation doctors are often ill-equipped to deal with challenging questions and statements generated from such discussions. We designed and evaluated a constructivist workshop for foundation training addressing this.

**Summary of Work:** The workshop design centered on a case-based role play, where Foundation doctors answered challenging questions and statements surrounding DNACPR decisions. Subsequently, a semi-structured group debrief modelled on communities of practice was conducted. Pre and post-workshop questionnaires evaluated participant experience and learning. A delayed post-workshop questionnaire will assess self-reported behaviour change.

**Summary of Results:** Pre-workshop questionnaire established that Foundation doctors face common challenging questions and statements regarding DNACPR decisions. Some of which were identified as a source of anxiety. 36 Foundation doctors evaluated the workshop as relevant, interactive and helpful to their training using a 5-point Likert scale (mean =4.6). Delayed-post workshop questionnaire pending.

**Discussion:** Foundation doctors evaluated the workshop immediately as being useful and relevant to their clinical training. Long-term impact and self-reported behaviour change will be evaluated in due course. The case-based role play gave Foundation doctors an opportunity to share their repertoire of experience and skills when handling challenging questions and statements.

**Conclusion:** In designing, delivering, and evaluating a successful constructivist workshop we addressed a perceived gap in our local foundation programme training. Incorporating communities of practice into our workshop was an effective way of facilitating group discussion and learning. This workshop design may help guide Foundation programme teaching development nationally.

**Take-home Message:** This workshop has the potential to generate and equip Foundation doctors with strategies to effectively handle challenging questions and statements following DNACPR discussions, thereby reducing their anxiety and improving patient experience.
From Inception to Implementation: Improving Procedural Skills Training and Confidence for Core Medical Trainees in the East Midlands South Deanery

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Background: The Joint Royal Colleges of Physicians Training Board stipulates that Core Medical Trainees must be trained in Procedural Skills (Ascitic Tap/Lumbar Puncture/NG Tube/Pleural Tap/DCCV/Central Line/Chest Drain). The lack of a formal course, and limited work-based opportunities, was leading to low confidence in performing these skills, and difficulties meeting curriculum requirements.

Summary of Work: A baseline questionnaire confirmed the need to implement a one-stop skills-lab course. We delivered this with small-group specialist teaching, across three dates. Qualitative questionnaires evaluated pre and post-course confidence (primary outcome). We surveyed how useful this course was in: meeting curriculum requirements, improving ability, and application to their clinical practice.

Summary of Results: 26 CMT1 and 35 CMT2 doctors were surveyed. Paired t-test analysis showed statistically significant improvement (p<0.05) in confidence across all seven skills. 100% stated ‘useful’ or ‘very useful’ in meeting curriculum requirements. 100% ‘agreed’ or ‘strongly agreed’ with increased ability. 100% stated ‘useful’ or ‘very useful’ for their clinical practice.

Discussion: Although confidence significantly improved directly after the course, it would be beneficial to do further questionnaires at 6 months, to allow sufficient time for CMT’s to apply the training into real-life practice. Further innovation could involve expanding this course to non-training grades, who may be required to perform these procedures.

Conclusion: Our results show that a formal procedural skills course, delivered by specialists, significantly increased confidence in CMT’s. It has also helped trainees to meet their curriculum requirements. We have concluded that this course should be a mandatory part of CMT training in East Midlands South.

Take-home Message: A quality improvement project can implement major educational change. Formal skills-lab training can improve confidence, as well as help to meet curriculum requirements. Very few deaneries in the UK offer a one-day course that includes all seven key skills, and this model of training could be adopted widely.

Comparison of Institution Reviews within and outside of Canada

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Background: Residency education accreditation in Canada includes review of each Faculty of Medicine and its affiliated learning sites, with emphasis on the postgraduate medical education decanal unit, using the General Standards Applicable to the University and Affiliated Sites. Recently, an equivalent institution review has been conducted in jurisdictions outside of Canada.

Summary of Work: The outcomes – citations of strengths and areas for improvement linked to standards – of the most recent institution review for each of Canada’s 17 postgraduate medical education institutions were compared to those of the 5 institution reviews conducted outside of Canada to date.

Summary of Results: Patterns of strengths and areas for improvement (AFI) were similar between Canadian and non-Canadian institutions; standards for institutional structure represented half of those cited. Faculty development was more commonly cited for non-Canadian institutions. Important differences in the significance of the AFI’s were found through qualitative analysis of the identified AFI’s.

Discussion: Similarities observed in the frequency and pattern of citations may relate to application of established norms by experienced surveyors rather than evidence of equivalent institution quality. The differences observed highlight opportunities to share knowledge and enhance capacity in key areas such as internal quality improvement practices.

Conclusion: Monitoring of institution review outcomes and comparison between Canadian and non-Canadian institutions is needed to demonstrate that the principle of equivalency is maintained. The extent of similarity validates the transferability of Canadian institutional standards to non-Canadian jurisdictions and suggests surveyors’ interpretation of the standards is consistent across jurisdictions.

Take-home Message: Institution reviews aim to support continuous improvement efforts and to help ensure the appropriate leadership for the provision of high quality residency education. Experience to date in institution accreditation outside of Canada reveals a need for enhanced faculty development around the world and capacity-building related to internal quality improvement processes.
#7JJ13 (1576)
What Do Clinical Competency Committees (CCCs) have in common? A Multispecialty Survey of CCC chairpersons

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**Background:** The Accreditation Council for Graduate Medical Education (ACGME) requires residency programs in the USA to create CCCs to assess their residents’ achievement of specialty specific milestones. There is little information about how CCCs function and even less aggregate data to compare and contrast such information across specialties.

**Summary of Work:** In 2017, CCC chairpersons across all 21 ACGME-accredited residency programs within a single institution were surveyed. Survey items were developed based on the available CCC literature. Reviewers with content expertise and knowledge of survey methodology assessed the items for clarity and relevance. The survey was subsequently pilot-tested and launched.

**Summary of Results:** 12 of 21 responded (57%), 6 medical, 4 surgical and 2 “other”. CCCs of both medical and surgical specialties 1) used end of rotation evaluations and multisource feedback most commonly, 2) did not include allied health professionals, 3) found practice-based learning and improvement and systems-based practice milestones challenging to assess.

**Discussion:** These similarities between medical and surgical CCCs were in key domains such as committee membership, function and challenges. We will incorporate “other” specialties (e.g. radiology) as data is obtained. Although this study involves only a single institution, the use of a multispecialty approach to elucidate factors affecting CCCs is unique.

**Conclusion:** Preliminary data analysis suggests that CCCs across medical and surgical specialties share more similarities than differences. This includes how CCCs view their role, membership and types of assessment data used and challenges. This pilot work will be investigated further to determine if these trends persist in a larger study sample.

**Take-home Message:** Across specialties, there are key similarities in CCCs which can serve as a foundation to engage CCC members in a dialogue about their work. Innovative CCC faculty development approaches can be developed in which specialties learn “best practices” from each other and brainstorm ways to address challenges.

#7JJ14 (227)
Evaluating the effectiveness and sustainability of near-peer simulation-based teaching among junior residents of a residency programme

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**Background:** Near peer teaching has been gaining popularity as it has been shown to improve learner’s understanding, targeted at an appropriate level and promotes familiarization. Three second-year internal medicine residents self-initiated this study to evaluate the effectiveness and sustainability of near-peer simulation-based training within a residency program.

**Summary of Work:** 42 first-year residents were recruited. Participants underwent a simulation-based training program conducted over 5 weeks. Each week involved either an emergency or acute clinical scenario. A structured questionnaire was administered prior to and after the course to compare participants’ perceived knowledge, experience and confidence in managing the clinical scenarios.

**Summary of Results:** 83% of participants agreed/strongly agreed that the scenarios were realistic. There were improvements of knowledge, experience and confidence after the course. The greatest improvement was experience (Median 7.0, Interquartile range 6.0-8.0 vs. Median 5.0, IQR 3.0-6.3). 65% of participants are keen to help with future training.

**Discussion:** Near peer led simulation for first-year residents significantly improved perceived knowledge, experience and confidence towards acute clinical scenarios. Near-peer teaching allows residents to feel at ease to ask questions when they had doubts, and the mentors were also able to better understand their needs and address their concerns.

**Conclusion:** Near-peer simulation training was found to be a viable and valuable method of instruction for first-year residents in cultivating knowledge, increasing experience and instilling confidence. It also shows good promise of continuity, with many first-year residents inspired to organize subsequent sessions.

**Take-home Message:** Our experience shows that it may be beneficial and likely sustainable for residency programs to conduct a near peer simulation-based medical education program for first-year residents, specifically to aid residents in preparing to face real-life emergency scenarios.
Relying Solely On Quantitative Residents' Evaluations Does Not Tell The Full Story

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Background: In our program, quantitative evaluations (QE) administered at the end of a rotation to individual residents do not always identify potential problems. We administered a mixed quantitative and qualitative evaluation (ME) via an online link to 6 residents simultaneously who had previously completed QE in the same rotation and examined their responses.

Summary of Work: Evaluations covered educational needs, administrative support, research participation, faculty evaluation and overall rating (OR). QE required responses on 9-point scales and concluded with one short-text field. ME required responses on dichotomous and 5-point scales (OR), and short-text fields in every domain. A question on repeat rotation required response on a multi-chotomous scale (Yes/No/Maybe).

Summary of Results: On QE, mean OR and faculty evaluation scores were 6.50±2.07 and 6.64±2.87 respectively versus 2.67±0.52 on ME. 5/6 (83%) residents cited non-conducive learning environments, 4/6 (67%) did no research, and reported poor faculty communication. All felt service requirements compromised clinical education, and provided qualitative feedback. None responded “Yes” to a repeat rotation.

Discussion: Despite reasonable scores on OR and faculty evaluation, QE failed to identify problematic areas pertaining to learning environment and faculty compared to ME. Possible reasons could be ME's qualitative design, and the associated psychological safety that responses were more likely to be kept confidential when administered simultaneously to a group.

Conclusion: ME, compared to QE, provided more information on areas of weakness and potential areas for improvement in the rotation as it allowed qualitative feedback in every domain. Residents appeared more forthcoming with their feedback when ME was simultaneously administered to a group perhaps because confidentiality could be more easily preserved.

Take-home Message: Residents' evaluations should incorporate ME to encourage qualitative feedback in every domain, rather than leave a single field for this at the end. Instead of administering to individual residents on completion of a rotation, it should be administered simultaneously to a group to create psychological safety and protect residents’ confidentiality.
The Impact of Targeted Simulation Training on Medical Student learning in Obstetrics and Gynaecology: A prospective cohort study with quantitative assessment

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Background: This study aimed to explore the “value added” by simulation training to traditional undergraduate medical teaching methodologies about obstetric emergencies: antepartum haemorrhage (APH); postpartum haemorrhage (PPH); and, sepsis. Learning objectives were identified from the Oxford University syllabus. Simulation scenarios involved active experimentation and reflection using a low-tech model.

Summary of Work: The session consisted of a brief revision of previously provided factual content followed by an APH case based discussion (CBD), simulation scenarios on PPH and sepsis. Identical pre and post knowledge tests were undertaken using single best answer format (maximum score of 5). The trainers were similar for each session.

Summary of Results: 107 students participated in 5 separate sessions. The pre and post test results were analysed using paired t-test; p<0.05 was considered statistically significant. A positive mean difference between the test scores was observed: 0.49 (APH: 95% CI 0.31-0.67); 1.33 (PPH: 95% CI 1.11-1.54); and, 0.88 (sepsis: 95% CI 0.67-1.09) (p<0.001).

Discussion: Simulation training improves learning, demonstrated by significant improvements in pre and post-test scores versus CBD alone. Building on Dewey’s theory of experiential learning, the session provided practical scenarios in real-time, reinforcing knowledge, and helping to identify gaps in their understanding. Kolb’s learning cycle was implemented followed by reflection post-simulation.

Conclusion: The pre and post test result scores demonstrated that the teaching session had a positive impact on the student’s knowledge. CBD had less impact on knowledge acquisition compared to the simulation scenarios. Actively incorporating educational theories into a learning environment helps to design a more effective teaching session.

Take-home Message: Implementation of Kolb cycle can significantly enhance the student’s learning experience. The European Working Time Directive places constraints on time for experiential learning and has led to the development of “skills drills” style training particularly for emergency protocols. Targeted simulation training can develop and enhance the acquisition of these skills.
Implementation and evaluation of a new student guided, video-assisted Simulation Course

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Background: During personal reflection, many final year medical students reported inability to competently handle daily situations as well as inexperience with common emergency scenarios. A new course design was developed and implemented to address perceived inadequacies using daily ward situations and emergency scenarios with standardized patients/manikins followed by video-assisted personal feedback.

Summary of Work: Fifty students received anonymous questionnaires before and directly after the course then one year later, following the final exam. They were asked to comment on expectations of the course and later if these expectations were fulfilled. Overall satisfaction with course content and structure was evaluated.

Summary of Results: The course received overall extremely positive feedback. Students reported their expectations as being highly fulfilled as well as feeling more confident in addressing various daily clinical situations. Attitudes to simulation training as an effective teaching approach improved. The opportunity to practice clinical skills was also well received.

Discussion: A simulation course, introduced as a new teaching strategy and when specifically designed to address perceived deficits, can be highly effective. Students appreciate personal feedback and are highly motivated to learn when they become engaged in realistic but controlled situations. Video assisted feedback, aids in recognition of deficits and strengths.

Conclusion: A simulation course specifically designed to address self-reported student deficits could lead to improved student satisfaction and a positive learning environment. This environment is conducive to and facilitates learning, which can lead to improved clinical competence. However objective markers of clinical competence and improved patient care require further investigation.

Take-home Message: Students are quite capable of identifying their own deficiencies, when placed in an appropriate learning environment. A simulation course using video-assisted feedback, when specifically designed to address these perceived deficiencies is an engaging and motivating teaching method.

Perceptions of Alexandria Faculty of medicine third year undergraduate medical students in Egypt towards medical simulation training as a method for clinical teaching

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Background: Simulation helps provide a standardized level of clinical skills acquisition. In 2010, simulation was formally introduced in Egypt at Alexandria Faculty of Medicine as a strategy for teaching basic clinical skills to medical students. Further implementation stages followed to help provide advanced training to the broader community of health professionals.

Summary of Work: A cross-sectional mixed method study using a self-administered semi-structured questionnaire with both Likert scale measurement and open-ended questions was used to elicit students’ perceptions towards simulation as a tool for clinical teaching after its integration into their program. 343 of 1176 third year undergraduate students were recruited for the study.

Summary of Results: 78% believed simulation creates a realistic and safer environment for training and 87% agreed that the simulation course had improved their clinical skills. 82% thought that using medical simulation could hinder their communication skills with patients and only 15% thought it was easy to treat the manikins as real patients.

Discussion: Interesting thoughts related to communication skills enhancement and the role of the medical teacher have come up through this study. The overall perceptions of the students were still very positive. The study findings reflected the adequacy of simulation to andragogy through allowing active learning and its relatedness to real-life careers.

Conclusion: Medical simulation offers added value to clinical teaching through allowing skills to be mastered in a safer environment. The study highlights the benefits that simulation brings to clinical teaching and encourages its use in medical curricula. Yet, simulation needs to be relevant and interlocking with actual clinical practice.

Take-home Message: Medical simulation provides a safer environment for skills acquisition. In full-environment simulation, skills as leadership, team work and decision-making can be enhanced. Decisions for its integration within medical curricula should be made during the design phase in order to ensure congruence between the targeted learning objectives and the training course.
Collaborative networking of a resuscitation team in a simulated environment

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Background: Unexpected disturbances take often place in real life and during simulation sessions. The participants carry out collaborative knotworking to figure out solutions to overcome the disturbance. The purpose of this study was to identify the disturbances and knots under the simulated exercise in order to facilitate debriefing.

Summary of Work: After permission of the ethics committee and informed consent, nine multidisciplinary full-scale simulation sessions were arranged in a real environment. In every scenario, there was a resuscitation period after severe hypotension. Simulations were video recorded and transcribed. The data was analysed by using activity theoretical concepts of disturbance.

Summary of Results: Taking care of a sedated, conscious patient is a challenge to a team. Coordination problems were caused by poorly synchronised work within the team. There is also an outsider to the OR staff, a radiology nurse, to assist the surgeon, which often confuses the division of labor.

Discussion: There are both psychological barriers physical barriers in the operation room. Disturbances concerning one’s own role were solved independently by the actor self. Problems inhibiting co-operation were caused by the poorly fitting resuscitation algorithm in the OR. Despite the disturbances, the participants showed respect towards the other team members' work.

Conclusion: Resuscitation algorithm fits poorly to the reality in the OR. Operative team had to control bleeding instead of starting compressions. The aseptic working environment prevents the circulating nurse from starting compressions. Slowly progressing hypotension ending in PEA creates communication problems situation and there is no need for defibrillation.

Take-home Message: Disturbances are deviations from the normal scripted course of events. High-fidelity simulations have been of great value in making visible both the disturbances and their possible solutions. Simulated exercises are recommended as a tool for implementation of new surgical techniques and for enhancing knotworking mode of collaboration.

A multidisciplinary simulation curriculum improves confidence and performance on the intensive care unit

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Background: Simulation training has become an integral component in the delivery of training of acute medical specialties around the world. It has been shown to improve knowledge, and performance, of junior doctors working on intensive care units (ICU) and to improve the timing and quality of resuscitation efforts.

Summary of Work: We developed and implemented a simulation course aimed at ICU registrars, mapped to the training curriculum, and consisting of common problems encountered on our units. This is run in parallel with a half-day, multidisciplinary course, with candidates consisting of a combination of ICU residents and nursing staff of all grades.

Summary of Results: Candidates across all grades, from both nursing and medical backgrounds, indicated that participation in one of the simulation courses was not only enjoyable; but significantly helped their clinical practice, and, aided their confidence in managing crises on the intensive care unit.

Discussion: Developing a “simulation curriculum” based around common crises encountered on ICU is feasible and effective. Over the course of a year we progressed from having no dedicated ICU simulation courses, to two established courses, run four times per year, catering to our junior medical, and nursing staff of all grades.

Conclusion: Structured simulation training can be easily developed, delivered, and replicated, for medical and nursing staff working in intensive care. It can be tailored to the experience and seniority of staff involved; new content can be developed based upon emerging need, and in response to adverse events, or near misses.

Take-home Message: A "simulation curriculum" for intensive care units, with common themes, that are applicable to medical and nursing staff of all grades, aids performance and development in critical care.
Application of Hybrid Training in Clinical Comprehensive Skills Training Courses for Senior Medical Students

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Background: To develop training courses based on hybrid training method which can help to improve the comprehensive competency of the senior medical students, to explore and implement the hybrid training method in the clinical comprehensive skills training courses for senior medical students.

Summary of Work: With 6 hybrid training courses in groups, to simulate the whole medical procedures by one case, including seeing patient, preliminary diagnosis, reporting to senior physician, communicating with the patient, patient safety management, crisis management of disease deterioration, BLS of the code team, advanced life support and case discussion.

Summary of Results: The hybrid training method was popular with the students, and was helpful to increase the subtends learning activities. All the participants in this program finished the homework with a good teamwork based on the learning group, and passed the hybrid examination by individual and by team.

Discussion: We established a simulation course pattern by simulating key procedures of dealing with a certain patient to train the students to improve clinical comprehensive skills. Hybrid teaching method and Team-based learning help students do more learning activity both in and out of class.

Conclusion: Hybrid training in the clinical comprehensive skills training courses was a student centered, results oriented method lead to active and effective learning, developed a new way for clinical competency training, this method can be applied in any other diseases, and valuable to be spread in clinical comprehensive skill training.

Take-home Message: We have established a simulation course pattern by simulating key procedures of dealing with a certain patient to train the students to improve clinical comprehensive skills with hybrid training methods, which can be applied in any other diseases, and valuable to be spread in clinical comprehensive skill training.

Identifying content for simulation-based curricula in urology: A nationwide needs assessment

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Background: Simulation continues to emerge as novel training methodology in response to the mounting pressure that the educational environment faces today. However, identification of included procedures is often based on coincidence or available simulation equipment. Curriculum development of simulation-based courses should follow a stepwise approach starting with a general needs assessment.

Summary of Work: We performed needs assessment using Delphi method among 56 participants in urology. Round 1 identified technical procedures that urologists should learn. Round 2 involved a survey to explore frequency of procedures, number of operators, discomfort when performed by inexperienced doctors, and feasibility. Round 3 involved elimination and ranking of procedures.

Summary of Results: The response rates for Round 1, 2 and 3 were 70%, 55% and 67%, respectively. The Delphi process resulted in a final prioritised list of 18 technical procedures in urology that are highly suitable for simulation training starting with cystoscopy, transrectal ultrasound-guided biopsy of the prostate, and placement of ureteral stent.

Discussion: The development of simulation-based training programmes should be guided by deliberate selection of the most suitable procedures. Performing a needs assessment among the end-users of simulation-based training allows for planning of educational activities that are targeted to current training needs.

Conclusion: The needs assessment following a structured Delphi process identified a prioritised list of technical procedures in urology that is highly suitable for simulation. Medical educators and leaders of simulation centres can use this as an aid in the planning and development of simulation-based training programmes.

Take-home Message: A general needs assessment following a structured approach is required to identify the most suitable procedures to include in a simulation-based curriculum.
#7KK09 (3137)
Development and Implementation of a Neonatal Procedure Simulation Boot Camp

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Background: Transition to fellowship can be challenging with residents finding fewer opportunities to learn procedural skills. Incoming Neonatology fellows are quickly placed in situations where unexpected events require rapid responses and procedural competency. Procedural boot camps have been piloted across the country and demonstrate improving skills and confidence during transitional periods.

Summary of Work: We developed a procedure simulation boot camp curriculum for the incoming first year Neonatology fellows in the Harvard Neonatal-Perinatal Medicine Fellowship with the SIMPeds Network Team at Boston Children’s Hospital. Our goal was to provide incoming fellows with standardized procedural instruction that allows best practices to be taught and reinforced.

Summary of Results: Following a needs assessment, a boot camp curriculum was designed to combine formalized didactics with simulation-based skill-stations utilizing high-fidelity task trainers. High-risk, low-volume NICU procedures with indications, contraindications, equipment, procedural technique, and potential complications were presented. Standardized procedural checklists were used to evaluate individual competence and course feedback was obtained.

Discussion: The Neonatal Procedure Simulation Boot Camp curriculum was well-received by the incoming Neonatology fellows who found the simulation-based instruction to be an effective learning modality for high-risk low-volume procedures, allowing them to feel better prepared as they started their rigorous Fellowship training. Iterative feedback will facilitate improvement of future experiences.

Conclusion: Procedure Simulation Boot Camps are a successful tool for preparing incoming Neonatology fellows, giving them more procedural confidence and competency from the outset of their training.

Take-home Message: Procedure Simulation Boot Camps are an effective learning modality and can cover a wide range of high-risk low-volume procedures in a short period of time.

#7KK10 (1711)
Interprofessional simulation for professionals working for young people with physical and mental health needs

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Background: Mental health difficulties in children and adolescents are increasing and there is a clear imperative for better joined up care in young people who present to healthcare services with both physical and mental health needs. Interprofessional simulation is one means of improving collaborative care in these cases.

Summary of Work: We developed an interprofessional simulation (IPS) course for paediatric and child and adolescent mental health staff which has run on numerous occasions over the last two years across a number of hospital in London. Data was collected from course evaluation forms, pre- and post-course questionnaires and focus groups.

Summary of Results: Quantitative data demonstrated a statistically significant increase in participants' confidence scores from pre to post course with an accompanying large effect size. Thematic analysis of the qualitative data generated several themes – many of which related to the achievement of the capabilities required for effective collaborative working.

Discussion: Our results demonstrate that IPS is an effective means of improving the knowledge, skills and confidence of individuals for working with this demographic. Additionally, participants improved in their command of the competencies required for effective collaborative practice. However, we observed some difficulties in debriefing interprofessional groups which need consideration.

Conclusion: With appropriate design, it is possible to simulate complex mental health presentations effectively. These can be used for interprofessional groups to impart the knowledge, skills and confidence for working with young people with both physical and mental health needs, whilst also promoting the competencies required for effective interprofessional working.

Take-home Message: • Complex mental health difficulties can be simulated effectively to lead to significant educational outcomes. • IPS is an effective means of promoting collaborative working at the mental-physical interface for the care of young people with both mental and physical health needs. • Debriefing techniques for IPS need careful consideration.
#7KK11 (2196)
First simulation-based Neurology teaching in Cambodia - Effectiveness and students' perspective

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Background: Traditional teaching methods, predominantly lectures, are still being used to deliver all medical education in Cambodia. We aimed to show that teaching Neurology Clinical Skills using a Simulation-based approach, significantly enhanced students' learning and should be an integral part of the developing undergraduate curriculum.

Summary of Work: Simulation-based teaching session in Neurology clinical skills was preceded for 500 students from University of Health Sciences (UHS). Its efficacy measurement was obtained by accessing 34 students in upper limb and cranial nerve examination using standardized oral structured clinical examination (OSCE). Student perception was sought using pre- and post-session survey.

Summary of Results: Pre-(mean 10.43/21; 9.92/21) and Post-(mean 16.30/21; 15.96/21) OSCE on Upper limbs and Cranial nerve Examination scores improved with statistical significance (p< 0.0001). Surveys revealed students valued this method of teaching over lectures, and post-simulation, 74% and 64% of students had increased confidence levels in history taking and examination, respectively.

Discussion: This is the first study of simulation-based teaching in Cambodia, and the first time it has been used to teach Neurology. It reveals positive effects on students learning, both in term of knowledge and attitude, and is pivotal event in shaping the future of medical education in Cambodia.

Conclusion: Our results support previous evidence that simulation to teach clinical skills is effective; student perception indicates more than didactic methods. The application of this to the undergraduate curriculum is integral to developing Cambodian doctors, particularly given their reliance on skills to guide clinical decision making in a resource poor setting.

Take-home Message: Student-centered simulation-based teaching is essential in learning clinical skills, and in resource poor setting where there is no formal training in a specialty such Neurology in a structured and supported way. We suggest studies assessing larger cohorts, within range of specialties, and comparing various teaching styles to strengthen this data.

#7KK12 (2134)
The Combination of Simulation and IPE/IPP Application in a Resources-limited Hospital in Taiwan

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Background: For the latest 10 years, simulation has become a method of teaching technical skills to surgical trainees. And IPE/IPP is also very important for the hospital members to work together for the better qualities of patient care. How to make simulation work, and combine the IPE/IPP members in a resources-limited hospital is necessary.

Summary of Work: We've set-up a IPE/IPP team (core members:8) to perform simulation from ward to ward. We make HCM for IPE/IPP and set-up scenario for simulation together. Then we demonstrate how to perform a scenario (For example: A Fallen Patient Care), and do more practices to make all hospital members familiar.

Summary of Results: Since 2016 October, we've taken place 2 workshops and a master lecture to teach our hospital members. Then we setup the combination simulation and IPE/IPP core team on 2017 January. Now, we've regular meeting every month, and performed several issues successfully, Ex. The fallen patient care and drugs use education.

Discussion: IPE/IPP members should be educated well first, and then could be organized to perform simulation works. In hospital ward, patient safety is always the first priority. So, we must have confidence to take part in the IPE/IPP teams and arouse the member passions for the better care of the patient.

Conclusion: Huge and rapid changes in health care systems underlie the shift to simulation-based medical education in many hospital center and countries. We combine IPE/IPP and simulation together to perform scenarios & topic issues ward by ward, case by case. Although resources are limited, the results of work are very good.

Take-home Message: 1. Make sure your core members in IPE/IPP and do regular meeting weekly or monthly. 2. Perform simulation scenarios case by case, ward by ward. 3. Make sure patient safety is always the first. 4. Let the hospital managers know how to perform even the resources are limited.
#7KK13 (1845)
Lessons learned in applying innovative evaluation methodology: using simulation for curriculum improvement

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Background: The Centre for Addiction and Mental Health (CAMH) proposed an innovative evaluation methodology using simulation to improve the Electroconvulsive Therapy (ECT) training curriculum which is delivered through didactic lectures, observation, in-situ simulation and debriefing. Simulation was used to identify curriculum gaps where learners were not attaining appropriate outcomes.

Summary of Work: CAMH aimed to understand the effectiveness of the curriculum in achieving learning outcomes by evaluating the relationship between simulation experiences and the content of the program. We triangulated pre- and post-tests with self-reflection data and a video review to identify program areas that show outcomes and areas of improvement.

Summary of Results: Knowledge increased between the pre- and post-tests, with the greatest knowledge increase related to the topic of contraindication. While self-reported knowledge and comfort increased, results from the post-training video review showed gaps in procedural knowledge, as students only correctly identified a fraction of the errors shown.

Discussion: Students showed confidence in knowledge in many areas of ECT, but triangulation of data sources showed limitations in abilities to perform tasks. Students had limited procedural knowledge and competence regarding reading an EEG, demonstrating that the curriculum requires more emphasis on this area in order to reach its learning outcomes.

Conclusion: The expanded evaluation methodology allowed in-depth data to be collected on the training. Refining the curriculum and evaluation tools will allow more insight into the curriculum and its impact on the learner. Future iterations should include evaluation measures beyond self-reported data, in order to assess students’ competence through simulation.

Take-home Message: Using simulation as an evaluation methodology is an innovative way to identify learning gaps and opportunities for program improvement. Adopting this methodology in conjunction with other evaluation activities, such as surveys and reflections, can provide valuable insight into necessary curriculum improvements.

#7KK14 (2710)
Pitfalls in Emergency Medicine: Survey-based identification of learning objectives for targeted simulation curricula by emergency department (ED) staff

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Megan Pollard, Memorial University, St. John’s, Canada
Tia Renouf, Memorial University, St. John’s, Canada
Adam Dubrowski, Memorial University, St. John’s, Canada

Background: The ED is a complex practice environment characterized by numerous factors that introduce potential for both human and system error. We surveyed physicians and allied health workers to identify potential causes of these errors in the ED (termed pitfalls), and to find simulation solutions.

Summary of Work: A literature search and consultation with an expert panel guided the development of an anonymous survey distributed to medical staff working in EDs in St. John’s, Canada. Respondents were asked about their experience with simulation, and perceived pitfalls in practice. Next, pitfalls were mapped with the current EM simulation curriculum.

Summary of Results: The electronic survey was distributed to 105 people employed in local teaching EDs. Response rate was 30% and participants varied in work and simulation experience. Major emerging themes identified were: inefficient communication, busy department, interruptions, crowding, and burnout. Curricular mapping showed that many of these are not addressed by simulation.

Discussion: Both technical, non-technical (e.g. communication and team work) skills, as well as well-structured clinical environment are vital to the efficient functioning of any ED. The survey results showed that staff felt that many of the non-technical skills, including communication, flexibility, and teamwork – could benefit from a targeted simulation curriculum.

Conclusion: Excessive pressures on the health care system pass directly to and through the ED, adding to an already complex practice environment. As such, communication, and team functioning were identified as additional parts of the current simulation curriculum.

Take-home Message: Technical skills are essential to have and to maintain in the ED, and are addressed with simulation-augmented education. However, many other pitfalls in clinical practice exist that have the potential to be developed outside of the real patient interaction using simulation, but are currently not addressed with this approach.
Implementation Of A Real-time Qualitative Tool For Resuscitation Simulation Training, A Pilot Study

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Ming-Yuan Huang, MacKay Memorial Hospital, Taipei, Taiwan

Background: Quality of CPR and the timeliness delivery of several critical interventions are well-documented key factors for successful resuscitation. The purpose of the present study is to develop and implement a feasible and useful tool in resuscitation training to provide instant data for continuous quality improvement.

Summary of Work: A free iOS App, CodeTracer, was developed to monitor interventions of a resuscitation scenario. And an observational study was conducted using quantitative measurements by the App to assess the effectiveness of ACLS courses by comparing teamwork performance in the final Megacode simulations with that in the practice scenarios before training.

Summary of Results: Among 76 paired scenarios, the mean chest-compression-free fraction decreased from 27.4% (SD 12.8%) in the practice scenarios to 21.4% (SD 6.6%) in the Megacode tests (difference 6.0%; 95% CI 0.7% to 11.4%). And time to first defibrillation decreased by 20.4 seconds after the courses. (95% CI 5.8 to 35.1 seconds)

Discussion: The information provided by our mobile solution empowers teachers to monitor teamwork performance progress in real-time with objective measurements. This application also could be used as a debriefing tool by helping participants to better identify gaps and deviations from ACLS protocols in cardiac arrest management.

Conclusion: Quantitative measurements of resuscitation parameters can offer an unbiased insight into the quality of individual teamwork performance, as well as the overall educational effectiveness of the ACLS training course.

Take-home Message: Combination of emerging technologies with innovative design in medical education can improve learning dynamics between teachers and students.

Does high fidelity translate into high realization of education goals?

Katarzyna Naylor, Department of Didactics and Medical Simulation, Medical University of Lublin, Poland
Ewa Domańska-Clonek
Grzegorz Witkowski
Anna Torres
Kamil Torres

Background: Technological advances provide educators with tools enhancing and stimulating the teaching-learning process. Medical simulation enables the standardized process of learning in the realistic setting adjusted to the set educational goals.

Summary of Work: The study aims at assessing the value and the usefulness concerning implementation of high and low fidelity simulation classes for undergraduate medical students of the first and fourth year at the Medical University of Lublin based on the final assessment results, participants’ self-assessment and instructors’ ratings.

Summary of Results: The results of the final assessment in the described courses showed higher results in the low-fidelity course, BCS compared to the high-fidelity course, Elderly Medicine. Additionally, the participants’ positive attitudes prevailed in the assessment of the BCS course. Instructors assessed both courses as appropriately tailored to set educational goals.

Discussion: When choosing the type of fidelity, the level of participants’ advancement is important. That consideration was employed when designing described courses. However, complexity of the high-fidelity simulation training can mask the goals and losing sight of the intended objectives. The educational impact is the most important outcome of any training.

Conclusion: Students found both simulation courses useful and interesting. However, higher number of participants expressed positive attitude towards low-fidelity course. Therefore, there is a need to furtherly develop high fidelity course to focus on set educational goals.

Take-home Message: Low and high fidelity simulation must be adjusted appropriately to the education goal to optimise its usefulness to both, students and teachers.
#7KK17 (2113)
Content validity and functionality fidelity of an arthrocentesis simulator checklist
Reid Alexander Adams, Institute for Research and Clinical Strategy, Sarnia, Canada
Gregory E. Gilbert
Eric B. Bauman
Carmen Fuentealba

Background: Previous studies explored arthrocentesis simulator fidelity, but have not considered a fit between functionality and learning objectives. The purpose of this investigation is to develop and compare a psychometrically valid arthrocentesis checklist and compare it to the functional fidelity of an existing simulator.

Summary of Work: Checklist items were gathered from published arthrocentesis guidelines and a valid checklist created using Lawshe’s method. A panel of five experts was used. The same expert panel examining the checklist judged the simulator for functional fidelity.

Summary of Results: Thirteen items, from a pool of 40, were identified as being valid. The content validity index was 1.00. Experts reviewed the simulator for fidelity using a three-point Likert scale unanimously concluding it performed, “Adequately, like a human.”

Discussion: Thirteen essential steps were identified in a psychometrically valid checklist for arthrocentesis. Using this list as a baseline for minimum required functionality, the panel reviewed the features and fidelity of the simulator. The expert panel also judged the simulator to have suitable functional task alignment or functional fidelity.

Conclusion: Psychometrically sound (valid and reliable) checklists are essential for simulation-based medical education (SBME). This investigation developed a valid checklist, used the checklist to inform investigators creating learning objectives, and ensured alignment of procedural requirements and functional fidelity.

Take-home Message: SBME balances needs of learners, patients, and the public. Teaching and assessments must be conducted within the framework of translational research. This investigation demonstrates the feasibility of aligning psychometrically valid checklists with simulator fidelity to ultimately result in improved patient care and safety.

#7KK18 (2554)
“Silver Trauma”: A multi-disciplinary simulation course to address the changing face of trauma in the UK
Cathryn Mainwaring, King’s College Hospital NHS Foundation Trust, London, UK
Charlotte Davies, King’s College Hospital NHS Foundation Trust, London, UK
Sinead Scullion, King's College Hospital NHS Foundation Trust, London, UK
Oliver Keane, King’s College Hospital NHS Foundation Trust, London, UK
Thomas Sanctuary, King’s College Hospital NHS Foundation Trust, London, UK
Kathryn Watson, King’s College Hospital NHS Foundation Trust, London, UK

Background: Trauma in the UK is changing. The average age of trauma patients is increasing, with over 75’s becoming the quickest growing group. Older patients may not be well served by traditional ATLS approaches, and are at risk of under-triage and increased mortality. Training in “Silver Trauma” is therefore required.

Summary of Work: Funding was secured from Health Education England. A 1-day multi-disciplinary high-fidelity simulation course was designed. Course content included the recognition of occult injury, under-triage, abnormal physiology, c-spine management and delirium prevention. Pre and post-course surveys were used to determine participants’ preparedness to manage older trauma patients across various domains.

Summary of Results: Course satisfaction levels are high. Following course completion participants rated their preparedness to manage older trauma patients as increased across all domains especially recognition of abnormal physiology, occult trauma and triage ability. Qualitative analysis suggests participants have a heightened understanding and awareness of special considerations when managing older trauma patients.

Discussion: As the population ages, levels of older trauma will increase further. We have demonstrated that a multi-disciplinary “Silver Trauma” simulation course can increase the preparedness of the workforce to manage older trauma patients, and heighten awareness of geriatric-specific issues in trauma management.

Conclusion: The need to train our workforce in older trauma management has been recognised both locally and nationally. “Silver Trauma” addresses this need. It is (to our knowledge) the first course of its kind to train all members of the multi-disciplinary team in this area, without pre-requisite for ATLS qualification.

Take-home Message: • A multi-disciplinary simulation “Silver Trauma” course increases the preparedness of multi-disciplinary team members to manage complex older trauma patients. • The “Silver Trauma” course increases awareness and understanding of special considerations unique to older trauma patients
SESSION 8
Tuesday 29th August: 1400-1530

#8A Symposium: Entrustment Decisions: Implications for Curriculum Development and Assessment
Location: Hall 1

Ara Tekian, University of Illinois at Chicago College of Medicine, Chicago, Illinois, USA
Olle ten Cate, University Medical Centre Utrecht, Utrecht, Netherlands
John Norcini, FAIMER, Philadelphia, USA
Eric Holmboe, ACGME, Chicago, USA
Trudie Roberts, Leeds Institute of Medical Education, UK

Summary: During the past decade, entrustment in professional activities has become a major discussion in teaching and assessing the competence of students and postgraduate trainees. Entrustment refers to the judgment that a particular clinical task can be performed at an appropriate level, both independently and unsupervised. Application of this concept has the advantage of directly connecting competencies with clinical practice and it is consistent with the types of judgments often made by clinical teachers. This symposium will explore critical components of entrustment, measurement issues, its importance and application, and the challenges it presents in both undergraduate and postgraduate settings. This interactive symposium will provide opportunities for participants to reflect on challenges in integrating “entrustment” in the curricula at their own institutions.

Who should participate in the symposium? This symposium interests all the participants of the AMEE meeting, since entrustment decisions are important for all professions and specialties, and are applicable both at undergraduate and postgraduate levels.

What will they gain from participating? Participants will have a better understanding of the following important concepts and applications:

- What is entrustment and why is it important?
- What are the implications of measuring entrustment?
- What are some of the challenges of incorporating ‘entrustment’ in the postgraduate setting?
- What are some of the challenges of incorporating entrustment in undergraduate setting?

#8B Symposium: Interprofessional Education: Identifying Best Practices for Schools and Countries
Location: Hall 3a

Ducksun Ahn, WFME, South Korea
Barbara Barzansky, LCME/AMA, USA
Dan Hunt, LCME/AAMC, USA
Nobuo Nara, JACME, Japan

Summary: The WHO has defined interprofessional education (IPE) as “when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes” (WHO, 2010). IPE has been recognized internationally as important to prepare learners for the delivery of quality health care but it is not universally included in the medical curriculum. This symposium will examine similarities and differences in IPE in three countries, including:

1. What types of required or optional IPE is included in the medical curriculum?
2. What are the challenges to implementing effective IPE?
3. What “best practices” within schools and countries would support effective IPE? Does the national context make a difference? Are there strategies that would apply across countries?

Through small and large group discussion, the audience will consider how the challenges and the “best practices” suggested by the panel apply to their own national settings.

Who should participate in the symposium? Medical school faculty members who have responsibility for curriculum planning, delivery, and evaluation. Medical school and university administrators responsible for providing educational program resources. Faculty from other health professions programs, should they be present at AMEE.

What will they gain from participating? Participants will gain an understanding of the following:

- How interprofessional education (IPE) is defined and structured in several countries.
- The organizational and other barriers to developing an effective IPE program.
- Strategies to support implementation of IPE.
#8C  Symposium:  CPD is more than CME  
Location:  Hall 3b

AMEE Local organising committee, Helsinki and UEMS,  
European Union of Medical Specialists  
Hannu Halila, Finnish Medical Association, Finland  
Bernard Maillet, UEMS, Belgium  
Kristiina Patja / Mervi Väisänen-Tommiska, Pro Medico, Finland

Summary: Physicians have an ancient moral and ethical obligation to update their knowledge. CME, continuous medical education represents traditional learning. In recent years, this has been replaced by CPD, continuous professional development. The European Union and modern societies are putting more pressure to Member States to make CPD mandatory and for physicians to show their fitness to practice. The aim of this symposium is to provide an update of the current CME/CPD situation in Europe and information of new tools to prove physicians participation in CME/CPD

#8D  Symposium:  Advances in Evidence-Based Health Sciences Education  
Location:  Hall 3c

Organised by IAMSE:  
William Jeffries, USA  
Peter GM de Jong, Netherlands  
Matthew Gwee, Singapore  
Tobias Boerboom, Netherlands  
Elisabeth Schlegel, USA  
Aviad Haramati, USA (Opening Discussant)

Summary: Health Sciences Education is an area that is continually evolving. New teaching strategies, team-focused activities and emerging educational technologies provide an array of tools for today’s science educator. This symposium will address some of the new developments in medical science education and will highlight evidence for their efficacy.

This symposium will consist of 5 short presentations covering developments in faculty development, technology and teaching methods. After the presentations there will be time for a moderated panel discussion.

Presentations:

1. The imperative for active learning: death of the lecture? William Jeffries (USA)
2. The role and impact of massive open online courses in medical science education. Peter de Jong (Netherlands)
3. Changing Paradigms in Medical Education: Transformative Learning Strategies in Health Sciences Education That Must Contribute to the Needs, Demands and Challenges of Patients and the Community in 21st Century Healthcare. Matthew Gwee (Singapore)
4. Using TBL as small scaled education in a large scale setting. Tobias Boerboom (Netherlands)
5. Aligning faculty development with educational roles and responsibilities. Elisabeth Schlegel (USA)
**Research Papers: Competencies and Frameworks**

**8E1 (115)**
Observable, Inferable, Invisible: Towards a workplace based diagnostic assessment

Saad Chahine, Western University, London, ON, Canada
Sarah Burm, Western University, London, ON, Canada
Mark Goldszmidt, Western University, London, ON, Canada

**Introduction:** Competency Based Medical Education (CBME) is asking programs to redefine their assessment process to provide clearly articulated targets—targets that are based in the workplace. However, many programs do not have robust systems of assessment to meet these expectations nor do they have a method for developing them. A novel assessment design approach developed as part of the Skills Diagnosis movement in Educational Measurement may provide a way forward to meet the enhanced expectations of workplace based assessment. In this paper, we present our initial findings from developing a diagnostic workplace based assessment (D-WBA) in the Internal Medicine inpatient setting.

**Methods:** The development of a D-WBA instrument requires a detailed analysis of the role and the variations of clinical practice seen when enacting the role. We focused on the entrustable professional activity (EPA) of the senior medical resident (SMR) on-call role in Internal Medicine because it represents a key milestone in trainee development. Five medical students, 5 junior residents, 5 IM consultants, 5 ER consultants and 5 ER nurses were asked to conduct observations of their on-call interactions with SMRs over a period of 1-7 shifts. Participants were subsequently interviewed and asked to describe each of the SMRs they observed as well as share their comparative reflections on the practices of past SMRs they worked with. An iterative coding process was followed to further our understanding of the different components of SMR role, the range of practices used and the extent to which these practices appeared more or less effective.

**Results:** Participants identified a spectrum of behaviours and practices that on-call SMRs enacted overnight. We have organized these into six key roles upon which a diagnostic assessment may provide a way forward to meet the enhanced expectations of workplace based assessment. In this paper, we present our initial findings from developing a diagnostic workplace based assessment (D-WBA) in the Internal Medicine inpatient setting.

**Discussion and Conclusion:** The results of this study can serve to enhance our understanding of assessment in the workplace as well as the development of more effective and meaningful entrustment assessment in CBME. Our study was successful in identifying many of the roles relevant to the on-call SMR. However, we recognize that developing a diagnostic assessment in the inpatient setting is challenging due to the amount of invisible work performed by SMRs. From an assessment standpoint, better strategies need to be developed to query the invisible role components to ensure that SMRs are providing high quality, safe, patient-centred care overnight. Such insight could be very important in supporting learners in their developmental progression toward competence.

**8E2 (189)**
Rethinking the process of prescribing antibiotics using activity theory

Karen Mattick, Centre for Research in Professional Learning, University of Exeter, Exeter UK
Anu Kajamaa, Center for Research on Activity, Development and Learning, University of Helsinki, Helsinki, Finland
Angelique Hilli, Institute of Healthcare Research, University of Exeter, Exeter, UK
Hazel Parker, Pharmacy Department, Royal Devon & Exeter NHS Foundation Trust, Exeter UK
Charlotte Rees, Faculty of Medicine, Nursing & Health Sciences, Monash University, Melbourne, Australia

**Introduction:** Prescribing medications is an error-prone activity within healthcare and one of the more challenging responsibilities for junior doctors once they transition from medical school to clinical practice. Errors in antibiotic prescribing are of particular concern as they are common, compared to other medications, and can lead to significant consequences including drug allergy and the development of antibiotic resistance. In 2050, it is predicted that there will be 10m deaths globally and a reduction in GDP of 2-3.5% due to antimicrobial resistance. We have previously highlighted the multiple challenges experienced by junior doctors when prescribing antibiotics (Mattick et al. 2014). Our current study uses activity theory to explore where prescribing processes do not work as intended, in an effort to stimulate learning and change (Kajamaa, 2010).

**Methods:** We developed a stage model of antibiotic prescribing, from diagnosis to patient administration (with consent) in hospital and/or patient concordance after discharge from hospital, which describes prescribing as it is intended to occur (the ‘idealised’ process). We then reanalysed existing qualitative data from 33 interviews with junior doctors working in two UK countries, to reveal the ‘actual’ process by mapping relevant sections of the interview transcripts onto the stage model. Through this process we aimed to understand which parts of the idealised prescribing process were given most attention by junior doctors and where the actual processes in busy health care environments were not proceeding as intended. Using activity theory as our lens, we traced different types of ‘disturbances’ (deviations from the
intended course of events in the idealised prescribing process), which can be seen as important tools for rethinking and developing prescribing processes.

**Results:** Traditionally, prescribing has been thought of as an activity undertaken by an individual, with a single prescriber signing off the prescription and taking responsibility for the decision. Our analysis highlights that: (1) prescribing involves multidisciplinary teams (e.g. to write the prescription, administer the medication, review the process); (2) the object of an activity (towards which the activity is directed) can be perceived differently by different parties involved in healthcare service provision, even when taking care of a shared patient; and (3) patients’ perspectives are often underemphasised and they may ultimately decide whether to take the antibiotic as prescribed. We suggest that instead of being harmful phenomena, disturbances need to be seen as important tools towards rethinking and developing processes of prescribing medications.

**Discussion and Conclusion:** By exploring ‘disturbances’ as an inherent part of an activity system, we provide new insights into how antibiotics are prescribed in hospitals in the UK currently. These insights can potentially serve as a stimulus for learning and change, and enable a shift from a focus on individualistic acts of prescribing medication, towards understanding prescribing processes as collaborative and involving several stakeholders. To conclude, we discuss a multi-professional approach to intervention and propose a process model for prescribing antibiotics that can be applied in different hospital contexts. Recommendations will be made for how the findings might be used to develop the process of prescribing antibiotics and for further research on the practice of prescribing medications.


**#8E3 (227)**

**Role Analysis and Development of a Professional Attributes Framework for Preregistration Pharmacists in the UK**

Fiona Patterson, Work Psychology Group & University of Cambridge, London & Cambridge, UK
Charlotte Flaxman, Work Psychology Group, London, UK
Gail Fleming, Health Education England London & South East, London, UK
Vicki Ashworth, Work Psychology Group, London, UK

**Introduction:** Recently, changes internationally within education and training have impacted on the skills required within healthcare roles. In the UK, the pharmacy profession has evolved in recent years, with the role of a pharmacist (including preregistration pharmacists) now being to provide pharmaceutical care. Specifically, with an emphasis on responsibility for the treatment outcome of patients and not simply medication supply. As part of Health Education England’s Pharmacist Education and Training Reforms programme, a role analysis was conducted to establish a Professional Attributes Framework of the competencies required for success in the preregistration pharmacist role. Role analysis is particularly effective for identifying future role requirements and hence is a useful technique for determining the skills needed to meet future requirements (e.g. enhanced patient focus).

**Methods:** Following a best practice methodology, a multi-method role analysis was conducted to identify the attributes associated with effective performance of a preregistration pharmacist. This consisted of 1) Literature Review 2) Stakeholder Consultation 3) Validation Questionnaire. The literature review provided background and a theoretical framework for the key attributes required for effective performance. The stakeholder consultation consisted of interviews and focus groups (n=63) and consultations (through small group discussions) during recruitment workshops (n=c.150) with a range of stakeholders across each of the sectors within pharmacy that work closely with the preregistration pharmacists. The data from the literature review and consultations were triangulated to ensure valid results. These triangulated results formed the Validation Questionnaire which asked respondents to rate the importance of the attributes previously identified (n=867).

**Results:** Template analysis was used to analyse the data from the stakeholder consultations. The interviews were coded to identify key attributes and related behaviours specific to effective preregistration pharmacist performance. Nine attributes were identified including Person-Centred Focus, Communication and Consultation Skills and Professional Integrity and Ethics. A mapping exercise conducted independently by two researchers compared the attributes identified through the template analysis with characteristics identified during the literature review; results from the validation questionnaire found that each of the nine attributes were rated on average as ‘Important’ with Professional Integrity and Ethics being rated as ‘Very Important’.

**Discussion and Conclusion:** The detail that emerged during the role analysis provided the granularity essential to selecting future preregistration pharmacists, with specific behavioural indicators related to each attribute subsequently used to inform selection criteria. The validation stage confirmed the importance of the nine attributes forming the professional attributes framework, justifying the use of the framework to inform future selection of preregistration pharmacists. This framework will be used to consider innovative ways to inform decisions relating to the future development of the preregistration pharmacist selection and curricula. This brings the potential for a national process to enhance standardisation of selection decisions, utilising criteria that provide rigour, validity and reliability, alongside enhancing candidate reactions. Outcomes will be discussed in relation to the wider lessons for other changing healthcare roles globally.
#8E4 (260)

Using Integrated Care to Address Integrated Complex Mental and Physical Health Care: A Framework for Undergraduate Medical Education

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Rachael Barnett, MD Program, University of Toronto, Toronto, Canada
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Introduction: An increasing number of studies have highlighted the current health care burden of mental health and addictions. The increasing complexity emerging from the recognition to concurrently manage patients’ physical and mental health needs has generated discussions about the need for transformations in medical education to teach new basic and clinical sciences to future physicians to better prepare them for health care in the 21st century. Existing literature on how to conceptualize and frame competency frameworks in undergraduate medical education (UME) have not adequately addressed challenges with clinical complexity in these integrated care settings. The following study aims to define integrated care competency domains related to concurrent physical and mental health care (medical psychiatry) using qualitative methodology and will be situated within existing competency frameworks.

Methods: The current study used a pragmatist approach where researchers’ prior knowledge, skills, experience and theoretical perspective helped guide data collection and analysis and where sampling was flexible and responsive to the data as categories emerged. An initial criterion sample of twenty-five educators, education scientists and clinicians participated in a half-day needs-assessment education retreat where we used a modified Delphi process to gather views on what makes an expert physician in medical psychiatry. Subsequently, a second confirming-disconfirming sample of seven interprofessional healthcare workers (three nurses, three psychiatrists and one social worker) was recruited from integrated care settings to participate in one-on-one semi-structured interviews for elaboration and refinement of our emerging understanding. We engaged informants in iterative facilitated discussions using patient cases and asked them to identify key competencies for year 2 and year 4 medical students for medical psychiatry training. A thematic analysis of transcripts was conducted to generate a framework.

Results: Participants described four broad competency domains: i) extensive integrated knowledge including the ability to apply knowledge across domains of medical psychiatry (i.e. basic sciences, clinical sciences, systems of care, social determinants of health); ii) skills to establish and maintain a longitudinal alliance with the patient and functional relationships with interprofessional colleagues; iii) the ability to be adaptive in developing an integrated understanding of each patient’s complex needs and of health & social systems given these needs; iv) the ability to effectively meet the patient’s needs using integrated care models. These four domains were linked thematically by an overarching philosophy of care encompassing key attitudes including the active pursuit of depth and constructing a deep understanding of patient and system complexity while maintaining a patient-centered approach.

Discussion and Conclusion: Our integrated medical psychiatry care competencies were best conceptualized as integrated competencies from the CanMEDs framework. This aligns with previous qualitative research suggesting that exceptional diagnosticians in medicine integrate multiple competencies to make diagnoses in complex encounters. Furthermore, our competencies reflect competencies in system skills and managing complexity of care that is now the norm in our current healthcare environment. As noted in the literature, the future physicians will need to develop abilities in new basic and clinical sciences, such as conceptualizing and skills to optimize systems of care; leading and working within interprofessional teams; and understanding patient needs and experience. Opportunities to teach these integrated competencies in UME will require curricular spaces that deliberately foster reflections, critical dialogues and an emphasis on continuity.

Introduction: “Transfer” is the application of a previously learned concept to solve a new problem in another context. Transfer is essential for basic science education because, to be valuable in medical education, basic science knowledge must be transferred to clinical problem solving. Therefore, better understanding of interventions that enhance transfer of basic science knowledge to clinical reasoning is essential. The purpose of this study was to identify, and review, health professions education (HPE) literature that reported interventions in curriculum, instruction, and assessment intended to help trainees transfer basic science knowledge to clinical reasoning.

Methods: A review of the literature focused on basic science education in HPE was conducted to systematically document evidence of strategies that help students in transferring basic science knowledge to clinical reasoning. Articles published between 1980 and 2015 related to basic science teaching at the “undergraduate level” in HPE were identified in seven databases. Articles were analyzed by pairs of reviewers using a “transfer out”/“transfer in” conceptual framework. “Transfer out” refers to the ability to apply the knowledge developed in a learning situation to solve a new problem. Yet, “transfer out” alone cannot capture the entirety of what is needed to solve new problems. Practitioners inevitably encounter unusual situations that require them to adapt and be innovative to solve problems. “Transfer in” captures this ability to learn from new problems.

Results: Out of 9,803 articles initially identified, 627 studies were retrieved for full text evaluation; and 15 were included in the review of the literature. Ninety-three percent (93%) explored the role of “transfer out” and 7% explored the role of “transfer in” for integration in clinical reasoning. Measures of “transfer out” fostered by basic science knowledge included diagnostic accuracy over time and for new clinical cases. “Transfer in” of basic science knowledge supported learning new related content and ultimately the “transfer out” to diagnostic reasoning. Successful teaching strategies included connections between basic and clinical sciences, the use of commonsense analogies, and the study of multiple clinical problems in multiple contexts. Performance on tests of recall did not reflect transfer of basic science knowledge to clinical reasoning.

Discussion and Conclusion: There were few studies designed to understand how HPE students transfer basic science knowledge to clinical reasoning. Positive effects on transfer to clinical reasoning were observed when teaching supported the development of the deep conceptual structure of basic science knowledge. Effectively teaching basic science concepts requires that transfer of basic science knowledge to clinical reasoning is recognized as a major learning goal of HPE curricula. Transfer deserves greater attention in order to be explained, clarified, and promoted. Fostering basic science knowledge transfer to clinical reasoning requires thoughtful theoretically-grounded scholarship to durably contribute to the field of HPE. Theoretical grounding is critical to comprehensively study transfer and to understand causal elements that are essential to deeply impact future practices in basic science education.


Cognitive effects of medical education with or without academic stress

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Aida Kassatova, Karaganda State Medical University, Karaganda, Kazakhstan

Introduction: Cognitive load theory (CLT) asserts that the learners develop expertise through creation of cognitive schemas in long-term memory [1]. The high-instructional
efficiency is associated with high performance and low mental effort. However, CLT does not account for academic stress, personality and achievement goals that might have an additional effect on mental effort. The recent review reported impaired performance due to elevated anxiety [2], but the results were not consistent. Up to a certain limit, the stress may lead to improved learning, but its exact academic value is not yet clear. We propose the model shedding the light on these interactions.

**Methods:** We administered 6 questionnaires to 577 medical students of Karaganda State Medical University studying in years 1 to 6. They included perceived stress questionnaire, Freiburg personality inventory, 3x2 achievement goal model, Kolb’s learning style inventory, study habit survey, and cognitive load measuring instrument. Each student answered 204 questions. We also selectively measured the level of physiological stress using heart rate variability (HRV) analysis with estimation of heart rate, stress-index, HF/LF ratio, RMSSD and spectral components in 76 of previously surveyed students. We used progress test (PT) score and GPA as the measures of academic performance. Both PT scores and GPA were standardised by student’s year of study to eliminate the effect of growing knowledge while students progress in their studies. We used advanced statistical methods such as exploratory factor analysis, cluster analysis, one-way ANOVA, and Kruskal-Wallis analysis.

**Results:** There was no correlation between GPA and progress test, so we clustered all the subjects into 4 clusters: GPA+,PT+ (125 students); GPA-,PT- (177 students); GPA+,PT- (168 students) and GPA-,PT+ (107 students). Exploratory factor analysis revealed 10 factors explaining 74.6\% of total variance: neuroticism, achievement goals, extraneous load, perceived stress, intrinsic load, dialectic conflict active experimentation/reflective observation, extraversion, dialectic conflict abstract conceptualisation/concrete experience. Post-hoc comparisons of factor scores between clusters were significant for 6 factors. The most favourable factor scores were for GPA+,PT+; the least favourable – for GPA-,PT-. The physiological stress (by HRV) was the highest in GPA+,PT+ and GPA-,PT+; the lowest - in GPA-,PT-. The most effective learning strategies were demonstrated by GPA+,PT+; the least effective – by GPA-,PT+ cluster.

**Discussion and Conclusion:** We proposed two mechanisms for the role of academic stress in cognitive processes: 1) high extraneous cognitive load caused by poor learning strategies leads to academic stress and inability to effectively cope with educational program (GPA-,PT-); 2) low individual psychological stability may lead to academic stress which does not interfere with cognitive abilities due to effective learning strategies and high achievement goals. The second mechanism is characterised by high GPA scores, but progress test scores may differ depending on better or worse utilisation of learning strategies. The better the academic results, the higher the academic stress is. The lowest level of academic stress leads to the worst academic results (GPA-, PT-) showing that stress is still a prerequisite for successful academic performance.


**#8F3 (208)**

**Medical Diagnosis Through ACTion: Evaluating a Point-of-Care Cognitive Aid for Junior Residents**

Michael Kilian

Sandra Monteiro, McMaster University, Hamilton, Canada
Jonathan Sherbino
Christopher Hicks

**Introduction:** Diagnostic errors may reflect cognitive failures or gaps in a physician’s knowledge (1). Strategies focused on self-assessment of knowledge and reasoning, such as metacognition and reflective practice, encourage physicians to access specific knowledge structures relevant to the patient problem, and have been shown to be successful in some contexts. The essential aspects of reflective practice have been described as: seeking Alternative explanations, exploring the Consequences of these alternative diagnoses, identifying evidence that may contradict the provisional diagnosis, and lastly, being open to uncertainty (1). These necessary aspects of reflective practice were distilled into a three-point checklist (abbreviated to ACT). The goal of this study was to evaluate whether the same benefits of structured reflective practice are seen with an abbreviated, self-regulated and more practical checklist.

**Methods:** Eight written cases, ranging in difficulty, were selected from previous studies on diagnostic reasoning (2). Participants were instructed to read the cases, enter a provisional diagnosis for each case and follow the 3-step protocol, before deciding to retain or revise their provisional diagnosis. Participants were free to complete as many cases as they wanted. Seventeen first year medical residents from the University of Toronto participated, providing 105 sets of responses (i.e. 5 responses per case completed). Provisional and final diagnoses were scored as correct or incorrect. All responses from the 3-step checklist were individually scored on a scale of 0 to 2. To determine if accuracy improved following use of the checklist, provisional and final diagnostic accuracy scores were submitted to a Chi-Square analysis. A secondary analysis looked at the relationship between residents’ accuracy for completing the checklist and the decision to revise the provisional diagnosis.

**Results:** The 3-point ACT checklist was ineffective as an error reduction tool. Overall, 49 out of 105 (53\%) provisional diagnoses were incorrect, with only 11 revised and no reduction of errors. However, accuracy in
completing the checklist may influence the decision to revise. Generally, scores for identifying alternatives (A) was lower than expected, indicating a limited ability to consider multiple unrelated diagnoses or consequences (C). Proportion correct for identifying consequences (C) for differential diagnoses was higher (87%) when provisional diagnoses were retained than when revised (67%, \( F(1,103) = 6.8, \ p < 0.05 \)), indicating this evidence confirmed the provisional. Conversely, proportion correct for detecting evidence contradictory (T) to the provisional diagnosis was higher (57%) when provisional diagnoses were revised, than when retained (29%, \( F(1,103) = 8.2, \ p < 0.01 \)).

**Discussion and Conclusion:** The cognitive challenges that can result in diagnostic error can be compounded for the novice diagnostician transitioning into independent practice. It has been suggested that taking the time to self-assess one’s knowledge and decisions can help reduce diagnostic error that results from cognitive decision failures. In the current study, there was some indication that physicians were able to self-assess as attempts to improve the accuracy of the provisional diagnosis was related to more accurate evidence that contradicted the provisional diagnosis. However, the decision to self-correct did not result in reduced error overall. Effective error reduction strategies need to go beyond self-assessment and improve retention and access to knowledge.


#8F4 (262)
**Medical Students Learn to Apply Bayesian Reasoning for Clinical Inference but Not Statistical Inference: A Mixed-Methods Study**

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Nathan G Boin, Department of Medical Education, Icahn School of Medicine at Mount Sinai, New York, USA
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Robert Fallar, Department of Medical Education, Icahn School of Medicine at Mount Sinai, New York, USA

**Introduction:** Medical trainees are often more comfortable with clinical diagnosis than statistical inference; however, they are not usually taught the analogy between these forms of inference (1). Both are forms of Bayesian reasoning, which involves using new data to update prior probability of a hypothesis (2). Clinicians update the pre-test probability of disease based on new test results (clinical inference). Similarly, for every new research study, estimating the probability its hypothesis is true depends upon previous studies examining the same hypothesis (statistical inference). We investigated how medical students apply Bayesian reasoning in analogous scenarios involving clinical inference and statistical inference.

**Methods:** Medical students were surveyed with an electronic questionnaire from September to October 2015 at our institution. The questionnaire was piloted among 10 medical students, three epidemiology graduate students, and five medical faculty with statistical training. The questionnaire presented two Bayesian reasoning scenarios; each scenario involved two analogous multiple-choice questions, one testing clinical inference and the other testing statistical inference. Clinical inference and statistical inference scores were calculated per student, allotting one point for every correctly answered question. A difference score (clinical inference score minus statistical inference score) was then calculated to compare clinical versus statistical inference per student. Demographic and educational variables were analysed as predictors of the difference score using non-parametric methods. Semi-structured interviews were also conducted, purposively sampling for students whose clinical and statistical inference scores represented their year’s most common responses to better understand the observed results. Thematic analysis was used to inductively analyse the interviews.

**Results:** Of 565 eligible medical students, 259 (46%) completed the survey. There were 64 first-year, 109 second-year, 39 third-year, and 46 fourth-year students. A total of 121 (47%) students correctly answered both clinical inference questions, whereas 47 (18%) correctly answered both statistical inference questions. Medical school year was the only significant predictor of the difference score; upper-year students were more likely to correctly answer clinical inference questions (Cuzick’s test for trend, \( z \)-score = 4.24, \( P \text{trend} < 0.001 \)), but there was no corresponding trend for statistical inference (\( z \)-score = 1.93, \( P \text{trend} = 0.054 \)). The effect size for medical school year was 120% greater for clinical versus statistical inference (\( z \)-ratio = 2.20). Twenty-three students were interviewed. Thematic analysis revealed that students’ ability to correctly answer questions correlated with application of Bayesian reasoning.

**Discussion and Conclusion:** Upper-year medical students were more proficient at answering clinical inference questions compared to statistical inference questions. This difference may result from medical education that implicitly trains students to apply Bayesian reasoning specifically for clinical diagnosis. Since medical students often struggle with statistics, future research should investigate whether training students to apply Bayesian reasoning for statistical inference can improve their statistical aptitude. This is important since accurate interpretation of statistics in research is essential to evidence-based medicine, a vital component of ethical and responsible patient care.

**References:** Windish DM, Huot SJ, Green ML. Medicine residents’ understanding of the biostatistics and results in
the medical literature. JAMA. 2007 Sep 5;298(9):1010–22.
Browner WS, Newman TB. Are all significant P values created equal? The analogy between diagnostic tests and clinical research. JAMA. 1987 May 8;257(18):2459–63.
#8G PechaKucha™ 2 - ASPIRE to Excellence
Location: Hall 3f

ASPIRE Academy/winners present a PechaKucha session: Examples of excellence in practice

#8G1 How do we have over 30 great faculty developers and pay none?

Erick Hung, Patricia O'Sullivan, University of California San Francisco, USA

Participants in faculty development benefit from hearing voices from well-prepared, diverse faculty developers. With up to 80 faculty development offerings per year at UCSF, we develop and prepare volunteer teamlets to meet this demand. We believe this peer-led model supports and encourages participants who see colleagues like themselves in action. These developers experience considerable satisfaction from this approach, gaining a sense of expertise, pride in improving the quality of local teaching and new relationships with other developers. Our presentation will describe the structure and outcomes of this approach to create a large pool of well-prepared developers.

#8G2 Developing teachers at a distance using video and self-reflection

Kim Whittlestone, Ayona Silva-Fletcher, Stephen May, Royal Veterinary College London, UK

Distance learning programmes are increasingly being used to develop teachers and their teaching at a distance (Anderson and Dron, 2010). However, how do we effectively evaluate the teacher’s development and performance from a distance? In our distance PGCert programme we use a dual approach; video recordings of teaching are discussed over Skype and pre- and post-observation ‘patches’ are analysed for teachers developing reflective ability (Dalrymple and Smith, 2008). This presentation will explore the implications of teaching observations from a distance and discuss how these experiences may inform on-site observations.
#8G3
Students as partners in the highs and lows of medical school life
Shelley Parr, Hoda Amar, Fiona Vincent, Tessa Davies, Linda Turner, Faculty of Medicine, University of Southampton, UK

The Faculty of Medicine won the ASPIRE – Student Engagement Award in 2014. This presentation focuses on how the strong established culture of staff and students working as partners in Southampton has enhanced one aspect of our programmes: the ‘Student Support’ available to our medical students. We will highlight how acknowledging and working together on sad as well as happy experiences has enabled students to significantly enhance the support available to students at Southampton and help staff to understand the needs of today’s medical students.

#8G4
The diagnostic justification questionnaire - a new clinical reasoning assessment tool
Debra Klamen, Southern Illinois University, USA

The diagnostic justification (DXJ) questionnaire is an assessment tool developed at Southern Illinois University School of Medicine to evaluate students’ clinical reasoning abilities. Composed of three questions asking students to generate their differential diagnosis, the findings derived from their history and physical examinations on a standardized patient, and an outline of the reasoning process bringing them to their final diagnosis. Students deficient in either of the last two skills are given an explanation of the nature of the deficiency. Commonly used SP examination component scores are not direct, comprehensive measures of DXJ ability. Critical deficiencies in DXJ abilities may thus go undiscovered.
#8G5
Beyond the Bandage – Aligning curricula with community needs

Amy Clithero, David Sklar, University of New Mexico, USA

Practicing within increasingly complex healthcare systems requires physician competencies beyond clinical and technical skills. The University of New Mexico has a longitudinal approach to socially accountable health systems education focusing on community health priorities. Year one: Introduction to population health and social determinants of health with visits to community organizations serving vulnerable populations. Year two: Community engagement and collaboration in rural underserved locations. Year three: Health policy and healthcare systems curriculum emphasizing costs, collaborative care models and advocacy. Year four: Learning to be leaders education
Interspersed throughout is interprofessional education including community health workers and experiential learning within communities.

#8G6
Green Family Foundation Neighbourhood Health Education Learning Program

Karin Esposito, Pedro Greer, Florida International University, USA

The Green Family Foundation Neighborhood Health Education Learning Program (NeighborhoodHELP™) at Herbert Wertheim College of Medicine at Florida International University is a required service-learning program that integrates social sciences, early clinical experiences, interprofessional teamwork, and the social determinants of health (SDOH) to prepare socially accountable and culturally competent future physicians. NeighborhoodHELP™ educates students while improving health in participating communities by addressing complex behavioral, environmental, ethical, medical, legal, and social issues. This is done through a household-centered care model in which teams of medical, nursing, social work, and physician assistant students; their faculty; and community outreach workers visit medically underserved households in Miami-Dade County, Florida. Law and education students and faculty are available to households as needed. The student teams assess the SDOH as they relate to their assigned households and respond to and monitor those determinants longitudinally. Students provide patient education, demonstrate relevant professional competencies, and facilitate access to health, behavioral, and social services.
A bottom up approach to extracurricular activities for medical students

Monika Sobocan, Ziva Ledinek, Ines Kebler, Suzana Bracic, Ivan Krajnc, Faculty of Medicine, University of Maribor

Student engagement should be integrated in every aspect of medical education. We highlight how our Faculty of Medicine of Maribor, which won the Aspire prize in 2013, supports and helps to develop extracurricular activities for medical students. The activities aim to educate peers and other health professionals, engage and maintain community involvement in health education as well as develop healthcare leadership skills among medical students. We present how developing student initiative projects lead to sustainable long term extracurricular activities.

To carry on the legacy of Dr. Michael Gordon is to ASPIRE-to-Excellence!

Ross Scalese, University of Miami, USA

The world lost a visionary medical educator and simulation pioneer with the recent passing of Michael S. Gordon, MD, PhD. The Center for Research in Medical Education at the University of Miami that bears his name is one of the inaugural winners of this year’s ASPIRE awards in simulation, a fitting tribute to his enduring legacy of uncompromising commitment to excellence in health professions education toward the betterment of patient care. Spanning more than a 50-year career, Dr. Gordon established programs that became leading exemplars in the areas of simulation, e-learning, interprofessional training, and collaborative outcomes-driven educational research. This presentation will highlight some of the Gordon Center programs that formed the basis for our ASPIRE application and subsequent recognition for excellence in simulation-based education.
Medical students' readiness to take care of patients of diverse groups - scientific evidence and no discrimination? A quantitative and qualitative study

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Yen-Ko Lin, College of Medicine, Kaohsiung Medical University and Hospital, Kaohsiung, Taiwan
Wei-Jen Yao, College of Medicine, National Cheng-Kung University, Tainan
Yen-shu Chen, College of Medicine, Kaohsiung Medical University and Hospital, Kaohsiung, Taiwan

Background: Along with globalization, medical educators need to address diversity in medical education in order to prepare future physicians for caring for diverse patient populations. In order to identify the current problems and comprehensive goals, this study investigated Taiwanese medical students' preparedness for Cross-cultural Care Competence throughout different stages of education.

Summary of work: The study used mixed methods including conducting generic questionnaires with 1277 medical students and focus group/individual interviews with 88 students of different stages at two Taiwanese medical schools. Both set of data were processed and analyzed respectively with SPSS and Grounded Theory (Nvivo), and then triangulated to interpret the findings.

Summary of results: The students didn't demonstrate progressive development of CCC and were relatively less prepared/skilled for/in caring for new immigrants, who use alternative medicine, have religious beliefs, and distrust healthcare system (3.2/3.2/3.1/2.8). Students tended to use 'no discrimination' and 'scientific evidences' to justify their preparedness. Clinical/exposure were considered crucial but shown problematic.

Discussion: The students' inadequate preparedness for CCC can be attributed to 1. lack of awareness, 2. inadequate explicit and implicit training of CCC. Clinical learning and role modeling are considered resources for acquiring CCC, but teachings appear to be 'hit or miss'. The scientific/clinical reasoning and western medicine take over when encountering differences.

Conclusion: An inclusion of a spiral CCC training framework for different stages in the medical curriculum is pressing and the curriculum needs to be re-designed to address bias/stereotypes and develop CCC skills specifically for some particular groups to better prepare medical students for the myriad of situations in real clinical settings.

Take-home message: Future physicians need to be culturally competent for caring for diverse patients populations with different health beliefs. Medical educators need to address the perceived students' inadequate preparedness in CCC and set the goals for each state of training. As clinical exposure is crucial, role modeling is indispensable in hidden curriculum.
Background: Medical students from ethnic minorities underperform compared to the ethnic majority. Motivation could be a mediator of this underperformance, but is under-investigated. The aims of this study were to compare the motivation of ethnic minority and majority students, and to determine the relation of motivation with academic performance.

Summary of work: A cross-sectional study including ethnic minority (Non-Western and Western) and majority (Dutch) medical students was conducted. Participants completed a survey including Academic Self-Regulation Questionnaire, measuring autonomous motivation (AM—genuine interest or personal endorsement) and controlled motivation (CM— for rewards/external gains). Mann-Whitney U test and linear regression analysis were performed.

Summary of results: AM of Non-Western students was significantly higher than that of Dutch students (Total n=656). CM was significantly higher among Western students than among Dutch students, only for pre-clinical education. AM was associated with a higher GPA for Dutch and Western students (pre-clinical education). Further, we found differences in CM between groups.

Discussion: We found significant differences in the motivation among the ethnic groups. The results also showed differences in the association between (autonomous and controlled) motivation and academic performance among the ethnic groups. More research is needed to understand the underlying mechanisms of these differences and associations between the ethnic groups.

Conclusion: Results showed differences in AM between Dutch and Non-Western students (pre-clinical and clinical education). Further, we found differences in CM between Dutch and Western students (pre-clinical education). AM was associated with a higher GPA for Dutch and Western students (clinical education). CM was associated with lower GPA in Dutch students.

Take-home message: In the medical education continuum, students from different ethnic backgrounds should be encouraged to feel autonomously motivated because this has a positive influence on their academic performance.
Perception of medical students and faculty regarding benefits and challenges of a diverse student body at the Aga Khan University, Karachi, Pakistan

Kauser Jabeen, Aga Khan University, Karachi, Pakistan
Asra-Tus-Saleha Siddiqui, Aga Khan University, Karachi, Pakistan
Ajia Syed, Aga Khan University, Karachi, Pakistan
Rozmeen Husein, Aga Khan University, Karachi, Pakistan
Kulsoom Ghias, Aga Khan University, Karachi, Pakistan

Background: Diversity in education has been associated with benefits for individuals, institutions and society. Classroom diversity positively affects the learning environment and provides exposure to various personal experiences, ideas and opinions. However, it is critical to contextualize definition of diversity and respond to context-specific challenges of a diverse student body.

Summary of work: A questionnaire adapted from other reported studies and based on the theory of diversity articulated by Powell et al was developed and piloted. The final questionnaire was administered online to students of all years (Years 1-5) and faculty from the undergraduate medical education programme at the Aga Khan University (AKU).

Summary of results: Preliminary analysis shows that 75% of students believe geographical origin is important to define diversity versus 25% of faculty. Students and faculty have varying perceptions of the importance of diversity for development of different skills; for example, 73.6% of students believe diversity is important for teamwork versus 50% of faculty.

Discussion: Differences in perception of students and faculty regarding definition of diversity and its importance for the development of various skills may be related to personal contexts and unconscious biases. These differences are being explored further for statistical significance in a larger sample size.

Conclusion: Majority of faculty and students agree that a diverse student body is necessary to learn essential skills, although to varying degrees for different skills. Differences in faculty and students’ perception of diversity and its importance need to be explored further and reconciled for an effective learning experience.

Take-home message: Since its inception in 1983, AKU’s undergraduate medical has produced physicians that are currently working throughout the world. It is important to determine the perceptions, benefits and challenges of diversity within the context of a developing country in transition to inform policy decisions at an institutional, national and regional level.
#8I Short Communications: Faculty Development 1
Location: Room 101 a/b

#8I1 (2905)
Parallel Student Enhancement Programming: A Novel Approach to Faculty Development

Nutan Vaidya, Chicago Medical School at Rosalind Franklin University of Medicine and Science, North Chicago, USA
Lisa Michaluk, Chicago Medical School at Rosalind Franklin University of Medicine and Science, North Chicago, USA

Background: Faculty development programming must adapt to accommodate 21st century pedagogy (Mohr et al, 2011). Teaching physicians need to develop alliances with learners (Benor, 2000); programs to develop small group teaching and awareness of generational differences may help. For faculty to maximize these programmatic benefits, students need to appreciate faculty perspectives.

Summary of work: Four parallel enhancement programs were administered to students and faculty. These programs were designed to explore student and faculty perspectives on professionalism, generational differences in learning, learner treatment, and feedback. Each cohort attended these programs with their peers.

Summary of results: These programs were piloted during the academic year 2016-2017. The program content was well received. The topics presented were identified as having the maximum impact on the academic learning environment. The professionalism and generational differences in learning components generated the most interest among faculty and students.

Discussion: This novel approach allows us to influence student learning behaviors. By giving a unique faculty perspective, we expect this will help students to become better learners by modifying their own behavior to individual faculty’s teaching approach.

Conclusion: Faculty development programming is often one sided, focusing on changing faculty behavior or knowledge. Students can learn from faculty and faculty can also learn from students. Parallel programming will foster a symbiotic learning relationship between faculty and learner instead of maintaining parental faculty roles and students’ roles as children.

Take-home message: As the focus of teacher-learner relationships shifts from a hierarchical framework towards a team-based approach, faculty development efforts must adapt. Enhancement opportunities should include training students on how to interact with faculty. A parallel enhancement program will strengthen understanding of the alternate role’s perspective and create a dynamic learning environment.

#8I2 (3370)
Can Medical Conferences fulfill on the needs of our young educators and recognise their teaching initiatives?

Rula Najim, Imperial College, London, UK
Nina Dutta
Kate David

Background: In addition to clinical commitments, students, trainees and allied healthcare professionals dedicate significant time to the planning and delivery of teaching. Opportunities are limited in which to share and enrich on our teaching experiences, and in particular to receive recognition for the myriad of teaching that is conducted by trainees.

Summary of work: We organised and delivered a conference to over 200 trainees from around the UK, our aims were to understand motives for attending education conferences and to evaluate whether these needs were met. We also wanted to 1) recognise our teachers and 2) inspire future medical educators.

Summary of results: 201 delegates attended a conference incorporating 15 workshops, 10 parallel sessions and 2 keynote lectures. Trainees declared the main motivator for attending was the opportunity to present their work formally, as well as a way to find out about teaching opportunities. Over 92% felt their needs were met or surpassed.

Discussion: The conference was overbooked with high overall satisfaction ratings - 96% would recommend the conference. This shows there is a large appetite from students and trainees to attend conferences in medical education, in particular where the conference is designed to match the needs and desires of students and trainees alike.

Conclusion: Students and trainees give their time to teaching. A conference where their passion for education can be enriched and also recognised (through the ability to present, and compete for awards) has proven to be popular. Delegates expressed a stronger desire to have a career in medical education than ever before.

Take-home message: Through inspiring speakers, new opportunities, and acknowledgment of the teaching that has been done - conferences can have a hugely positive impact on trainees. They are an important way in which to encourage future educators and should continue to be used as another facet to the joys of medical education.
#813 (1059)
The “what” and “how” of teachers’ reflections on their own teaching practices during their faculty development. A qualitative study

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Carolina Roni, Instituto Universitario del Hospital Italiano, Buenos Aires, Argentina
Erica Delorenzi, Instituto Universitario del Hospital Italiano, Buenos Aires, Argentina
Laura Eder, Instituto Universitario del Hospital Italiano, Buenos Aires, Argentina

Background: Reflection is one of the major strategies to improve teacher’s performances. Portfolio includes a collection of teacher’s reflections about their real-concurrent teaching practices accomplished in context of most flexnerian curriculum designs. We aim to analyse reflective teaching practices (RTP) written by teachers during a two-year faculty development program.

Summary of work: We present a descriptive research over 1054 RTP that were written during a period of 10 years (2007-2016) by 175 teachers. Grounded theory methods was followed in order to develop a coding system that was used as a matrix applied to the total of the RTP.

Summary of results: The three main dimensions that the coding system showed about the RTP were: context, themes and reflection type. The principal context refers to Postgrade Programmes (residences, fellowships, etc); the principal theme is Teaching Strategies; and a recurrent reflection type is Making questions about traditional practices to reach for innovative proposals.

Discussion: RTP enable the problematization of traditional practices, promote the construction of alternatives and transform teachers identities. This experience evidences the value of a teacher training model focused on real situated practices as an object of reflection, enlightened by pedagogical theory rather than a model focused on isolated technical skills training.

Conclusion: This work allows us to identify teaching practices that mostly concern to health professionals (contexts and pedagogical aspects), and the different types of reflection during their two-year teaching training program. It also shows the value of constructed matrix as an instrument to systematize the analysis of RTP.

Take-home message: The results shows what kind of contexts and themes are involved in RTP, and how health professionals think about them. The written RTP during their pedagogical training improve their actions and strengthen their teacher identity in order to professionalize their role.

#814 (2798)
Extra-mural preceptors: a forgotten group!

Saskia Mol, University Medical Centre, Utrecht, Netherlands
Christel Grau Canet-Wittkampf, University Medical Centre, Utrecht, Netherlands
Joyce Parlevliet, Faculty of Veterinary medicine, Utrecht, Netherlands
Nina Winters, Department of Pharmacy, Utrecht, Netherlands
Esther de Groot, University Medical Centre, Netherlands

Background: Teaching in the medical workplace calls for specific skills taught in faculty development programs at many academic medical centres. However, many professionals in healthcare, such as family doctors, pharmacists and veterinarians supervise students outside the hospital. They are often not reached by these programs.

Summary of work: In a collaborative project between the Faculties of family medicine, pharmacy and veterinary medicine we developed teacher training for extra-mural clerkships. Before developing, we questioned both students and preceptors on challenges experienced in workplace learning and teaching. Besides, we explored which tools were available for training teaching skills through e-learning.

Summary of results: Of several areas named, students were the least happy with the way they received feedback. Preceptors had difficulty giving critical feedback and increasing motivation. We developed blended learning on feedback skills. The e-learning focuses on theory and practice (virtual student game). In the face-to-face part, role play is central.

Discussion: Teaching skills of extra-mural preceptors are suboptimal while providing training for them outside academia is problematic. We are under way to solve this problem. The e-learning saves time away from the practice. The feedback on the virtual student game aims to motivate preceptors to participate in the face-to-face training.

Conclusion: Collaborating with different disciplines in developing a program on feedback skills for extramural preceptors is practically feasible. Besides, it makes developing e-learning more affordable. The feasibility of the blended learning program is being studied and will be presented.

Take-home message: • Extra-mural preceptors must get access to training in precepting skills too! • Collaborating with other disciplines is feasible and efficient when developing e-learning.
Mentorship and Professionalism in Training (MAP-IT): A humanistic mentoring program through the lens of critical reflection and experiential learning

Alice Fornari, Northwell Health, Great Neck, NY USA

Background: MAP-IT is a faculty development (FD) opportunity to impact healthcare professionals. Steinert states, "we should explore the role of FD within the larger organizational context." Participation in FD for humanism may increase the number of highly humanistic events by sensitizing and motivating faculty members to meet patient's' emotional needs.

Summary of work: Two cohorts of healthcare professionals, totally 60 facilitators and 165 participants, were divided among small groups during 90-minute monthly meetings over ten months. These longitudinal sessions modeled a theoretical framework of critical reflection and experiential learning. Meetings were centered on clinical topics. Also included were Objective Structured Teaching Encounters.

Summary of results: Assessment data was collected: 1) Humanistic Teaching Practices Effectiveness (HTPE), 2) Mentoring Competency Assessment (MCA) and 3) Post Program Comprehensive Evaluation. For MCA, mentors had significant improvement between Pre/Post ratings. HTPE, all but one item showed significant improvement pre/post program. Responses were agree/strongly agree for 8 program outcomes and curriculum.

Discussion: A “community of practice” faculty development model confirmed that critical reflection, through professional stories, is well received. Key features of faculty development include evidence-informed educational design, relevant content, experiential learning, feedback and reflection, intentional community building, longitudinal program design, and institutional support. The MAP-IT program supports these identified key features.

Conclusion: Daloz states, “Mentors are guides. They lead us along the journey of our lives...” . Medical educators must go beyond the skills of role modeling and ensure clinicians embody behaviors to assure experienced faculty cultivate, encourage and guide junior faculty in their professional development as humanistic and compassionate teachers and caregivers.

Take-home message: An unexpected outcome is participants identify this effort builds resilience for clinicians. Other healthcare institutions that desire to combat burnout among their clinicians can consider this template. We must focus on research to assess the impact on participants, healthcare institutions, and most importantly, evaluate transfer to clinical practice.
Teaching and learning clinical skills: the interest of a peer-teaching program to reconnect with global conception of a patient

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Zoé Boulot, Lyon-Est Faculty, Lyon, France
Jerome Etienne, Lyon-Est Faculty, Lyon, France

Background: As currently organized, clinical examination teaching is delivered organ by organ in different specialized EU. This organization makes it difficult for the student to be self-confident in his approach for a global patients’ examination. Peer-teaching was thought to be an interesting way to improve teaching of global clinical examination.

Summary of work: At Lyon-Est Faculty of medicine, three tutorial sessions were put in place, for 2nd year students, managed by motivated 3rd year students and under teachers’ supervision. These tutorials were about taking the history, physical cardio-thoracic then neurologic examinations. Groups were kept as small as possible (approximately 10 students).

Summary of results: The three sessions were judged as profitable to both second and third year students, as the ones learned what they needed to learn, and the others learned to teach! This initiative involved collaboration, that was extremely beneficial to everyone involved, from supervising teachers (3-4) to all students (more than 300).

Discussion: By developing this project, we discovered a gap between what teachers think the students know about examining, and what they actually know. This peer-teaching program also reminded us of the importance of incorporating the holistic conception of a patient in medical education to reconnect with the “medical art”.

Conclusion: Students thought they improved their understanding of global clinical examination and their self-confidence for the following traineeships, as students were more at ease to ask peers rather than teachers. They could link theoretical knowledge brought by teachers with clinical practice and fill the gaps by asking peers!

Take-home message: If you want to train generations of doctors who care for patients, and not only for organs, you should reconnect with teaching a global clinical examination! Medical education can’t only rest on books or PowerPoint slides; that’s why peer-teaching may be a solution to complete the training of medical students.

Ward Round Simulation: A Novel Method for Teaching the Fundamental Skills of the ‘Medical Ward Round’

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Craig Pascoe, Royal Wolverhampton NHS Trust, Wolverhampton, UK
Sophie Taylor, Royal Wolverhampton NHS Trust, Wolverhampton, UK
Kirsten Herregods, Royal Wolverhampton NHS Trust, Wolverhampton, UK
Aria Nikjooy, Wolverhampton NHS Trust, Wolverhampton, UK
Mehvish Khatoom, Royal Wolverhampton NHS Trust, Wolverhampton, UK

Background: The ability of a clinician to conduct one’s own ward round is paramount in patient safety, yet students receive little formal training on how to do so. Hence junior doctors may lack some of the necessary skills to carry out a safe ward round, directly impacting upon patient safety.

Summary of work: A three-station simulation was designed testing abilities in observation charts review, notes documentation, drug prescription, prioritisation skills, communication with team members and safe review of medical inpatients. Pre and post-simulation questionnaires were administered to assess confidence levels. A group debriefing discussed difficulties, identified learning points and provided a ward-round template.

Summary of results: Significant variation in performance noted although no critical incident arisen so far. All students valued the experience and an improvement in the mean overall confidence score from 1.9 in pre-simulation questionnaires, to 3.4 in post-simulation questionnaires was recorded. Quarter of students still lacked confidence in conducting a ward round independently.

Discussion: Improving confidence levels were witnessed, however it is unproven whether this equates to improving competency and safety as future doctors. The benefits of these sessions therefore cannot be truly evaluated unless performance of students is extrapolated into their initial years as junior doctors.

Conclusion: Variability in performance could be attributed to lack of previous exposure, differing delivery of medical school curricula, or lack of engagement in clinical opportunities. Significant variation in delivery of ward round is also seen in clinical practice, which could have shaped students’ prior conceptions and knowledge.

Take-home message: Despite limitations of our work, results suggest that it is important to incorporate ward round simulation into final year training, allowing students to learn fundamental skills in a safe environment without harm to patients. We have demonstrated this model can be used as a platform for other institutions to follow.
Clinical supervision of medical students during the new hospital based 6th year at the Medical University of Vienna: Identifying and meeting needs

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Gerhard Zlabinger
David Taylor
Beate Schrank
Anita Rieder

Background: In 2014 the Medical University of Vienna implemented a hospital-based clinical 6th year into the undergraduate medical programme. The aim of this study was to assess the quality of supervision: Which activities did the supervisors actually show? Which of them were most helpful for students? – and which weren’t?

Summary of work: After 48 weeks of clinical placements we asked students about the clinical supervision using two methods: (1) standardized questionnaire (see Kilminster et al., 2007) and (2) written group report, where open ended questions were answered by a group of ten students. Data were analyzed statistically and using Thematic Analysis.

Summary of results: Hitherto we have analyzed questionnaires from 372 students and 38 group reports. The most frequently mentioned activity was “sharing professional expertise” (83.6%) for Internal Medicine and “teaching specific techniques and procedures” (77.0%) for Surgery. Most helpful for students were “clearly stated responsibilities”, “promoting students’ self-dependency” and “integration into the team”.

Discussion: There are two striking observations. Students gain most when they have explicit roles and responsibilities. Equally important is the fact that we were able to ensure that all supervisors were trained and aligned with our intended outcomes.

Conclusion: Results are very satisfying and mirror the facets of supervision described in the literature.

Take-home message: Distinct roles and explicit described responsibilities are essential in clinical education.

Relationships and role foundational for medical student learning

Jill Konkin, University of Alberta, Edmonton, Alberta, Canada
Darren Nichols, University of Alberta, Edmonton, Alberta, Canada

Background: Meaningful participation in patient care and coaching have been identified as affordances for learning in the health care work place. Clerkship structure can affect the extent to which these are available for medical students. The implementation of longitudinal integrated clerkships (LICs) affords an opportunity to better understand context and learning.

Summary of work: This phenomenological hermeneutic study inquired into experiences of students who undertook an LIC in Year 3 of a 4 year graduate entry program and a rotation-based clerkship (RBC) in Year 4. Results are based on conversations with 33 students from 5 cohorts. Socio-cultural learning theory provided an appropriate interpretive framework.

Summary of results: Participants identified interconnected affordances which facilitated learning. Students described an authentic role that allowed for accountability and responsibility in patient care. They connected this directly to motivation for learning. The role they experienced in the RBC was more as observer, like a student, rather than a junior colleague.

Discussion: This study builds and expands on previous work that found that the length of clerkship and the setting were key elements in facilitating medical student learning. This 10-month clerkship allowed for the continuity necessary to build therapeutic relationships with patients over time and trusting relationships with physician teachers/coaches.

Conclusion: Continuity relationships and an authentic role in patient care are important affordances for clinical learning for medical students. Length of clerkship and its setting have a major impact on learning. Using affordances for learning as a basis for evaluation of clerkship experience can assist in improving clerkship experience.

Take-home message: The logistics of a clerkship including length and setting can have a significant effect on learning for medical students. Medical educators need to examine the logistics of their clerkships to determine how they support or hinder key affordances for learning including the meaningful role in patient care and coaching.
#8J5 (3116)
What influences Students' Performance In Physical Examination During Their Clerkships?

Catharina Haring, Radboud University Medical Center, Nijmegen, Netherlands
Mahlet Beyene, Radboud University Medical Center, Nijmegen, Netherlands
Cornelis Postma, Radboud University Medical Center, Nijmegen, Netherlands

Background: Students are assumed to improve their physical examination skills during the clinical phases of their studies. However, during this phase students perform less and less thorough physical examinations. It is unknown which factors contribute to this change. Awareness of these factors could lead to improvement of education in physical examination.

Summary of work: We conducted a qualitative grounded theory study using semi-structured interviews and focus group discussions amongst students at the end of their first clerkship and the final clerkship. The central research question was: Which factors affect the performance of physical examination of medical students during the clinical phase of their studies?

Summary of results: Improvement was felt when students were observed, received feedback, could repeat practice and had sufficient time available. Perceived (lack of) utility, examples of performance by supervisors and availability of technological diagnostic aids encouraged students to lessen the extent. Expectations, intrinsic motivation and experiences as missed diagnosis influenced their physical examinations.

Discussion: This study points out the importance of the exemplary role that supervisors have in practice of which they should be aware. Perceived utility of physical examination is an important factor that influences future physical examination behaviour of the student. Important improvements can also be found in observation and feedback moments.

Conclusion: Students notice change in their physical examination performance during the clinical phase of their studies. This study lines out the important factors of influence experienced by students.

Take-home message: The exemplary role of supervisors in clinical practice setting regarding physical examination should not be underestimated. Incorporation of observation and feedback moments regarding physical examination should be warranted throughout the clinical practice setting.

#8J6 (1656)
But there's not time! - incorporating educational theory into ward round practice

Amy Gray, The University of Melbourne, Melbourne, Australia
Helen Enright
Paul Monagle

Background: Education delivery on ward rounds is a complex activity, which competes with the necessary priority of service delivery and is increasingly pressed for time. If we believe education holds a place on rounds, then we must identify ways to make it more efficient and effective for the benefit of all.

Summary of work: We used a developmental evaluation approach, working within a clinical department at a tertiary paediatric teaching hospital to develop a framework to help clinicians incorporate evidence-based education in busy ward rounds. The framework drew from observational data, educational theory and ward round literature and was refined through piloting and feedback.

Summary of results: We present the STIC framework, which encourages education to be explicit and learner-centred, with clear agenda setting and closure. The framework facilitates integration of feedback, inspection and reflection into daily rounds. It is available online accompanied by video examples. Feedback from clinicians was positive and shaped framework design and implementation.

Discussion: In the early implementation of a framework to improve education on ward rounds we have demonstrated variable but clear changes in the educational climate. We believe the framework meets a need to facilitate busy clinicians, both consultants and trainees, who genuinely value education to deliver it more effectively and efficiently.

Conclusion: A structured approach to ward rounds may enhance the delivery of education within them, the educational experience of trainees and ability of senior clinicians to manage the business of rounds, plus education. There are significant challenges to changing “how they are done” including time, service delivery and hidden curriculum.

Take-home message: Leading ward rounds, and delivering effective, quality education in this context is a skill which is often not made explicit. A structured framework to integrating education delivery, using learner-centred approaches has the potential to support clinicians in both teaching and learning, as well as the business of rounds.
#8K  Short Communications: Simulated Patients
Location: Room 101 d

#8K1 (2400)
Evaluation of fairness, feasibility, acceptance, realism and educational impact of the involvement of elementary school children as standardized patients as perceived by different stakeholders in a summative OSCE: results from 2016 and 2017

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Sabine Feller, IML, Bern, Switzerland
Kai Schnabel, IML, Bern, Switzerland
Sabine Kroiss, University Children's Hospital, Zurich, Switzerland
Maja Steimlin, University Children's Hospital Inselspital, Bern, Switzerland
Sören Huwendieck, IML, Bern, Switzerland

Background: The influences of using elementary school children as standardized patients (SP) in summative OSCEs on perceived fairness, feasibility, acceptance, realism and educational impact are still not well understood. Therefore, we investigated these aspects in two student cohorts in 2016 and 2017 and compared the results.

Summary of work: After the 5th year OSCE in Bern in April 2017, 200 Students and 15 raters will be asked to complete questionnaires to evaluate the pediatric OSCE station. Students will additionally be asked if this station has implications for the educational impact. Results will be compared to the first implementation’s results.

Summary of results: In 2016, all stakeholders perceived the pediatric station as fair, feasible, and realistic, and were satisfied with this approach. Additionally, many students prepared them differently for the OSCE as an indication of an educational effect. These results will be compared to those of the examination in April 2017.

Discussion: In 2016 we confirmed results from other studies, and showed that it is fair and feasible involving children in an OSCE, and that children enjoy playing a SP. Additionally, we focused on every stakeholder (students, raters, child/teacher SPs, organizers) and highlighted that it is relevant for everyone involving children.

Conclusion: Conclusion will be drawn by comparing the existing very positive results from 2016 with the results from 2017. This will help us to better understand the influences of using Child SPs on perceived fairness, feasibility, acceptance, realism and educational impact.

Take-home message: The results from 2016 indicate that all stakeholders perceive the use of pediatric SPs as fair, feasible and realistic and were satisfied with this approach. By the additional data from 2017 we will be able to formulate an even better grounded take home message.

#8K2 (1389)
The age of standardized patient (SP) is most important at the first training in medical interview of elderly patients

Eiji Kaneko, Tokyo Medical and Dental University, Tokyo, Japan
Risa Suzuki, Tokyo Medical and Dental University, Tokyo, Japan
Yasuko Abe, Tokyo Medical and Dental University, Tokyo, Japan
Kentaró Shimokado, Tokyo Medical and Dental University, Tokyo, Japan

Background: Although it is important to teach medical interview and cognitive function test of the elderly patients in this aging society, we do not have enough elderly standardized patients (SPs) for medical student training. In this study, we examined the influence of the age of SPs on third year medical students.

Summary of work: Eight students performed interview and cognitive function test of elderly patients. Scenarios of 72-year-old patients were performed by young (50’s) or old (70’s) SPs. Each student experienced two interviews. Half of them started with young SPs and then old SPs, while the rest started with the old. Students answered questionnaires.

Summary of results: Although students who first experienced medical interview of young SPs tended to mind the age, those students who first experienced old SPs did not mind the age of young SPs. As for the cognitive function test, the age of SPs had little effect.

Discussion: Young SPs had useful discussions with old SPs to improve their performance before the study. Since students who experienced interview of old SPs first did not mind the age of young SPs, the first training is most important. The age of SPs is less important for the cognitive function test.

Conclusion: In the training of medical interview of elderly patients, the age of SPs is most important at the time of introduction. The age of SPs is less important in the cognitive function test. (This is an ongoing study and results from larger number of students will be presented.)

Take-home message: The age of SPs is most important at the time of introduction to medical interview of elderly patients, whereas it is not very important in the training of cognitive function tests.
#8K3 (869)
Simulated Clinical Cases through the Prism of Focus Group Process

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Teresa VanDeven, Western University, London, Canada

Background: Simulated patients cases based clinical skills courses are very effective yet expensive. This, along with new developments in medical education requires creative ways to optimize cases. Facilitators’ involvement in the cases design via interactive group process has never been attempted in the psychiatry course’s development at the Schulich faculty.

Summary of work: Four focus group sessions involving 21 facilitators of the clinical skills were conducted in a semi guided fashion. Adequate level of complexity of the psychiatric cases, suitability of psychosocial components, and emphasis on simulated patients’ training were the most important themes. The results were reported to the facilitators’ group.

Summary of results: Facilitators were actively formulating challenges, dilemmas and discussing possible solutions. They have shared important suggestions regarding the cases’ construction and also their own pedagogical findings as to how help students form proper attitude and understanding of the patients’ behaviour, the elements most consistent with competency based approach.

Discussion: The amendments in the cases will help students to make the first steps in psychosocial formulation and to consider interprofessional team involvement consistent with the new educational paradigm. Challenges of the steep trajectory from the simulated clinical encounter to the next year “real life” exposure were discussed.

Conclusion: Involvement of the facilitators in the focus group enabled sharing experiences and teaching “pearls”. The facilitator’s experience was very positive. The focus groups process stimulated natural conversation pattern, group effect.

Take-home message: Adequacy of cases for clinical skills methods course needs to be reviewed in order to meet changing pedagogical foci. Involvement of the faculty in focus group provides invaluable information for the further course development and enriching encounter for facilitators.

#8K4 (633)
The Effect of Interactive Educational Workshops with or Without Standardized Patients on Midwifery Students’ competency in providing Sexual Health Counseling

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Khadijeh Mirzaii, Department of Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran
Reza Mazloum, Department of Nursing, Mashhad University of Medical Sciences, Mashhad, Iran

Background: Midwives have a special role in providing Sexual health counseling but, they haven’t the skill at graduation that indicates the need for exploring the best training methods. This study compares the effects of performing two workshops with and without Standardized Patients (SPs) on Students competency in sexual health counseling.

Summary of work: In this quasi-experimental study, 92 eligible midwifery students of Mashhad Medical University were randomly divided and participated in a 10 hour workshop with and without SPs. Students’ competency in sexual history taking, diagnosis and treatment was assessed applying a 10 stations validated OSCE before and two weeks after the interventions.

Summary of results: There was no difference between students’ competency in providing sexual health counseling in the two groups in pre-test. Two workshops significantly improved students’ competency (p=.000, p=.000), whereas the improvement was significantly higher in SP group (75.8±11.2 vs 47.0±8.9 out of 128 overall score, p<0.0001). Student satisfaction was high in both groups.

Discussion: The study of Pike(2010) showed similar results on communicative skill education and Chian’s(2005) on students’ skill in applying complementary medicine. Schwartz(2007) and Zeric(2003) revealed no advantages for SP over traditional training methods that showed the need for more research on efficacy of SP in teaching different subjects.

Conclusion: Both methods of interactive educational workshops with and without standardized patients could promote students’ competency in providing sexual health counseling, whereas, the impact of workshops with SPs was highly better.

Take-home message: Applying interactive educational workshops with or without SP is recommended in midwifery educational curriculum. Considering the unmet need of community to sexual counseling and need for training competent midwives, the use of SPs is highly suggested in teaching the counseling skill to midwifery students especially in sexual health issues.
What is in the Simulated Patient(SP)'s mind? Qualitative study among SP at Chiang Mai University, Thailand

Praelada Wongsirimeteekul
Rapeephat Srichan, Chiang Mai University, Chiang Mai, Thailand

Background: The simulated patients(SPs) have played important role to enhance the competencies of medical student in the 21st century. CMU has developed well-trained SPs for a decade. As we know that SPs are the key for practice DRE skill, however, there is little study about the SP's story.

Summary of work: A descriptive study to explore the attitude, motivation, and experience of simulated patients(SPs) at CMU. We have designed the interview study. 10 randomized SPs from total of 38 (16 males, 22 female) worked in DRE section are interviewed in January 2017.

Summary of results: It shows that at the beginning SPs have negative attitude toward DRE. Shyness and fear are main obstacles. However, SPs believe that they are teacher and scarify for benefit of mankind. Knowledge, respectfulness and passion are top three advantages fulfilled SP's heart. After working it shows >90% have positive perspective.

Discussion: Believing that being medical teacher and scarified themselves can relief their shyness and fear of working as SPs. The positive perspective and motivation have been increasing after SPs work with medical students. Happiness and self-esteem promote SPs to continue working. These all contribute to ultimate the SPs performance and retention.

Conclusion: The study explore the SP's view, motivation and experience which outcome shows in positive aspect. The result enable us to derive the action guideline and improvement of our program.

Take-home message: Most of SPs have positive perspective, motivation and passion in their job.
#8L Short Communications:
International Education 2
Location: Room 102

#8L1 (1595)
Internationalization of medical education in China – Jinan university experience

Wang Liwei, Jinan University, Guangzhou, China
Deng Yongzhong, Jinan University, Guangzhou, China
Nivritti Patil, The University of Hong Kong

Background: Medical education in People's Republic of China is going through significant evolution offering placement to overseas students to study medicine in China. There are nearly 45 universities offering MBBS program in English; which is highly subscribed by students from every continents.

Summary of work: The establishment of the International School at Jinan University was one of the important steps in building up a modern international university to meet the needs of local and international students through its prestigious programs since 2001.

Summary of results: Although, medium of instructions is in English, overseas students are given ample opportunities to learn Chinese to communicate with the patients during clinical years. Teaching staff for MBBS program is drawn both local and overseas faculty.

Discussion: Jinan University has effectively brought in integration of local MD curriculum and MBBS on the same campus. There are nearly 300 students from South Asia and beyond currently enrolled to undertake MBBS program at Jinan. Students are provided accommodation on the campus and interact with local students.

Conclusion: As part of staff development program, a competition was held at Jinan in 2016 of local teachers from MBBS schools in China to showcase their teaching skills in English which has shown that medical education in China is making seamless efforts towards Internationalization of medical and health sciences education.

Take-home message: Aspire for one world in global health care and education!

#8L2 (2659)
A study to explore how interventions support the successful transition of overseas doctors to the NHS

Amelia Kehoe, Newcastle University, Newcastle, UK
Jan Illing
John McLachlan
Madeline Carter
Simon Forrest
Jane Me

Background: There is recognition of the need to better support the transition of overseas doctors to the NHS. The absence of a supportive framework, targeting social, cultural and work related issues, has led to difficulties in career progression, retention and performance. This research explores interventions that support overseas doctors.

Summary of work: A realist approach was adopted. One North East Trust has developed a Programme for Overseas Doctors (POD) which was explored using a realist evaluation. A comparative case study design, using mixed methods, was used (including interviews, questionnaires, researcher observation and analysis of performance data).

Summary of results: A synthesis of the findings illustrated that three key contextual levels; organisational, training and individual, will likely impact on the adjustment of overseas doctors (performance, retention, career progression and wellbeing). The main outcomes of this is a transferable, theoretical explanation of how interventions to support overseas medical graduates are successful.

Discussion: Interventions must focus on building an open and supportive culture, address individual needs, and include ongoing support from all staff beyond the initial intervention. The findings have also led to a developed regional intervention, including a 'train the trainer' component. All staff need to be involved in the process.

Conclusion: In order to successfully support the transition of overseas doctors, interventions need to be more comprehensive and broad ranging than a simple induction or one-off training programme. This work has reviewed factors that contribute to a successful intervention and has put forward recommendations for future policy, interventions and future research.

Take-home message: OMG transition is vital to the future of the NHS given its reliance on overseas graduates. Successful interventions need to be more than a simple one day programme. Interventions must focus on creating a positive open and supporting culture.
The challenge of IMG selection in Canada: our success in the selection of positive deviance

Alasdair Nazerali-Maitland, University of British Columbia, Vancouver, Canada
Laura Nimmon, University of British Columbia, Vancouver, Canada
Joanna Bates, University of British Columbia, Vancouver, Canada

Background: We are facing a challenge with ever-increasing competitiveness from IMG physicians trying to match to Canadian Residency programs. As training costs are supported by provincial health authorities, it is imperative to select those candidates that will successfully complete their training without delay or remediation and to serve our diverse population.

Summary of work: This study aimed to examine if current selection processes are able to discriminate the candidates with a high chance of success from candidates unlikely to succeed. It examined what attributes are positively predictive of residency success and examined if the current selection methods were able to identify/discriminate for them?

Summary of results: The majority of the interviewees felt that selection methods could be improved and that it is not possible to accurately identify trainees who would flourish in residency. A large list of attributes demonstrated by both successful and unsuccessful residents was generated and weighted accordingly that may predict success/failure respectively.

Discussion: 1) Although experienced preceptors agreed that the current selection methods were far from ideal - few could suggest alternate methods that would improve practices. 2) Although attributes that could be used to predict success/failure were suggested - this research did not determine each's direct correlation or relative predictive value.

Conclusion: Many experienced preceptors feel that current selection methods are unsuccessful in identifying the most suitable candidates and there is considerable room for improvement. Not only do we need to identify the attributes of successful IMG trainees but we need to be able to correctly discriminate for them in selection practices.

Take-home message: Selection of IMG trainees is high-stakes and must take into account future national healthcare needs. It can and should be improved. One way to do this may be to determine what attributes standout candidates (good and bad) possess and how we may develop tools to correctly identify these residency applicants.

USA-citizen graduates of international medical schools: 1991-2015

Marta van Zanten, FAIMER, Philadelphia, USA
John R. Boulet

Background: Approximately 10% of physicians in the USA are US-citizens who graduated from international medical schools (USIMGs). This study provides an overview of the countries/territories of USIMGs’ medical schools and highlights trends in the regional location of international medical education over the past 25 years.


Summary of results: From 1991-2015 there were 63,567 USIMG applicants from medical schools in 135 countries. The five top countries of medical school were Dominica: 11,324 (17.8%), Grenada: 10,600 (16.7%), Sint Maarten: 5,763 (9.1%); Mexico: 4,767 (7.5%), and the Dominican Republic: 3,214 (5.1%). Most countries had a relatively steady rise in applicants.

Discussion: Over the study period, USIMGs have increasingly been educated in the Caribbean region and less so at European-based schools. Countries with shifts over time included Mexico which peaked in 1996-2000, Ireland and Hungary which peaked in 2001-2005, and Poland which peaked in 2006-2010.

Conclusion: While physician migration is often characterized as “brain drain”, many USIMGs attended international medical schools with the intent of returning to the US for graduate training and practice. Students may be attracted to Caribbean schools because they offer a US-style curriculum and opportunities for clinical clerkships in the US.

Take-home message: To better understand physician supply, it is important to investigate the characteristics of schools where large numbers of physicians, including US citizens, are educated. Further studies are needed to assess the quality of international medical schools and the contribution of their graduates to the global workforce.
#8L5 (1411)
International comparative assessment of final year medical students in Ukraine using the IFOM Clinical Science Examination through cooperation between NBME and Testing Board/Ukraine

Marina Mrouga, Testing Board, Kyiv, Ukraine
Carol Morrison, NBME, Philadelphia, USA
Iryna Bulakh, Testing Board, Kyiv, Ukraine
Lesya Voitenko, Testing Board, Kyiv, Ukraine
Donald Melnick, NBME, USA

Background: International comparative studies are the basis of quality evaluation in education. Ukraine started reform of health care system and was interested to get an objective measure of qualification of Ukrainian students compared to medical doctors internationally. IFOM Clinical Science Examination (CSE) from NBME was chosen for assessment of Ukrainian graduates.

Summary of work: A large group of graduates (approximately 6,000) was administered paper-and-pencil IFOM CSE in Ukrainian in 2017 under standard proctored conditions. A small group took computer-based IFOM CSE in English. Both groups also took national Ukrainian licensing examination “Krok”. IFOM CSE was developed by NBME and administered by the Testing Board.

Summary of results: Ukrainian IFOM Results were compared with a large representative group of international examinees who took IFOM CSE at the same stage of training and with Ukrainian “Krok” results. Students exceeding the IFOM CSE International Standard of Competence (comparable to USMLE Step 2 CK standard) were awarded with a special certificate.

Discussion: Analysis revealed two NHS frames: a model of universal health coverage alongside a service in crisis no longer affordable. Recent growth in migration is also framed as a crisis. Most importantly is the framing of a causal relationship: the migrant crisis causing health service crisis.

Conclusion: With this context in mind we developed a half day flipped teaching intervention involving national NGOs and using case-based learning inviting students to analyse healthcare policy and its implication for vulnerable individuals.

Take-home message: frame analysis is a neglected but valuable tool in educational design around issues of social and political significance.

#8L6 (2265)
Migrants and healthcare: educating tomorrow’s doctors for a global (and highly politicised) challenge

Anita Berlin, UCL / BARTS, London, UK

Background: The relationship between migrants and healthcare is complex, contemporary and politically charged. I focus on the education of doctors for their role in the care of vulnerable migrants in the UK. • How to tackle politicised topics? • Should we include advocacy? • Do schools have a social justice role?

Summary of work: I describe an educational intervention to achieve core objectives around the issues in providing healthcare for migrants in particular refugees and asylum seekers as well as victims of modern-day slavery and trafficking, and undocumented labourers and sex workers. The teaching blended presentations with case-based workshops.

Summary of results: The paper uses frame analysis to consider the role of medical schools in preparing doctors for their duty to vulnerable migrants and describes the theoretical basis and practical implementation and evaluation of an educational intervention.

Discussion: Analysis revealed two NHS frames: a model of universal health coverage alongside a service in crisis no longer affordable. Recent growth in migration is also framed as a crisis. Most importantly is the framing of a causal relationship: the migrant crisis causing health service crisis.

Conclusion: With this context in mind we developed a half day flipped teaching intervention involving national NGOs and using case-based learning inviting students to analyse healthcare policy and its implication for vulnerable individuals.

Take-home message: frame analysis is a neglected but valuable tool in educational design around issues of social and political significance.
#8M (1154)
Experiences that build medical student interest in rural and remote practice

Robin Ray, James Cook University, Townsville, Australia
Louise Young, James Cook University, Townsville, Australia
Daniel Lindsay, James Cook University, Townsville, Australia

**Background:** Close attention is being paid to the value of rural and remote clinical placements for the development of rural practice intention among students across health professions. Despite the background of student, repeated rural clinical placements during training may be influential in the recruitment of rural doctors.

**Summary of work:** This study explored medical students’ rural clinical placement experiences and their influence on future practice. 647 responses were collected from medical students returning from rural rotations in years 2, 4 and 6 of the MBBS course. Free text responses about placement experiences were descriptively coded and thematically ordered.

**Summary of results:** Year 2 students gave little indication that the placement influenced existing attitudes to rural practice. However, through Year 4 and into Year 6, positive role models, increasing involvement in interdisciplinary teams, widening scope of practice and diversity of opportunities available in rural areas increased rural practice intentions.

**Discussion:** Student’s positive attitudes to rural practice increased as they became more involved with positive practice opportunities and experienced the lifestyle. While rural practice will not appeal to every medical student, our study showed that repeated clinical placements increased students’ interest in future rural practice.

**Conclusion:** Repeated rural clinical placements throughout this medical course nurtured rural practice intentions where placements provided a positive clinical learning relationship embedded in the local community. Rural practitioners need to be supported to mentor students in a holistic experience of rural life and work.

**Take-home message:** Sequential rural practice experiences are more influential for future practice than one-off experiences. Medical students in more senior years may gain more from rural practice opportunities. Practitioners mentoring rural practice students need to be supported to engage students in a whole of life rural experience.

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#8M2 (605)
“The experience guides my work now”: Post-graduation impact of an in-situ Australian rural and remote health placement program.

Donna B Mak, School of Medicine, University of Notre Dame, Fremantle, Australia
Sandy Toussaint, School of Medicine, University of Notre Dame, Fremantle, Australia, and The University of Western Australia

**Background:** Non-metropolitan Australians have poorer health than metropolitan residents, but less access to healthcare. To address this, all University of Notre Dame Australia, Fremantle’s (UNDAF) medical students undertake voluntary in-situ work in non-clinical, rural and remote (termed rural) environments to engage with local people to understand their life-ways and health priorities.

**Summary of work:** We examined the post-graduation impact of UNDAF’s Wheatbelt Rural and Kimberley Remote Area Health Placement Programs (RRHPP) through in-depth ethnographic interviews with 29 alumni (1 to 8 years post-graduation) and 15 rural hosts who had participated in the RRHPP. We systematically and thematically coded, and analysed the data.

**Summary of results:** RRHPP participation encouraged consideration of rural practice and facilitated informed career choices. Alumni applied knowledge/skills gained during the RRHPP when caring for rural patients in rural and urban settings. Alumni developed relationships forged during the RRHPP to build enduring professional networks. Hosts unanimously supported the opportunity to educate future doctors.

**Discussion:** Relatively little research concentrates on post-graduation impacts of medical school programs. Most programs, and their evaluation, primarily emphasise pre-graduation medical student outcomes and/or recruitment of doctors to rural medicine. This research revealed the enhanced value of an in-situ program for alumni and rural populations.

**Conclusion:** Research on the post-graduate impact of medical school educational programs is important in the furthering of rural education and practice. In-depth ethnographic research that enabled a spectrum of productive RRHPP outcomes to emerge has potential benefits for future medical education and practice, and health delivery in rural and urban settings.

**Take-home message:** Experiential, non-clinical, in-situ rural and remote area health placements during medical school benefitted newly graduated doctors by enabling them to be more patient-centred during interactions with rural patients and colleagues, and by encouraging consideration of a rural career. Rural residents value opportunity to participate in educating rural Australia’s future doctors.
#8M3 (1211)  Tracking study of 2007-2011 graduates from a South African University: rural versus urban characteristics

Ann George, University of the Witwatersrand, Johannesburg, South Africa
Lionel Green-Thompson, University of the Witwatersrand, Johannesburg, South Africa

**Background:** Rural origin has been shown internationally to be a good predictor of whether graduates end up working in rural areas. Despite the need for more rural doctors, limited data on this phenomenon is available in South Africa. This study investigated the workplaces of 991 graduates from the University of Witwatersrand.

**Summary of work:** Graduates were surveyed using an online questionnaire which explored their origins and work history. Graduates from rural and urban backgrounds were compared in terms of whether they elected to do their two-year internship and one-year community service in rural or urban areas, and where they are currently working.

**Summary of results:** Of the 112 graduates from rural areas, 75 (67%) answered the questionnaire, with 35% having done internship and 65% community service in rural facilities, compared with 8% and 18% of the 365 with urban origins. Comparing current workplaces, 27% from rural and 3% from urban backgrounds work in rural areas.

**Discussion:** Higher proportions of doctors from rural backgrounds chose rural facilities for internship and community service, and to work in rural areas. However, both the proportion of doctors from rural origins, and the total number (irrespective of origin), who ended up working in rural areas is low.

**Conclusion:** This study confirms international reports that students of rural origin return to rural sites. However, because of the low number of doctors working in rural areas, further investigation is needed into what underpins graduates’ choices and what measures can be implemented at undergraduate level.

**Take-home message:** • Tracking studies are useful for informing admission policy changes and investigating whether these are having the desired outcomes. • Targeted selection of students of rural origin may be needed to increase the number of rural doctors.

#8M4 (1606)  Challenging the interchangeability of rural training contexts

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**Background:** Postgraduate programs intended to produce rural family physicians have been expanding and diversifying in North America. However, relatively little is known about the educational opportunities of these divergent contexts. Our aim was to examine how residents’ experiences of rural training sites differ, and the educational affordances of those differences.

**Summary of work:** We conducted an interpretive phenomenological study based on interviews with residents in rural family practice training programs from three university-affiliated programs in Western Canada. We asked participants to describe their current rural training site, and to compare it to their experiences of other rural training sites.

**Summary of results:** 27 resident respondents compared and contrasted 10 regional sites and 26 rural sites. They described differences in patient mix, geographical remoteness, availability of diagnostic and specialist resources, teaching styles and role models, educational program structures and expectations, health care systems, medical culture, and community culture.

**Discussion:** Previous reviews of rural training have focused on workforce outcomes and academic equivalency, and they have tended to treat all rural sites as fundamentally similar in nature. It was particularly notable that residents in the same context often perceived it quite differently, which informed their approach to their training.

**Conclusion:** No two rural sites are the same; different sites lead to different learning opportunities. The same site can differ in its educational affordances according to the trainee. A clearer sense of the variations in learner experiences and the mechanisms that underpin those variations can contribute to program planning and evaluation.

**Take-home message:** Rural training placements are not all the same; different sites lead to different learning opportunities. The same site can differ in its educational affordances according to the trainee. A clearer sense of the variations in learner experiences and the mechanisms that underpin those variations can contribute to program planning and evaluation.
Rural Community-Based Medical Education (RCBME): Teaching and Learning Challenges in a New Context in Thailand

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Background: Thailand is being developed RCBME to enhance rural clinicians and rural background students in general practice training and community engagement. However, there are not enough studies to confirm the successful RCBME in a new context. This study aims to explore teaching and learning challenges in a Thai RCBME initiative.

Summary of work: To explore whether the context matters, a qualitative case study was conducted from 21 purposive participants who will be involved in RCBME including students, clinical educators, policy makers, rural health professionals and local community stakeholders. Individual semi-structured interviews were used for data collection within Worley’s symbiosis as a conceptual framework.

Summary of results: Teaching challenges focused on rural clinicians’ massive clinical workload management and academic commitment to deliver RCBME for students, whereas learning challenges included students meeting academic requirements and protecting their reputation of doing well regarding the academic results of National Examinations, and readiness to contribute legitimately to rural practice as apprenticeship.

Discussion: Balancing rural clinicians’ clinical workload and academic commitment to deliver RCBME must be supported politically and academically, resulting in faculty development and rural career progression. Students must prepare for apprenticeship relationships to particularly improve clinical and community engagement. National Examinations need a privilege from workplace-based assessment rather than knowledge examinations.

Conclusion: A Thai RCBME initiative needs political and academic supports for both teaching and learning challenges in order to ensure a successful RCBME in a Thai context. These results can spread across Thailand and initiate a dramatic change from a traditional medical education paradigm.

Take-home message: Although some principles of RCBME are universal, the context does influence the expectations and capacity of stakeholders to contribute to RCBME.
Short Communications: Teaching and Learning - The Lecture & the Flipped Classroom

#8N (1725)
The reasons for non-attendance of lectures -- discrepancy between teachers and students

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Background: Non-attendance of lectures is a growing trend worldwide. Previous studies in Western countries suggested the main factors influencing attendance are student attitudes and motivation, teaching process used, and the teaching style of the teacher. This study explored the reasons underlying student non-attendance (SNA) from students’ and teachers’ perspectives in Asia population.

Summary of work: A questionnaire containing 10 key contributing factors of SNA was applied in the study. The questionnaires from 110 of teachers and 106 of fourth-year medical students in a military medical school in Taiwan were collected. The opinions of students were further analyzed by stratification with attendance rate and academic performance.

Summary of results: Students suggested the most common factors of SNA are unorganized teaching materials (85.8%) and self-time-planning (77.4%), but teachers indicated accessible lecture by Powercam (74.1%) and unattractive teaching style (69.6%). Interestingly, only 29.2% of students agreed with the factors of accessible lecture by Powercam and 45.5% of teachers agreed with the unorganized teaching materials.

Discussion: The discrepancy between teachers’ and students’ perspectives regarding SNA does exist. In the era of rapid knowledge expansion, even with recently-developed technology-assisted instruction, teachers should prepare well before class, provide logical and concise teaching materials, and introduce high-level thinking and problem-solving competencies during class to earn satisfactory student attendance rate.

Conclusion: The value of classes is not only knowledge-delivery but also problem-solving. To make students come back to the classes, teachers should be well-prepared. A concise lecture along with organized teaching materials is more helpful and efficient, which retains longer in students’ mind and gains higher student attendance rate than Powercam.

#8N1 (1725)
Take-home message: Our studies highlighted the gap between students’ and teachers’ opinions on SNA. To attract students’ attention and call them back, teachers should prepare extensively before class, listen to the students, and realize and provide what students really need, in addition to technology-assisted instruction.

#8N2 (3083)
Video-conferenced classrooms: Unintended consequences of connectivity

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Background: The implementation of video-conferencing has become a critical tool in medical school facilitation of teaching and learning, particularly in a distributed-education model. Although this technology provides access to education and experience without time or distance limitations, increased remote attendance results in fewer learners physically attending class.

Summary of results: Video-conferenced attendance increased from 21.86% in 2014 to 43.23% in 2016. Residents shared diverse explanations for online viewing including service obligations, parking and gas expenses, travel time, and a desire to multi-task. Faculty expressed frustration at declining attendance citing full participation as a necessity for engaging and interactive educational sessions.

Discussion: An increasing number of residents are choosing webcast over live attendance, determining that conveniences of time and money supersede the educational benefits of in-class participation without a clear understanding of the impact on their learning. Additionally, these choices are constraining faculty’s ability to foster engaging learning environments.

Conclusion: Although video-conferencing was initially offered to benefit residents practicing at distributed sites, gratuitous usage has called into the question the value of continuing to offer such costly technology. Over-reliance on remote viewing may be diminishing the quality of education faculty can provide.

Take-home message: Videoconferencing in medical education provides savings in time and money for learners but comes at a cost to organizations, faculty, and the learning environment. Medical schools should utilize evidence-based teaching and learning strategies to determine if learner-driven technological change is truly in the best interests of education.
**#8N3 (1365)**  
eLearning Module + Active Learning Matches  
Performance of Live Lecture for basic EKG Knowledge and Skills  

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**Background:** eLearning methods have been eschewed due to the reported lack of student engagement. Combining active learning sessions with eLearning is one proposed method of increasing student engagement. The complex and difficult topic of interpreting EKGs provides an opportunity to compare this teaching modality with live face-to-face lecture.  

**Summary of work:** 98 physician assistant students were randomly assigned to attend an hour-long live lecture on EKG basics, or given an hour to complete the identical material (and slides) in an eLearning module. All students came together for an hour-long active learning session immediately afterward. Pre and post quizzes were administered.  

**Summary of results:** Students who completed the eLearning module performed similarly on the pre and post quiz as did the students who participated in the hour-long live lecture. Post-quiz scores of the eLearning group were 3.4 points higher than the live lecture group, but not enough to be statistically significant.  

**Discussion:** Both groups only had one hour of EKG information before participating in active learning and achieving the same quiz scores. eLearning modules afford students a personalized experience by accessing the information at their own speed and chosen length of time without impacting course cost and possibly increasing academic performance.  

**Conclusion:** Combining an eLearning module with an active learning session for teaching the basics of EKG interpretation results in similar learning outcomes and student performance as using a live face-to-face lecture and active learning session.  

**Take-home message:** eLearning modules are a valid method of providing EKG education that rivals the delivery of information in a live delivery format. eLearning for EKGs can free up time in the classroom to provide more active learning experiences while in the classroom and in the presence of a subject matter expert.

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**#8N4 (1953)**  
Can lecture recordings provide input to problem-based and self-directed learning?  

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**Background:** In Problem-based Learning lectures play small roles in knowledge construction of students. The staff has an aversion to lecture recording as it will overrate the importance of lectures. However the students request for recordings, stating that it is common practice in higher education and only relevant lectures should be given.  

**Summary of work:** A mixed research approach is taken, organising focus groups (students and staff) to investigate expectations and (dis-)advantages. Usage data are collected based on questionnaires and logging by the server. The analysed data, the found patterns and irregularities have been discussed with focus groups of students to support our interpretations.  

**Summary of results:** The students use the recordings to complement their physical presence for example to complete and check notes, to return to difficult concepts or explanations. The students appreciate the recordings. The majority accessed the recordings, the access time varies heavily and (provisional) results show several groups based on specific usage characteristics.  

**Discussion:** The approach enables linking usage groups with attitudes and study behaviour. The shown behaviour watching recordings will be consistent with behaviour in other settings. The remaining part of the pilot will focus to more insights in these profiles and to investigate the possibility (desirability) to pinpoint it to individuals/groups.  

**Conclusion:** Belonging to a specific group/profile uncovers information about students’ self-directed learning. Uncertain students can spend too much time watching recordings. This endangers other learning activities, which in PBL contexts are important for an active construction of knowledge. The shown behaviour viewing recordings provides opportunities to provide student or group feedback.  

**Take-home message:** The introduction of innovative technology or procedures generates often resistance. By putting focus on expectations, (dis-)advantages and by involving the different stakeholders (including students) unforeseen opportunities can be found. Whether these opportunities justify an implementation or not, can be answered by finishing the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis.
A just-in-time teaching approach to the 'Diabetes Acute Care Day' flipped classroom model improves medical students' participation and diabetes prescribing skills

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Background: To evaluate a novel pedagogical approach to a 'Diabetes Acute Care Day' for final clinical year medical students. 'Flipped classroom approach' with four weeks online pre-access to nine micro-lectures and a quiz. Just-in-time (JiTT) teaching approach was used. Online usage statistics and online quiz performance was monitored during the 4 weeks.

Summary of work: Students invited to email the single point that they found difficult or confusing in advance of the day before JiTT learning strategies with an interactive case-based lecture quiz using peer instruction with novel classroom response system called Yet Another Classroom Response System (YACRS) followed by small group prescribing skills workshops.

Summary of results: 192 students participated. 79% described overall satisfaction for the flipped classroom approach as very satisfied or satisfied. Mean preparation time was 119 versus 92 minutes (p<0.05). 89% versus 69% viewed the micro-lectures (p<0.05) with a greater unique views (973 versus 623, p<0.05), and total views (686 versus 1660, p<0.05).

Discussion: Paired analysis confirmed an improvement in mean prescribing skills assessment scores confidence scores from 47.6% to 87.3% (p<0.001). Final prescribing assessment scores were higher than previous year (p<0.05).

Conclusion: Evaluation underpinned by Kirkpatrick model using survey instrument, online usage statistics and diabetes prescribing skills assessment using authentic prescribing charts was compared to the previous year that did not use JiTT.

Take-home message: This work described a targeted curricular development of acute diabetes care in the undergraduate curriculum by developing the flipped classroom approach with JiTT. This approach appears to be an effective way to improve participation and teach diabetes prescribing skills to medical students.
#8O Short Communications: Assessment
- Final Exam

#8O1 (1387)
Organisation of a high-stake assessment in surgery for final year medical students

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**Background:** Final year examination in medical school is the last professional assessment before medical students proceed to internship as practising doctors. At CUHK, final year examination consists of two parts – medicine and surgery. Surgery examination covers disciplines including surgery, orthopaedics, radiology, and anaesthesia and intensive care.

**Summary of work:** The final surgery examination is a high-stake examination based on a well-verified blueprint. The whole examination is divided into three parts: written examination, OSCE, and clinical short-case examination with real patients. Passing the examination means the medical students would have acquired the necessary knowledge and competencies of being safe interns.

**Summary of results:** The scope of surgery examination includes (1) the use of high-quality, standard-set MCQ items; (2) the use of OSCE stations to test multi-facet tasks by well-trained simulated patients and assessors; and (3) the use of patients with real surgical pathologies in clinical examination to test the relevant clinical examination skills.

**Discussion:** Although the final surgery examination is extensive and prolonged (total of more than 7 hours of examination time), it allows a fair and comprehensive assessment of the knowledge and clinical competencies of the medical students. A similar approach is also used in licensure examination in Hong Kong.

**Conclusion:** Generally, the performances of medical schools in national examination are in line with their accreditation status.

**Take-home message:** Final surgery examination is meant to be intensive. Multiple approaches are required to allow a fair assessment of the standard of graduating medical students.

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#8O2 (2434)
Performances of Indonesian Medical Schools on National Examination based on the Accreditation Status

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**Background:** In order to assist medical schools to identify their strengths and weaknesses, the National Committee for Indonesian Medical Doctor Competency Examination has provided annual feedback for each medical school. Among various aspects included in this feedback is the performance of medical schools based on the accreditation status.

**Summary of work:** Two annual feedbacks have been produced. The first annual feedback involved 65 medical schools based on 4 examination periods (August and November 2014, February and May 2015), while the second annual feedback involved 71 medical schools based on 4 examination periods (February, May, August and November 2016).

**Summary of results:** There are 3 accreditation status, A, B, and C, whereas the A is the highest status. In the first annual feedback there were 14, 32, 19 medical schools with A, B, C accreditation respectively. In the second annual feedback there were 19, 30, 22 medical schools with A, B, C accreditation status respectively.

**Discussion:** In the first annual feedback, medical schools with A accreditation perform better in MCQs and OSCE than medical schools with B and C accreditations (mean score and pass percentage). Medical schools with B accreditation perform better than those with C accreditation. These findings are similar in the second annual feedback.

**Conclusion:** Generally, the performances of medical schools in national examination are in line with their accreditation status.

**Take-home message:** Accreditation process observe various aspects from input, process and output. Meanwhile the national examination focuses on the output. Application of accreditation indicators may contribute to the performance in national examination.
#8O3 (2537)
The Licensure Exam; new avenues to enhance quality of medical education in Ethiopia

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Background: The Ministry of Health launched the National Licensing Exam for health professionals in 2015 in response to growing concerns about quality of medical education. The examination helps to verify whether graduates have acquired the minimum competency required for entry-level practice. It also provides feedback on quality of educational programs.

Summary of work: Exam blueprints were developed using results of task analysis studies. Higher-order single best answer questions were developed and reviewed by trained subject matter experts. Standard setting workshops were conducted to determine pass/fail cut-off points. Written exams were administered, scored, analyzed and reported. Preparations are underway to introduce the practical exam.

Summary of results: Nearly 200 medical educators were trained from medical schools across the country on how to write high-quality exam items. Over 4,000 medical graduates took the written exam and pass rates ranged from 40% to 60% across exam forms. Post-examination analysis revealed optimum difficulty level (55%-65%) and acceptable reliability coefficients (82%-92%).

Discussion: Exam results were notified in the presence of state ministers of both Ministries of Health and Education, academic leaders and other stakeholders. After receiving feedback, institutions conducted self-assessment of training programs. Consequently, academic leaders gave attention for faculty development efforts with emphasis on assessment to improve quality of medical education.

Conclusion: The government’s commitment to use the licensure exam program as a platform to enforce educational standards completes the educational quality assurance loop. While the licensing exam is at its infancy, it is reinforcing efforts to improve quality and relevance of educational programs.

Take-home message: The licensure exam could serve as a powerful tool to enforce educational standards in resource-limited settings with appropriate engagement of relevant stakeholders especially policy makers.

#8O4 (1832)
Variation in Stringency and Leniency of Examiners in Surgical Final Examinations

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Background: Examination boards expend a great deal of effort ensuring that final clinical examination results have been awarded fairly and reliably. Reliability depends on a number of factors including inter-examiner variation, and examiner fatigue. Such factors may affect the marks awarded independent of the candidates' grasp of the subject.

Summary of work: A retrospective analysis of University of Malta final year medical students’ surgical examination results from June 2016 was performed to analyse whether examiners’ stringency varies over time during the exam. The study also explored inter-examiner marking tendency variation based on gender, age, training in examining candidates, professional specialty and rank.

Summary of results: 39 examiners examined 104 candidates over 3 days. Leniency increased as time progressed on each day with no differences attributed to examiner gender (p=0.64), age (p=0.70), rank (p=0.385), nor examining in one's own specialty versus another (p=0.98). Significant differences in marking tendencies of examiners from different specialties (p=0.002) were noted.

Discussion: Examiner fatigue describes a decline in examiners' performance with time which may cause systematic error, this was reflected here as an increase in leniency. The study is limited in that paired examiners might influence each other; and candidate performance may vary in different areas irrelevant of examiner demographics or fatigue.

Conclusion: The study showed that examiner fatigue leads to an increase in examiner leniency. Moreover, specialists from different fields showed statistically significant differences in their marking tendencies with anesthetists (mean mark 5.69) being the most stringent, and cardio-thoracic surgeons (mean mark 6.87) being the most lenient.

Take-home message: The results may be utilised to ensure that clinical examinations are more reliable by mitigating the effects of examiner fatigue through having increased examiner changeover. Moreover, specialists from different fields can be paired in such a way so as to ensure a level playing-field for all the candidates.
#805 (744)
Intended and Unintended Consequences of National Licensing Examination: perspectives from Indonesian context

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**Background:** National licensing examination (NLE) is used as one of the methods to quality assures medical graduates in Indonesia since 2006. While it is considered as an approach to better improve patient safety and lead to better assessment practice, how NLE impact the medical education in Indonesia is still unknown.

**Summary of work:** A qualitative approach was conducted to understand the consequences of NLE from stakeholders’ perspectives. A sampling framework selected medical schools based on regions, accreditation status, and ownership, to capture characteristics of Indonesian context. Interviews and focus groups were conducted with medical schools’ representatives (deans/ programme directors), students and teachers.

**Summary of results:** Participants perceived that the NLE brought improvement in education practice, especially in curricula and assessment system. Unintended consequences of NLE, which were considered predictable, were related to pressure on medical schools and failed students’ problems. However, some unpredictable consequences related to competition and collaboration were also found.

**Discussion:** Intended consequences were related to how medical schools, teachers, and students, adapted with changes brought by the NLE. Predictable intended consequences were prominent: achieving a common standard in education and clinical practice. Some unintended consequences were unpredictable, whilst this does not mean these consequences were perceived as negative impact.

**Conclusion:** Intended and unintended consequences of are contextual. Indonesia, which most schools are still developing, found that the NLE has a significant role in medical education. Positive consequences, whether it is intended or unintended, were mostly found and might open opportunities for improvement.

**Take-home message:** NLE is a topical yet controversial issue in medical education, with limited evidence. This study presents a number of positive consequences in Indonesian context and helps frame further longitudinal studies, to understand the consequences in graduates’ clinical performance and its relation to patient safety.

#806 (823)
Using Automated Item Generation in a Large-scale Medical Licensure Exam Program: Lessons Learned

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**Background:** On-demand testing is commonplace with many large-scale testing programs as it affords greater flexibility in session scheduling for candidates. However, robust and large item banks, usually predicated on an increase in committee-based item writing efforts, are needed to support routine retirement and replenishment of items available for assessment.

**Summary of work:** In an effort to increase its item banks, the Medical Council of Canada (MCC) has been exploring automated item generation (AIG) for several years. AIG uses computer technology to generate test items from cognitive models, i.e., representations of the knowledge and skills that are required to solve any given problem.

**Summary of results:** The quality of AIG items is at least equal, and in many instances superior, to that of traditionally written MCQs, based on difficulty, discrimination and information. Ninety-six percent of AIG items piloted in the spring, 2016 MCCQE Part I were retained for future operational scoring based on pre-defined inclusion criteria.

**Discussion:** AIG is appealing in that it offers a highly efficient process through which hundreds of items can be generated from cognitive maps within minutes. AIG has thus permitted the MCC to better address shallow areas of its pools as well as produce items that yield stronger distractors.

**Conclusion:** AIG has proven beneficial to the MCC from a number of perspectives. It has provided a framework for the systematic creation of plausible distractors that yield added value from the perspective of tailoring diagnostic feedback for remedial purposes. It has also contributed to the enhancement of our test development process.

**Take-home message:** AIG has produced anticipated as well as unanticipated positive impacts for the MCC, including: (1) the near instantaneous production of large quantities of high quality items; (2) improvement in item writing capabilities and; (3) the potential for more accurately tailored diagnostic feedback to the learner.
#8P1 (496)
Monitoring Clinical Competency Committee's Shift in Rating Stringency over Time

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Background: Since December 2013, biannual assessments of Milestones have been potentially useful for investigating residents' trajectories of performance levels, exploring program effectiveness, and detecting struggling residents for remediation. The validity of longitudinal data depends on the consistency in rating that the Clinical Competency Committee (CCC) has applied over years.

Summary of work: Analyses were based on initial (December) Milestones ratings from Emergency Medicine, Radiology, and Urology residents in their first year of training in 2013, 2014, and 2015. Using a random-coefficients regression model, the program-level average score was regressed on year of assessment to see if programs maintained rating consistency over time.

Summary of results: No evidence was found for increased leniency or severity were contained within a half unit of the rating scale. On the majority of sub-competencies, the CCCs maintained their rating consistency over years.

Discussion: The results suggest that CCCs tend to maintain rating consistency over years or become more stringent in rating on some sub-competencies. The latter changes may be more substantive than they appear, because they may have potentially counteracted a statistical tendency towards regression to the mean.

Conclusion: These results are consistent with the hypothesis that CCCs have sensed the utility of accurately rating residents when they enter the program. As such, these longitudinal results are consistent with validity evidence for the Milestones. This approach can be generalized to monitor any shift in rating consistency for any specialty.

Take-home message: Nationally, the CCCs appear to maintain consistency in Milestones rating processes over time, which contributes to the validity argument for the residents' trajectory data. The analytic approach in this study can be readily applied to other specialties to monitor the validity of CCCs' rating processes.
Engaging Preceptors in Competence Assessment in Medical Residency Program

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Background: Competence training is essential for professional qualification and improve the quality of integral health care. But it is a great challenge, since often preceptors, despite having recognized technical expertise, may present fragility in their pedagogical strategies and assessments approach to optimize learning.

Summary of work: We held a workshop on student's competency assessment by the DOPS (direct observational of procedural skills) involving preceptors and faculty from the endoscopy digestive service. It took 30 hours long and was formally certified by the institution. Active teaching and learning methodologies were used to achieve the learning objective proposed.

Summary of results: The workshop involved 71% of the endoscopy service's preceptors/faculty. Reflections on the importance of performing resident's competence assessment came with a lack in definition of core competencies for endoscopic residents. Besides that, the participants built collectively the standards of each DOPS domains and were asked to begin resident's assessment.

Discussion: Most guidelines for endoscopy training include a number of procedures to be performed. However, this strategy does not guarantee competence. The competency assessment of the residents is still a challenge because need preceptor and faculty's development.

Conclusion: The workshop was considered a fundamental initiative to improve assessment expertise and motivate them to plan new learning strategies. The active methodologies and feedback provided during the workshop were also positive aspects reinforced by participants.

Take-home message: The training of teaching staff for resident's assessment allow a greater team integration, being an important moment of collective construction for the standardization of residence program content, teaching strategies and skills needed in the endoscopy fellowship.

Creating a consistent framework for assessment and documentation of performance across the continuum of pediatric medical education

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Background: As learners progress through the USA medical education system they encounter different frameworks for assessment at different stages of their training. This makes it challenging for them to grasp what needs to be learned, systematically track their progress and document and present their progression using a portfolio.

Summary of work: We created a framework for performance in pediatrics by cross tabulating and organizing under RIME (Reporter, Interpreter, Manager, Educator) the essential content of AAMC Core EPAs, ACGME Competencies, Pediatric Milestones, and Pediatric EPAs for residency. Students and pediatric interns piloted the framework and used it to create e-portfolios.

Summary of results: Our learners assembled artifacts and narrative relating each element of the framework to 11 EPAs that cover all areas of pediatric clinical care. They created showcase examples of their best work in these broad areas of pediatric care and illustrated and highlighted their ability in all the framework's elements.

Discussion: Creating a common framework that spans the UME/GME continuum allows learners, beginning in medical school and continuing into residency, to gather and accumulate evidence/data about the progressive development of their skills in each element of the framework and their abilities to integrate skills to care for different types of patients.

Conclusion: A longitudinal approach and support for developmental progression in medical education requires a consistent framework for data/evidence collection and assessment/entrustment decisions. The clinical focus of EPAs may change as learners progress from medical school and residency into fellowship and/or practice, but the framework must remain the same.

Take-home message: Changing frameworks for learning makes it difficult to develop an understanding of the scope of practice to be mastered. We need a clear and consistent framework for medical education and practice that provides learners and practitioners a roadmap for developing, maintaining and documenting performance.
#8P5 (301)
The International Council of Ophthalmology 360-degree assessment tool: development and validation

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Background: 360-degree assessments are recommended for evaluation of interpersonal and communication skills, professionalism, and some aspects of patient care and system-based practice. No such tool has previously been developed for ophthalmology. The purpose of this study was to create a valid, internationally applicable, ophthalmology specific 360-degree assessment tool.

Summary of work: Individual 360-degree evaluation items from a literature review were catalogued according to different groups of assessors by a panel of international trainers of ophthalmology residents. A second panel of international ophthalmic educators reviewed its international applicability and appropriateness. A Likert-type scoring scale of frequency was included.

Summary of results: A 360-degree assessment tool consisting of four sets of questions to evaluate Professionalism, Interpersonal and Communication Skills, and some components of System-based Practice by peers, co-workers, patients, and faculty was developed. The panel of international experts considered it appropriate and applicable in different settings, countries and cultures.

Discussion: To our knowledge no such tool to evaluate resident competency has previously been created for Ophthalmology. We also do not know of 360-degree assessment tools developed to be internationally valid and applicable. We envision it to be used to give feedback to the resident and develop a plan for improvement.

Conclusion: The ICO-360 assessment tool can be used internationally for giving formative feedback based on the opinions of the full spectrum of people (faculty, peers, coworkers, and faculty) that interact with Ophthalmology residents.

Take-home message: 360-degree assessments offer the advantage that evaluators representing the full spectrum of people with whom physicians interact provide a more complete picture of the resident’s behaviors, especially those behaviors that residents do not show in simulated or proctored observed assessments.
#8Q1 (1724)
Professional Identity Formation: Two medical schools introduce first-year students to the Professional Identity Essay (PIE)

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Hyuksoon Song, Georgian Court University, New Jersey, USA
Adina Kalet, New York University School of Medicine, New York USA

Background: An evidence-based approach to understanding ethical medical Professional Identity Formation (PIF) is needed as part of medical education’s intensified focus on core elements of professionalism that cannot be assessed through traditional cognitive/behavioral means (self-assessment) or observed behavioral competencies (Cooke et al, 2010).

Summary of work: First-year students from two medical schools (N=257) completed the Professional Identity Essay (PIE) which identifies stages of professional development, and the Defining Issues Test (DIT2), a validated measure of moral reasoning. A key DIT2 score (N2) reflects the proportion of time that students use universal ethics justifications for dilemmas.

Summary of results: Professional Identity Essay: Distributions of scores were similar for School 1 (public) and School 2 (private), Chi-square p = .969; they were distributed in four groups from Stage 2-3 to Stage 4 (externally to internally defined). Defining Issues Test: (DIT2) scores indicated students’ strong preference for post-conventional (universal ethics) thinking.

Discussion: An evidence- and narrative-based measure of professional identity formation is a feasible part of a medical professionalism curriculum for entering medical students with score distributions similar to students in medical professionalism curriculum for entering medical professional identity formation is a feasible part of a medical education and faculty development and seek measurements that are valid both for formative and summative assessment purposes. These measures are acceptable and intriguing to our students and may provide a foundation for and complement to competency-based professionalism curricula.

Conclusion: If professional identity formation is a central goal of medical education, we must understand its advancement, humanism, social learning, and other cross-sectional data.

Conclusion: The explicit teaching of professionalism and emphasis on professional behaviors will remain important. But Chinese medical schools should institute reforms to bridge the gaps and to facilitate development of these competencies within the medical education and faculty development programs as well as in clinical milieus where student learning occurs.

Take-home message: Medical education needs to be responsive to changes in professional identity being generated from factors within medical student experiences and within contemporary society. Medical educators should pay more attention to the outcomes from the investigation of professional role formation and synthesize the relevant factors in curriculum design.
Role models for professional identity formation in undergraduate education: who and how?

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Luis Patrao, University of Beira Interior, Covilha, Portugal
Isabel Neto, University of Beira Interior, Covilha, Portugal

Background: Role modeling is a component of medical education which deeply influences professionalization. A role model is defined a standard of excellence to be imitated. Understanding who medical students’ role models are and how they behave is a key strategy to work on faculty development to support professional identity formation.

Summary of work: A questionnaire was created aiming to identify medical students’ role models, their perspective on expected behavior and its change from the first to the last clinical year. It addressed topics related to clinical practice and attitude towards teaching. Medical students from third to fifth year (n=74) answered the survey.

Summary of results: Most of the students reported that role models were important for their professional identity formation (89.2%). The main role models were the consultants (58.1%) and university tutors (17.6%). Students recognized the most important characteristics of their models as: clinical reasoning and knowledge, effective communication with patients and other health professionals.

Discussion: In the present study, students identified desired behaviors, attitudes and characteristics that role models should have. This analysis was used to design strategies to increase doctors and tutors awareness on being a role model, support strategies to an effective approach and to generate reflection on what can be improved.

Conclusion: Students recognized role models that guide their process of professional identity formation. Knowing who students’ role models are and how they perform is useful to work with faculty in order to improve awareness of their participation and performance as role models.

Take-home message: Role modeling is very important in the development of medical professional identity. Its influence should be objectively identified and addressed to stimulate professional identity development.

Learning to be. The influences of education on professional identity formation, a narrative inquiry

Elizabeth Armitage-Chan, Royal Veterinary College, Hatfield, UK

Background: A well-developed professional identity imparts emotional resilience and prevents identity dissonance when the experiences of a novice clinician are discordant with their professional values and priorities. The formation of an inappropriate professional identity for the individual’s ultimate career environment makes professional goals unachievable and may increase perceptions of failure.

Summary of work: A narrative inquiry was performed to explore participants’ perceptions of their own identity formation. 12 veterinary graduates discussed their work-related experiences in an 8-month closed social media group. Stories were analysed using critical discourse analysis, generating major themes, and through the construction of narrative to deepen understanding of identity formation.

Summary of results: Learning attitudes influenced identity formation. Participants demonstrating lifelong learning, and valuing learning outside their chosen specialisation, used graduate experiences (euthanasia, “sole charge”) to form a professional identity incorporating client relationships and wider stakeholders in patient care. Other participants, whose identity exclusively prioritised diagnosis and treatment, demonstrated frustration and career dissatisfaction.

Discussion: Participants most satisfied with their identity seemed to demonstrate growth mindset learning: learning through work and from wide-ranging environments. Contextual influences informed identity development. Other individuals demonstrated fixed mindset learning, perceived only “relevant” university teaching as valuable, underwent an identification process neglecting contextual influences and seemed dissatisfied in their identity.

Conclusion: Clinical education that fosters lifelong learning and the ability to develop in a variety of environments may better support graduate identity formation, resilience and emotional wellbeing. Role modelling identities beyond those prioritising diagnosis and treatment, and encompassing the priorities of the client, family and practice, is also likely important.

Take-home message: Attitudes to learning as a student, and early decisions taken to focus on narrow competences or maintain a wider perspective, appear to influence how novice clinicians use early career experiences to construct their identities.
#8Q5 (981)
Are we making a difference? What impact does cultural awareness curriculum have on students’ attitudes?
Second results from a longitudinal study

Janie Dade Smith, Bond University, Robina, Australia
Sally Sargeant
Shannon Springer

Background: To improve the health status of Indigenous Australians all health professionals work in a culturally safe way. Many initiatives are occurring in Australia to teach compulsory cross cultural education to health professionals. However there is little evidence that any of these programs have a long term impact on their practice

Summary of work: Since 2012 Bond University Medical School has been conducting a significant cultural awareness program, that includes cultural immersion. To measure the impact of these activities on student’s attitudes and behaviours we undertake a 5 year longitudinal study using a validated cultural awareness and cultural competence scale survey.

Summary of results: Initial findings (n=280) have revealed positive shifts amongst first and third year undergraduate medical students. The most notable differences occurred within knowledge acquisition, retention and dissemination (items 18–20, p<0.001). Institutional and curricular influences also showed positive directions after the cultural immersion [4].

Discussion: These initial findings are very pleasing and indicate that the cultural awareness and cultural immersion program is having an impact.

Conclusion: Cultural immersion has a great potential to elicit positive shifts in attitudinal and knowledge related aspects of cultural awareness in the early stages of a medical curricula.

Take-home message: Cultural education and immersion can impact on attitudinal change and resulting medical practice. Sharing this information will assist others who are teaching into these programs.

#8Q6 (359)
Are There Differences Between Religion and Diversity Perceptions in Medical Students?

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Olga Matus Betancourt, University of Concepcion, Concepcion, Chile
Cristhian Pérez Villalobos, University of Concepcion, Concepcion, Chile
Peter McCall Calvo, Univeristy Andres Bello, Viña del Mar, Chile
Nancy Navarro Hernández, University La Frontera, Temuco, Chile
Ivone Campos Cerda, University of Concepcion, Concepcion, Chile

Background: Health educational approaches are increasingly comprehensive. However, there are few studies that focus the perception of diversity in health which is important considering, that health professionals require skills to empathize with a diversity of people.

Sponsored by FONDECYT Nº1170525.

Summary of work: Quantitative, non-experimental, cross-sectional, relational scope study. 110 first year medical students, average age 19.3. After informed consent process, Scale of Educational Inclusion (SEI) was applied. It is composed by 42 items, grouped in 6 subscales. Descriptive statistical analysis, T-test, Pearson’s R, Cronbach alpha reliability were made in SPSS 21.0 software.


Discussion: It is important to consider more dimensions to understand inclusion and diversity. Recent studies have focused on considering disability as the main dimension of inclusion. However, acceptance of diversity should consider other dimensions such as those included in this study.

Conclusion: The differences between students who profess/no profess religion show that the students who profess could be more tolerant in the perception of diversity. However, it is necessary to do qualitative research to understand the factors that influence in the religious or non-religious beliefs.

Take-home message: It is important to consider diversity in health students learning process.
Bioethics in practice: a participatory approach to design a just-in-time learning mobile application

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AKU Bioethics App Research Team, Aga Khan University, Karachi, Pakistan

Background: In health professions education, if bioethics is taught in a didactic and theoretical manner, students find translation of theory to practice challenging. Interactive, context-specific and application-based knowledge and skills are critical for ethical decision-making in healthcare settings. This could be addressed through just-in-time, in-practice teaching and learning approach.

Summary of work: We have set out to develop a mobile application (app) to provide just-in-time teaching and learning for nurses, residents, medical and nursing students by bioethics teachers. Three participatory app design workshops were conducted with 10-15 stakeholders in each workshop. The workshops focused on desired app functionalities and features.

Summary of results: Bioethics teachers were interested in providing content through multiple modalities, including live-chat, video, audio and text. Medical and nursing students included a blog in their proposed design to share and discuss ethical experiences. Residents recommended a ‘call-an-expert’ feature to guide them with ethical decision-making.

Discussion: While there was agreement by all stakeholders on most features, a significant difference was highlighted between residents’ expectations of utilizing the app for decision-making, given their day-to-day role, and other end-users who desired more of a conceptual and contextual learning environment.

Conclusion: An interactive just-in-time teaching/learning app for users at various stages of training or practice working in healthcare teams must be designed keeping needs of stakeholders in mind. Design of the app should be flexible, nimble and responsive. Just-in-time approach should also address feasibility of access to teachers at all times.

Take-home message: The participatory design approach to developing a mobile app for just-in-time teaching of bioethics is critical to a user-centered, relevant and useful end product. Such an app is more aligned with current methods of learning and can be extrapolated for other disciplines.

Take-home message: Even though information regarding the consequences of unprofessional behavior was officially presented to all medical students, unprofessional behavior was still commonly found throughout the academic year. Reviewing medical students’ Facebook may be an effective tool to identify unprofessional behavior earlier and help prevent further unprofessionalism.
#8R3 (201)
Exploring the effectiveness and impact of prescribing error feedback in an acute hospital setting

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Kevin Hardy, St Helens & Knowsley Hospitals NHS Trust, Whiston, UK

**Background:** Prescribing errors (PEs) occur frequently in hospital settings. Further interventions to improve prescribing are needed with feedback one potential intervention to develop desirable prescribing behaviours. Doctors have reported limited prescribing error (PE) feedback previously whilst studies exploring the impact of feedback on prescriber behaviour, or in hospital settings, are limited.

**Summary of work:** Prescribing was audited at the start and end of a three-month period for control and intervention group doctors who received pharmacist-led PE feedback. Twenty-three doctors were interviewed individually to explore the impact on their prescribing following feedback on different types of PE. Interviews were analysed thematically using a framework approach.

**Summary of results:** Mean PE rates were significantly lower (23.8%, p<0.05) for the intervention group. Educational outcomes were reported by doctors who were more engaged with prescribing. Feedback facilitated reflection, increased self-awareness and informed self-regulation of prescribing behaviour. Information and feedback-seeking behaviour was reported with prescribers also reporting greater situational and error awareness.

**Discussion:** Feedback supports prescribing practice with reported changes in prescriber behaviour resonating with non-technical prescribing skills. Prescribers adapt their behaviour depending on the prescribing conditions, with feedback developing the self-awareness and situational-awareness to do so through reflection-in-action. Training in these skills and understanding of cognitive errors could enhance prescribing education.

**Conclusion:** Pharmacist-led PE feedback works. A model of prescribing is proposed with non-technical skills activated in response to error-provoking conditions. These findings have implications for prescribing pedagogy to make it a more contextualised educational process, supporting development of non-technical skills alongside any technical, and knowledge-based prescribing competencies.

**Take-home message:** Constructive PE feedback has positive effects on prescribing with prescribers using more non-technical prescribing skills in response to feedback to self-regulate their prescribing. Development of non-technical skills should be explored to form part of a more holistic prescribing curricula.

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#8R4 (2934)
Medical errors recognition among fourth-year to sixth-year medical students during clinical practice in Surin Hospital

Sunphat Paireepinas, Surin Clinical Medical Education Center, Surin, Thailand
Supapan Witthayanuwat

**Background:** Medical errors are major problem among doctors and medical students. This problem impact patient safety and suing for malpractice. Medical students during studying need good medical skills with safe practice. Teaching them right is challenging. Recognizing this issue is essential in medical education.

**Summary of work:** Cross-sectional survey using questionnaires was done in 82 forth-year to sixth-year medical students at Surin Hospital in 2017. Questions included medical error recognition, error types, reminder and who students need for their error correction. They were also interviewed their suggestions on how to teach and feedback on their medical errors.

**Summary of results:** Most of students(96.3%) recognized their medical error during practice by themselves(49.4%) and by others(50.6%). Most common error types included procedural error(96.2%), lacking universal precaution(78.5%), and contamination(63.3%). Most students(83.5%) recognized more than one type of errors. They wanted feedback and relearning from no one(6.4%), senior(51.3%), and staff or senior(42.3%) secretly.

**Discussion:** Most of medical errors are preventable and depend on experience. Majority of teaching medical knowledge is lecture, and experiential curriculum is a majority of skillful clinical practice. Medical staff is a main consultant for medical students, and medical senior is secondary, however, students are more familiar with senior.

**Conclusion:** Students needed feedback and they preferred relearning from both staff and senior. A focus on critical procedure is suggested for improving curriculum. Training medical senior to help teaching students is a good alternative. Teachers need to pay attention on teaching procedural skills.

**Take-home message:** Students need experiential curriculum for increasing their procedural skill to do less harm to the patient.
Factors predicting a change in diagnosis in patients hospitalized through the emergency room

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Stefan Schauber, University of Oslo, Faculty of Educational Sciences, Centre for Educational Measurement, Oslo, Norway
Juliane Kämmer, Max Planck Institute for Human Development, Center for Adaptive Rationality & Charité Universitätsmedizin Berlin, AG Progress Test Medizin, Berlin, Germany
Thomas Sauter, Inselspital, Department of Emergency Medicine, University of Bern, Switzerland
Tanja Birrenbach, Inselspital, Department of Emergency Medicine & Inselspital, University of Bern, Department of General Internal Medicine, Bern, Switzerland
Wolf E. Hautz, Inselspital, Department of Emergency Medicine, University of Bern, Switzerland

Background: Diagnostic errors contribute substantially to preventable medical error. The estimated rate varies from below 5% in ‘visual’ specialties to around 25% in contexts like the emergency room. It is currently unknown which factors (patient, physician, context) are most important in determining error and should be attended to in medical education.

Summary of work: In a single centre observational field study we collected diagnostic decision data for patients admitted to internal medicine wards from the emergency room. Change of lead diagnosis and physician's confidence were the primary dependent variables, which we aimed to model through 40 predictor variables.

Summary of results: 754 patients were included, in 17% a change in diagnosis was observed. Patients with a change in diagnosis stay significantly longer at the hospital (p=0.01) and die twice as likely (p=0.04). Important predictors include patient gender and physicians rating of how “prototypical” the patient presents.

Discussion: Changes in diagnosis observed from the emergency room to discharge from internal medicine wards is determined more by factors rooted in the patient and the context then by factors inherent to the physician. How to deal with influential contextual variables may potentially be taught.

Conclusion: Previous studies of diagnostic error are often limited to either cognitive or contextual factors. The aim of this study was to identify the relative importance of factors rooted in patients, physicians and the context to inform educational interventions with the highest potential effects.

Take-home message: There are factors predicting change in diagnosis and thus patient outcome. Knowing about and teaching those factors to future physicians is essential.
#8S  Workshop: What to do when OSCEs go wrong! Using meaningful psychometrics to support recognition, remediation and decision making in OSCE ‘dilemmas’ (91)
Location: Room 203a

Richard Fuller, Leeds Institute of Medical Education, Leeds, UK
Matthew Homer, Leeds Institute of Medical Education, Leeds, UK
Jennifer Hallam, Leeds Institute of Medical Education, Leeds, UK
Godfrey Pell, Leeds Institute of Medical Education, Leeds, UK

Background: The OSCE provides a robust, reliable and high quality assessment format for use in many professional discipline. The application of psychometric indicators to ‘assess the OSCE’ is increasingly routine, often using automated software. However, interpretation and decision making when quality markers are of concern is challenging, with consequences for students, faculty and institutions. Analysis will often reveal areas of dilemma – what should we do with poorly performing stations, examiner or site variation?

Who Should Attend: It is essential that all those who are responsible for the design, analysis and decision making in OSCEs have a good grasp of both the interpretation of psychometrics and approaches to remediation and improvement in the OSCE. All professional groups are welcome and we encourage participants to share their own experiences and dilemmas to each other workshop participants and facilitators – we are happy to advise where possible!

Structure of Workshop: This highly interactive workshop begins with a brief ‘refresher’ in interpretation of whole exam and station-level psychometric indicators. A series of advanced OSCE ‘problem cases’ will be presented and participants will analyse psychometric indicators, explore impact and propose solutions. Cases focus on challenging issues requiring complex decision making, including ‘extreme’ examiners at individual/group level, multi-site variation, stability of borderline groups and whether stations should be removed or remediated.

Intended Outcomes: For maximum benefit from the workshop, it is advisable that participants have some practical experience of OSCE quality measurement, including the use of borderline methods of standard setting.

Participants will gain confidence in the identification and analysis of poorly performing stations, undertake complex decision making on management and explore modelling of outcomes and consequences.

The workshop concludes with a summary of key actions and ‘top tips’ to help participants apply in their own OSCE assessments.

Level: Intermediate/Advanced

#8T  Workshop: Respecting the respective culture - Transferring concepts from one context to another (2674)
Location: Room 203b

Ming-Jung Ho, National Taiwan University of Medicine, Taipei, Taiwan & Weill Cornell Medicine-Qatar, Doha, Qatar
Elizabeth Kachur, Medical Education Development National and International Consulting, New York, USA
Bianca Schuh, Medical University of Vienna, Vienna, Austria
David Taylor, University of Liverpool, Liverpool, UK & Gulf Medical University, Ajman, UAE

Background: Although achieving global medical education standards has some benefits, cultural particularities should not be ignored. Medical education ideals and practices such as professionalism and problem-based learning vary across different cultures. Therefore, cultural factors must be considered in implementing a concept originating from a foreign context into another one. The aim of the workshop is to support medical educators in adapting foreign concepts to meet their local needs.

Who Should Attend: This workshop is interesting for those, who plan to tailor a new medical education concept to their local context.

Structure of Workshop: The workshop will start with a short introduction, comprising a conceptual framework, strategies and methods for adapting concepts to local needs, with case studies. Then, participants will work on a case scenario in small groups, either suggested by the participants or by the workshop facilitators. Using a guideline with pre-structured questions, each small group will design a project. The results will be shared in the large group afterwards.

Intended Outcomes: After the workshop, the participants will be able to: Describe the rationale why it is important to consider cultural particularities of the respective context, when adopting a concept; Identify cultural and contextual factors relevant for the implementation project; Identify possible challenges and critical success factors as well as practical strategies and methods to take cultural factors into account; Design projects for transferring concepts from one context to another.

Level: Introductory
#8U Workshop: Let's go mobile in medical education! An evidence based and practical approach to mobile learning (459)
Location: Room 204

Eeva Pyörälä, University of Helsinki, Helsinki, Finland
Colin Lumsden, University of Manchester, Manchester, UK
Teemu Masalin, University of Helsinki, Helsinki, Finland
Jussi Merennies, University of Helsinki, Helsinki, Finland
Saana Mäenpää, University of Helsinki, Helsinki, Finland
Heikki Hervonen, University of Helsinki, Helsinki, Finland

Background: The Manchester Medical School and the University of Helsinki are active in fostering mobile learning in medicine. The Manchester project has integrated iPads into clinical environment since 2011. The Helsinki project has incorporated mobile learning into biomedical studies since 2013 and is now fostering mobile learning in clinical studies. Both units have combined the flipped classroom model with mobile learning. This workshop provides an evidence-based and practical insight into incorporating mobile devices into health-care education.

Who Should Attend: The projects in Manchester and Helsinki have been participatory and collaborative processes with students, teachers and experts in ICT and higher education. We invite all those who are at the outset or in the middle of similar projects in their units to share experiences and learn from and with us. The workshop is targeted to all health-care professions, both at graduate and postgraduate level, specialist training and continuing professional development.

Structure of Workshop: The workshop is highly interactive and facilitates active learning. First, the participants take a web-based test and the research-based development projects in Helsinki and Manchester are presented and related to previous research literature. Then, the participants will be able to experiment successful practices developed in these projects, such as mobile devices in (1) note-taking, (2) PBL tutorials, (3) flipping the classroom, and (3) feedback and assessment. The workshop is concluded with a discussion.

Intended Outcomes: At the end of the course, the participants will be able to (1) Outline the principles of study use of mobile devices and recognize the support needed for students and teachers, (2) Describe how mobile devices can be incorporated into active learning strategies such as problem-based learning and the flipped classroom model of learning and in assessment, and (3) Start making an action plan for promoting mobile learning in their own units.

Level: Introductory/Intermediate

#8V Workshop: Philanthropy: The new frontier in medical education research funding (1531)
Location: Room 205

Robert Paul, University of Toronto, Canada
Nancy McNaughton, University of Toronto, Canada
Kerry Knickle, University of Toronto, Canada
Jeannine Girard-Pearlman, University of Toronto, Canada

Background: Funding for medical education research is becoming more challenging to obtain. Traditional governmental sources are becoming overstretched and as a result are unlikely to be able to meet the growing funding needs of this burgeoning area. Philanthropy is emerging as an important funding mechanism and as a supplement to traditional government sources. There is a fundamental lack of knowledge and skills amongst medical education leaders and researchers to meet this challenge.

Who Should Attend: This session is designed for faculty leaders, medical education researchers, administrators and centre leaders who face funding challenges and are interested in exploring philanthropy as a new competency for medical education research. We welcome participation from all learners who want to examine the role of philanthropy in the funding of their research centre and their research.

Structure of Workshop: This practical workshop is structured in two parts. Part 1 will be a didactic session describing the philanthropic cycle, the role of advancement officers, researchers and centre leaders in the philanthropic cycle and the three donor classifications most likely to support medical education research followed by a facilitated discussion. Part 2 will be experiential, providing participants an opportunity to explore the classic communication challenges faced by academics as they engage with donors and advancement professionals.

Intended Outcomes: Workshop participants will have the opportunity to: 1. Gain knowledge about the philanthropic cycle; 2. Recognize the relationship between advancement officers, leaders, potential donors and researchers in the philanthropic cycle; 3. Brainstorm about how to engage with advancement offices and potential donors; 4. Practice engaging with donors and advancement officers.

Level: All
#8W  Workshop: A different perspective on accreditation (1739)
Location: Room 209

Nesibe Akdemir, VU University Amsterdam, Amsterdam, Netherlands
Theanne Walters, Australian Medical Council, Canberra, Australia
Bas Schreuder, Royal Dutch Medical Association, Utrecht, Netherlands
Fedde Scheele, VU University Amsterdam, Amsterdam, Netherlands
Sarah Taber, The Royal College of Canada, Ontario, Canada

**Background:** Accreditation systems around the world are aiming for high quality residency training. Although the goals are quite the same, the means for achieving these goals are different. These differences can be described in models in which the role of the actors are different. Actors are regulators, specialist colleges or societies, teaching hospital boards, directors of training sites, supervisors and trainees. Their responsibility for the quality of residency training and their power vary across the globe.

**Who Should Attend:** Everyone interested in accreditation can attend the workshop, e.g. administrators, accreditors, program directors, supervisors and residents.

**Structure of Workshop:** We will introduce four models and each group will be invited to represent one of the models. Each group will be asked to address the following issues: What are the benefits and disadvantages of the model? What kind of consequences does the model have for the ownership of residency training? Are there aspects in this model which could enhance your system? After a small-group discussion, the group members will be invited to defend their model.

**Intended Outcomes:** This session will present how we can learn from opportunities and challenges of different accreditation models for residency training. At the end of this session, participants will be able to: Reflect on different models for accreditation of residency training; Identify strengths and weaknesses of different models; Describe complex accreditation systems in more generic models.

**Level:** Introductory/Intermediate

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#8X  Workshop: How to Build and Enhance a Health Professions Education Scholarship Unit at your Institution - A Workshop Sponsored by SDRME (314)
Location: Room 215

Maria Blanco, Tufts University School of Medicine, Boston, MA, USA
Sandy Cook, Duke National University of Singapore, Singapore
Steven Durning, Uniformed Services University of the Health Sciences, Bethesda, MD, USA
Anne McKee, King’s College, London, UK
Patricia O’Sullivan, University of California at San Francisco, San Francisco, CA, USA
Lara Varpio, Uniformed Services University of the Health Sciences, Bethesda, MD, USA

**Background:** The growth of educational scholarship in the health professions – together with expectations from accrediting bodies that medical school and academic health center faculty members engage in education-related research – demands that institutions build and sustain units for supporting educational research and innovation. However, local and national variability impedes the development of best practices for these organizational structures. Building on facilitator experiences and research, this interactive workshop examines the foundational principles that shape unit success.

**Who Should Attend:** This session is aimed at faculty members and/or administrators who are: (1) responsible for overseeing and advancing educational scholarship at their institution; (2) leading a health professions education scholarship unit at their institution; and (3) in the process of (or aspiring to) developing a health professions education scholarship unit at their institution. This session will also be of interest to educators and researchers who work with and/or work in health professions education scholarship units.

**Structure of Workshop:** First, presenters will give a brief overview of the Society of Directors in Medical Education Research (SDRME) mission and membership requirements. Second, two presenters will share findings about Health Professions Education Scholarship Units (HPESUs) from their international program of research. Third, participants will engage in a World’s Café activity to discuss challenges related to developing and sustaining HPESUs including: organizational structure, unit membership, leadership, strategies for advancing research, advocacy, and collective action.

**Intended Outcomes:** By engaging in this workshop, participants will be able to: (1) identify key components of an HPESU; (2) appraise strategies for building and/or sustaining such an educational research unit at their institution; and 3) devise strategies for evaluating unit effectiveness in different contexts.

**Level:** Intermediate/Advanced
#8Y Workshop: Standard Setting in OSCE: The Good, the Bad & the Borderline (1609)
Location: Room 216

Boaz Shulruf, University of New South Wales, Sydney, Australia

Background: The Objective Structured Clinical Examinations (OSCE) was introduced by Harden & Gleeson (1979) to increase the reliability and validity of clinical skills assessment. Nonetheless, setting reliable and valid standard for OSCE's has been an ongoing challenge. The workshop will discuss a range of standard setting methods applicable to OSCE; and will provide the participants with a systematic decision making tool for identifying the optimal standard setting method for OSCE's undertaking in any particular educational context.

Who Should Attend: Medical educators who have strong interest in assessment and standard settings or in utilising effective reliable and defensible OSCE’s

Structure of Workshop: Structure: 1. Introduction to standard setting methods, what purposes they serve and a brief overview of the most commonly used methods. 2. Setting standards for standard setting method: A critical discussion of the quality of standard setting: Examples will be provided from a range of methods including: Bookmark, Regression, Angoff, Cohen, Contrasting groups and others. 3. Decision making exercise: Identifying the optimal method for any given OSCE (participants can use their own examples). 4. Conclusion & summary.

Intended Outcomes: The participants will enhance their comprehension of the principles and practice of setting standard applied to assessment of clinical skills. The participant will be able to critically appraise standard setting methods used in their clinical education context. The participants will be able to make defensible decisions about the standard setting methods to be used in their clinical education context.

Level: Intermediate/Advanced

#8Z Workshop: Video Assessment of real patient encounters using a flexible online IT system (1182)
Location: Room 217

Paul Ram, European Board of Medical Assessors, Maastricht, Netherlands
Annemarie Camp, European Board of Medical Assessors, Maastricht, Netherlands
Lesley Southgate, European Board of Medical Assessors, Maastricht, Netherlands
Thomas Gale, Plymouth University Peninsula Schools of Medicine and Dentistry, Plymouth, UK
Pauline McAvoy, Independent Consultant, London, UK
Adrian Freeman, University of Exeter Medical School, Exeter, UK

Background: Modern assessments rely on standardised formats through the use of simulated lab settings ensuring objectivity and structure, with indirect evidence of a doctor's actual performance. The European Board of Medical Assessors presents an innovative video tool. Students can upload multiple encounters and multiple assessors review the videos. Communication and professionalism are assessed. The competency framework is set at the level of medical graduates who will benefit from feedback.

Who Should Attend: Delegates who wish to explore a new pathway of authentic assessment using real encounters in a smart IT solution and want to learn more about video assessment and it’s assessment methodology.

Structure of Workshop: The workshop is structured in following format: Interactive demonstration of the video assessment software tool; Short introduction on the assessment instrument and criteria for selecting patient's encounters; Scoring of competences by assessing one doctor-patient encounter by using the assessment instrument followed by a plenary discussion (participants are asked to bring their own laptop); Final discussion on standard setting, ethical and legal procedures plus challenges concerning the video assessment as a whole.

Intended Outcomes: Delegates will have explored the possibilities of video assessment plus the challenges and possible solutions associated with European (video) assessments including: Procedures around video assessment; Scoring of competences by the use of videotaped encounters; Content validity of the selection of encounters and the assessment instrument; Ethical and legal challenges for patient's consent; Definition of standards to assess real encounters of the newly graduating doctors across European borders.

Level: Intermediate
**#8AA Workshop: PATH: a tool for leadership and change management (920)**

*Location:* Room 218

*Derek Jones, University of Edinburgh, UK*
*Gill Aitken, University of Edinburgh, UK*
*Tim Fawns, University of Edinburgh, UK*
*Michael Ross, University of Edinburgh, UK*

**Background:** Bringing about meaningful change in complex environments—such as education—often requires leadership skills, deliberate action and the management of other people and resources over a period of time. This workshop provides participants with a practical tool (PATH) to help clinicians and academic faculty design and deliver high quality education. For over more than 20 years PATH has been used to help individuals, groups, and organisations achieve their vision.

**Who Should Attend:** This workshop is for anyone with a role in organising the delivery of education and a desire to effect change, whether modest or substantial. You should attend if you work with a diverse group of people, who share a common problem or situation, have a commitment to developing a shared understanding of the situation and its possibilities, and have an interest in mutual support, personal and team development.

**Structure of Workshop:** The workshop will briefly review the complex organisational and policy context within which educators work. The PATH tool will be introduced and following this participants will be split into four groups. In each group there will be an opportunity for one member to develop a PATH for use in their own context (aided by a facilitator and the rest of the group). The workshop facilitators welcome further discussion during the conference.

**Intended Outcomes:** By the end of the workshop participants will have gained knowledge and experience of the application of the PATH process for the purposes of enhancing the delivery of education. Participants will be provided with personal copies of the path process and instructions for use.

[Previously submitted as a pre-conference workshop: Understanding and influencing policy; responding to the policy-practice gap. - "workshop offered"; submission amended to take account of reduced time available]

**Level:** Introductory/Intermediate

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**#8BB Workshop: Cracking the code: How to prove the return on investment from medical education interventions (95)**

*Location:* Room 306

*Jeffrey H. Barsuk, Northwestern University Feinberg School of Medicine, Chicago, USA*
*Doug Beighle, Simulab Corporation, Seattle, USA*
*Diane B. Wayne, Northwestern University Feinberg School of Medicine, Chicago, USA*

**Background:** Several countries are evaluating business models of healthcare delivery to determine how to shift to value-based payment methods that emphasize improved outcomes per dollar spent. Rigorous medical education has the ability to improve population health. However, medical education is not widely seen as a powerful tool to improve healthcare quality. We will provide evidence of the effectiveness of medical education as a quality improvement strategy and how to demonstrate this at participants’ home institutions.

**Who Should Attend:** Medical educators, administrators, and patient safety professionals interested in learning about return on investment (ROI) methodology, Implementation Science, and change theory as it relates to medical education.

**Structure of Workshop:** First, we will describe how to create a business case for medical education as a quality improvement strategy. Second, participants will review costs associated with specific adverse events and determine whether education can be used to reduce them. Third, participants will review and practice a common ROI methodology and how it can be used with Kotter’s Change Theory and Implementation Science principles to build a business case for funding specific medical education quality improvement projects.

**Intended Outcomes:** Participants will be able to describe the use of rigorous education to promote value in healthcare. They will know how to apply an ROI methodology that incorporates seven steps: Access, Cost, Reaction, Learning, Application and Implementation, Impact, and ROI. Upon returning to their institutions, participants will understand how to use Implementation Science and Kotter’s Change Theory with the ROI methodology to obtain support to implement medical education-based quality improvement programs.

**Level:** Introductory/Intermediate
#8CC ePosters: Simulation Supporting Individual Learning
Location: Room 206

#8C01 (97)
Developing an integrated educational simulation model by considering art approach: Teaching Empathic Communication skills

Afsaneh Yakhforoshha, Qazvin University of Medical Sciences, Qazvin, Iran
Mandana Shirazi, Tehran University of Medical Sciences, Tehran, Iran
Hossein Emani Seyed Amir, Tehran University of Medical Sciences, Tehran, Iran
Navid Mohammad, Iran University of Medical Sciences, Tehran, Iran
Mohammadali Cheraghi, Tehran University of Medical Sciences, Tehran, Iran

Background: In the process of communication training, designing high-impact learning experiences in simulated environments has encountered some challenge. Art-based education can help to overcome these issues. In this article aims to develop new model of simulation for communication skills education through integrating the essential features of simulation and art.

Summary of Work: A review was done on the literature of medical education, simulation model and main art approach. Expert panel by the use of nominal group technique were held with medical education experts in Iran and Sweden to design, select an appropriate simulation model and approve the final model following some modifications.

Summary of Results: IMCS is an integrated model in three concepts of Jeffries simulation model based on art approaches: simulation design, simulation intervention, and outcome. The model uses activity theory and transformative learning theory to foster outcomes of skill-based and emotional-based of communication skills.

Discussion: Current integration frameworks for simulation in health care education aimed to improve the accessibility of simulation data and computational model for developing simulation technically. The IMCS model we present is focused solely on integration of psychological and technical aspects of educational simulation model in real-life setting.

Conclusion: The art strategies could be incorporated into simulation model. The IMCS has the potential to promote emotional and technical aspects of communication skills to make the health care providers as competent communicators.

Take-home Message: Proposed eclectic simulation model is a resource that learner continually travels alongside skill base and human base of communication competent in simulation setting. In this educational model, learners are understand ‘the skill is essential, but not enough; the heart is equally important in order to developing understanding of others’ emotions.

#8C02 (107)
Development of Customisable 3D Cadaveric Model and Visualisation on Consumer IT Platforms - An interactive and cost effective tool for anatomy education

Brenton Sio, Lee Kong Chian School of Medicine (Nanyang Technological University/Imperial College London), Singapore
Nabil Zary, Lee Kong Chian School of Medicine, Singapore
Eric Yap, Lee Kong Chian School of Medicine, Singapore

Background: Anatomy teaching in modern medical education utilises technology to overcome limitations in traditional teaching. The availability of numerous technological aids provide ample choices for medical students, but learners seek different aids that complement their learning style. Development of these tools are fast progressing especially in the field of human anatomy.

Summary of Work: We evaluated current anatomy technological aids and developed 3D cadaveric models through an easily reproducible and cost effective process. Models were visualised on an interactive and open source platform, to complement current gaps in modern anatomy learning modalities. Survey and quizzes were administered to medical students to assess its usefulness.

Summary of Results: The 3D cadaveric models resembled real human specimens with high anatomical accuracy. There were perceived advantages using the 3D models in visualising the anatomy to help understand spatial relations between structures. The 3D models were non inferior in test scores compared to 2D images amongst students who studied them exclusively.

Discussion: The 3D models were a favourable learning aid amongst students and at least equivalent to 2D materials (e.g. atlases). Students may enjoy learning more with 3D models, indicating better acceptance and perceived usefulness. 3D models give students better appreciation of structural spatial relationships, which is an important concept in anatomy.

Conclusion: The easily reproducible developmental design allows customisability of 3D cadaveric models to the uniqueness of the curriculum in each medical school. This offers a collaborative potential between lecturer and student. We are now currently automating the development process and assessing the utility of visualising these models in Virtual Reality.

Take-home Message: There is a lack of 3D cadaveric models with high anatomical accuracies amongst the myriad number of technological learning aids in modern anatomy teaching. With increasing availability of learning aids, the new challenge is finding the right combination of supplementary materials that perfectly complements each medical curriculum or learner's style.
**#8CC03 (110)**  
*How to Learn Skills With Invasive Clinical Procedures (ICP) in Medical School*

Roberto Garcia Turiella, IUNIR, Argentina  
Mario A Secchi, Italian University Institute of Rosario, IUNIR, Argentina  
Juliana Merello, IUNIR, Argentina  
Nicolas Rodriguez León, IUNIR, Argentina  
Walter Bordino, IUNIR, Argentina

**Background:** The obligation to give patients the best possible care is often contrasted to the needs of medical training. The Resolution of the Argentine Ministry of Education, 1314/07 establishes the basic curriculum and the criteria on intensity of the practical training.

**Summary of Work:** We propose a model for learning of competencies in ICP, in medical school. Opinion polls from students and experts were conducted to make a diagnosis of the situation and to assess the specific objectives: (n = 140) and validation surveys (n = 84). The statistical package was SPSS V18

**Summary of Results:** Among the students of 5th year and the teachers find it very necessary more than 70%. All the experts and more than 60% of the students and the teachers consulted, consider very necessary the creation of a Simulation Center with and new didactic model at our IUNIR structure.

**Discussion:** Actually, "Virtual Patients in Virtual Hospital" is the model to learning clinical invasive skills in many Medical School.

**Conclusion:** We designed a model that would not breach with ethical and legal standards that govern the practice of medicine. Our model, designed on the basis of a diagnosis of the situation, was be validated.

**Take-home Message:** The Clinical Simulation is a technique that should be applied in the acquisition of skills, as a preliminary step to practice on patients, helping the learning and working together to meet the ethical and legal standards. A Virtual Hospital is mandatory in Medical School.

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**#8CC04 (210)**  
*Use of augmented reality to enhance understanding and fun for medical education*

Bura Sindhupakorn, Suranaree University of Technology, Nakornrachasema, Thailand  
Jessada Tanthanuch  
Suwittaya Thienpratan  
Preyapang Hitapisut  
Sittasart Saathong

**Background:** In medical studies, Technology-enhanced simulations have been used widely to enhance student understanding and skill and to make learning enjoyable. At the heart is the engagement of the student in the learning process. We believe that Technology-enhanced simulations will improve the engagement of the student in the class.

**Summary of Work:** This paper use a augmented reality as a technology-enhanced simulations for orthopedic class to see the impact of engagement in term of attractiveness and understanding in medical student. Four different techniques were compared in orthopedic class, which were conventional, VDO, 3 Dimensional (3D) video and augmented reality (AR).

**Summary of Results:** The results shown that the pretest score among 4 methods was the same while there were differences of post-test score (p-value, <0.001). AR lecture was the highest in engagement. Effectiveness is the low result in AR. Conventional study is the highest in term of effectiveness and understanding.

**Discussion:** From the result AR is very attractive and fun. AR gave the highest attractiveness(Mean + SD. 7.9 + 2.71)and significant higher scores when compared to other methods. The effectiveness is low in AR. The limitation of AR lecture is the details of the lecture in explanations and 2-way communication with the students.

**Conclusion:** In new technologies that emerge for today, AR lecture is the most attractive but it is lack of interaction with the student. We prove in our study that the effectiveness of AR is low but highest in conventional lecture. If we can combine together, it will enhance both engagement and effectiveness.

**Take-home Message:** If we can develop AR technology that eliminate the limitation of uses and interactive with the student, we believe that these technologies will be the most attractive and effective for learner.
A Survey of Surgical Learning Journey: Does the Experience of Video Game Playing Enhance the learning outcome of Robotic-Assisted Surgery?

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Ming-Ju Hsieh
Yin-Kai Chao
Chung-Hsien Chao
Yi-Ching Hung

**Background:** Novices of robotic-assisted surgery are usually trained by virtual reality simulators. Because of the similarity between the simulators and video games, the study aims to evaluate whether novices’ experiences of playing video games or other experiences enhance their learning outcomes of robotic-assisted surgery.

**Summary of Work:** A questionnaire methodology was conducted for investigating novices’ learning experiences, experiences of playing video games, and outlook on robotic-assisted surgery. Voluntary novices (n=70) comprising residents (R1-R6) and visiting staff, were examined on a simulator. Scores of examination provided by the simulator automatically. Questionnaires and the scores were analysed through SPSS.

**Summary of Results:** Participants’ prior experiences of assisting robotic-assisted surgery and having robotic surgical simulation within six-months increase novices’ learning outcomes ($t(54.008)=2.966, p=0.004$; $t(19.171)=2.412, p=0.026$). Video game-playing experience, and outlook on robotic-assisted surgery do not significantly influence their learning outcomes ($t(68)=1.446, p=0.153$; $t(62)=0.484, p=0.63$).

Interestingly, we found that R3-R5 performed better than R6, visiting staff and R1-R2 from ANOVA analysis ($F(2,67)=4.422, p=0.016$).

**Discussion:** Participants stopped playing video games gradually when they became residents; therefore, the past experiences of playing video games probably do not have a strong influence on the learning outcomes. Given that R3-R5 performed better than others, this may provide some indication of the best timing for robotic-assisted surgery learning.

**Conclusion:** Our findings suggest that learning outcomes of robotic-assisted surgery are related to previous stimulated surgery practice, being an assistant in di Vinci surgery or seniority, while novices’ experiences of video game-playing have no significant impact. Correlations between participants’ viewpoints of robotic-assisted surgery, learning motivation and learning outcomes requires further study.

**Take-home Message:** Experiences of playing video games do not have significant impact on learning outcomes of robotic-assisted surgery in our study. Learning outcomes are influenced strongly by their clinical learning experiences and practices. The result of R3-R5 performing better gives a guidance of when is better learning timing of robotic-assisted surgery.

Adapting virtual patient cases to language and culture: how not to throw the baby out with the bathwater?

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Viktor Riklefs
Sholpan Kalyeva
Alma Muratova

**Background:** Erasmus+ CBHE project “Training against medical error” (TAME) aims to implement virtual patient (VP) cases into curriculum of medical universities in Kazakhstan, Ukraine and Vietnam. 6 paediatric cases were provided by St. George’s University of London and had to be translated, adapted and modified to national healthcare needs and requirements.

**Summary of Work:** The working group translated and adapted VP cases training students against 10 deadly medical errors into Russian and Kazakh. Case adaptation included ethnical, lingual, socio-economical, geographical and professional aspects. Clinical staff of paediatric departments had to insure that cases suit the national healthcare but still have original content and idea.

**Summary of Results:** Adaptation process was systemic: for each case we created a table with the original and modified texts and relevant commentaries. Cases were reviewed by other university, tested with senior students and modified according to their feedback. All cases were then used in tutorials with 64 students and their feedback collected.

**Discussion:** Several challenges existed during case adaptation to local healthcare needs: discordance in medical terminology and abbreviations between languages; differences in medical staff duties; different clinical protocols of management of children in UK and Kazakhstan; different socio-economic situation; disagreement on frequency and possibility of certain medical errors in Kazakhstan.

**Conclusion:** All VP cases had 2 versions: in linear cases students followed and critiqued someone else’s decisions; in branched cases they made their own decisions. Despite systemic adaptation, students told that some cases still ‘did not feel authentic’ to local healthcare, especially for linear cases.

**Take-home Message:** The impact of TAME on individual, institutional and national level is obvious. VP methodology gives the unique chance to develop students’ clinical decision making to avoid medical errors in their future clinical practice. Special attention needs to be paid to case adaptation, especially if they come from a foreign country.
Combining virtual and traditional microscopy enhances teaching and learning of histology

Mikael Niku, Faculty of Veterinary Medicine and Teachers’ Academy, University of Helsinki, Helsinki, Finland

Background: Virtual microscopy (VM) is superseding microscopes and glass slides in histology teaching and learning, due to practical and pedagogical benefits. Veterinarians however still need microscopes throughout their studies and in their occupation. Thus, it is important to balance the teaching methods.

Summary of Work: Histology learning and student perceptions were evaluated over three veterinary student cohorts. The first used only microscopes, while the next two received microscopy training, then individually chose VM and/or microscopy. The third cohort did VM group work. Performance was assessed in practical microscopy exam immediately and online 7 months later.

Summary of Results: Students preferred VM, regarding it “essential” for learning, but wanted to retain microscopes. VM is time/location independent and eased note-taking, assignment completion, scale perception and eye discomfort, but suffered from occasional malfunctions and unrealistic quality and homogeneity of material. Performance of VM and microscope users was similar.

Discussion: VM makes histology teaching and learning more effective by letting students focus on subject matter rather than accessing and operating physical equipment. It allows versatile pedagogical approaches. Student performance was not affected in our case. However, basic microscopy training and the option to use microscopes is necessary in veterinary curriculum.

Conclusion: A combination of VM and traditional microscopy is optimal for histology studies in the veterinary curriculum, allowing effective and versatile teaching and learning.

Take-home Message: Most students preferred VM but wanted to retain the option for traditional microscopy; Test performance was similar for students using mostly VM and those using mostly microscopes. Both were confident in their microscope skills; Using both VM and microscopes ensures adequate technical skills while enhancing histology teaching and learning.
#8CC09 (2802)
A case-based approach to teaching virology, available to use under Creative Commons license

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Background: The Viral Outbreak case-based learning scenario replaced a laboratory practical that had always been simulated due to safety concerns. The aim of the exercise is to encourage students to concentrate on the science of a viral outbreak and actively work through the problem, rather than simply following an experimental ‘recipe’.

Summary of Work: We developed a web application that places students in the role of a scientist faced with a viral outbreak. Multi-media teaching materials enable them to acquire the knowledge needed to collect appropriate samples, perform the necessary tests to determine the viral serotype and make recommendations on the response required.

Summary of Results: Feedback from students was positive, with most saying that the found the exercise more interesting and enjoyable than ‘normal’ practical classes, even though it required more effort. Teaching staff found that the students’ reports demonstrated an excellent understanding of the key learning outcomes.

Discussion: While student performance on exam questions related to the topics covered in this scenario was very good, for practical reasons it has not been possible to objectively and comparatively assess the impact of the iCase on students’ understanding of the topic.

Conclusion: This case-based scenario has proved to be a popular and seemingly effective teaching resource. It encourages active, deeper learning, and students were not put off by the extra work required compared to other teaching methods, as they were engaged by the exercise and found it useful and interesting.

Take-home Message: Students benefit from exercises that encourage them to think for themselves and place their learning in a broader context. This scenario is freely available for other institutions to use under a Creative Commons license. A version that does not require completion of each step to progress is accessible here: https://weblearn.ox.ac.uk/x/9ZBMQB

#8CC10 (1245)
Stroke Wars, Could We Win The Battle with Stroke Fast Track?

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Background: Interpreting a brain CT scan in Stroke fast track is a challenge for doctors, especially in a less experienced. Acquiring the skill is a hard time-consuming task for medical students but if there’s a fun-to-learn tool on the mobile phone, it will increase the efficiency and enthusiasm in their self-study.

Summary of Work: Externs will be tested with 5 brains CT scans interpretation. The results will be compared to official radiologists’ reports. “Stroke wars”, an application developed for Android by web-based tool “MIT app inventor” will be played after the pre-test finished. Questionnaires and Likert scales were used to evaluate users’ satisfaction.

Summary of Results: The pre-test and post-test scores were 83.6% (15 SD) and 100% (0 SD), with p = 0.005. The median scores of their confidence prior and after practice with the application were 3(min 1, max 4) and 4(min 3, max 4); satisfaction scores were 5(min 4, max 5) out of 5.

Discussion: Pattern recognition skill requires repetition of practice in brain CT interpretation which can be tiresome. The application was designed on a game-based learning basis to make this process more enjoyable and interesting for self-study. Although it is only a pilot application, it showed a fascinating outcome.

Conclusion: This study shows significant improvement in externs’ skill after using the application. All of them agreed that the application is fun, interesting and help them to accurately interpret CT. Since it was on a mobile phone, it’s portable and available for students anywhere, anytime.

Take-home Message: Game-based learning applications show a promising potential for medical study. It can be used to enhance medical teaching in the near future.
Evaluation

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Pauli Puolakkainen, University of Helsinki, Faculty of Medicine, Department of Gastrointestinal Surgery, Helsinki University Hospital, Helsinki, Finland

Kaisu Pitkälä, University of Helsinki, Faculty of Medicine, Department of General Practice, Helsinki, Finland

Terhi Karaharju-Suvanto, University of Helsinki, Faculty of Medicine, Department of Oral and Maxillofacial Diseases, Helsinki, Finland

Eeva Pyörälä, University of Helsinki, Centre for University Teaching and Learning, Medipeda, Helsinki, Finland

Background: Helsinki University established Teachers’ Academy in 2012 to reward teaching excellence, improve status of teaching and create an inspiring scholarly community for teachers. The Academy members and their home units are awarded. This study examines the members’ perceptions of the impact of the Academy on teaching esteem and teachers’ networking.

Summary of Work: The eight members of the Academy in the medical faculty answered an anonymous web-based questionnaire focusing on how the Academy had fostered (1) the status of teaching, and (2) the stimulating community for and networking of teachers. The data were analysed using both quantitative and qualitative research methods.

Summary of Results: The Academy members expressed that the status of teaching had improved. The most positive effects of the Academy were the stimulating multidisciplinary community the Academy provided, improved opportunities to attend medical education conferences with colleagues, and inviting international experts on teaching and learning to give seminars and workshops in Helsinki.

Discussion: Reward systems are established throughout the world. In Helsinki, the decision of extending award grants also to the member’s home unit and establishing one Academy for the whole university proved successful. The number of participants in medical education conferences has rapidly expanded and teachers’ networks have spread throughout the university.

Conclusion: This study focuses on the early stage of Teachers’ Academy and members in one faculty. An ongoing follow-up study on the effectiveness of the Teachers’ Academy will reveal whether this type of rewarding system has enhanced the status of teaching and increased interdisciplinary and international networking throughout the university.

Take-home Message: Medical education requires special efforts to increase the status of teaching. The Teachers Academy in Helsinki rewards both excellent scholarly teachers and their units. The Academy has improved the status of teaching and offered the teachers stimulating interdisciplinary and international networks which foster educational development in medicine and dentistry.

“The Wisdom of Medical Experts” program enhanced trainees’ self-expectation

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Pei-Chun Lin

Background: Learning from role models through observation and reflection has far-reaching influence. We designed, implemented and evaluated a program to know the learning outcomes of the role modeling teaching strategy.

Summary of Work: We designed a program “The Wisdom of Medical Experts” to give the trainees a soft way to shape the professionalism through lessons by outstanding physicians from diverse specialties. Each speaker acted as a mentor to share their career preparation, lifestyle, values and professional achievements. Questionnaires with feedbacks were collected.

Summary of Results: Trainees’ feedbacks on various items gave an overall rating 4.7 (Likert scale: 5 strongly agree; 1 strongly disagree) overall. 91.0% trainees agreed this program could help them to inspire learning motivations, 90.8% to face clinical issues in the future and 90.6% to enhance clinical professional knowledge.

Discussion: We provide role models mentoring to facilitate trainees’ reflections and assist trainees to make the connections between the outstanding physicians’ experiences and the standard learning system. Most trainees agreed this program could help them to shape professional identity and commitment, and enhance the self-expectation.

Conclusion: Our findings reinforce the important function of role models in influencing trainees’ motivations and values. We could recruit more role models to strengthen the contents and diversity of this program.

Take-home Message: A program using role modeling teaching strategy can transfer the knowledge, values and attitudes to trainees to enhance their motivation and self-expectation.
Creating an Educational Enterprise: Leveling the Playing Fields of Medical Science Research vs. Medical Education within the Core Missions

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Geeta Singhal, Baylor College of Medicine, Houston, TX, USA
Gordon Schutze, Baylor College of Medicine, Houston, TX, USA
Teri Turner, Baylor College of Medicine, Houston, TX, USA

Background: Unlike publications of medical science research that are more readily rewarded, clinician-educators’ scholarly achievements are more nebulous and under-recognized. Creating an education enterprise that empowers clinician-educators to engage in a broad range of scholarly activities and produce educational scholarship requires strategic approaches to leveling the playing fields within an organization.

Summary of Work: Using Bolman’s and Deal’s (B&D) four frames of organization (structural, human resource, political, symbolic), we analyzed the advantages and disadvantages experienced by medical science researchers vs. clinician educators. We then identified and incorporated strategies that align with each frame and empower clinician-educators in their scholarly endeavors.

Summary of Results: We enhanced structural frame by creating a decentralized medical education unit, incorporated human resource component with an endowed chair to support faculty development, leveraged political model by providing grant supports and expanding venues for scholarship, and enhanced the symbolic frame by endorsing value of education and public recognition from leaderships.

Discussion: In five years, we saw an increased number of faculty interested in becoming clinician-educators, an increased number of faculty winning Educational Awards for Excellence and delivering conference presentations, and received 12 of the 15 college-wide awards for educational scholarship. These satisfactory trends reflect early success of our educational enterprise.

Conclusion: Bolman’s and Deal’s organizational frames can be used to identify strategies for addressing the pressing need to promote clinician-educators’ scholarship. We realize that our situation is unique in several respects, but this approach is flexible within an institution and transferable to any other institution and its medical education program.

Take-home Message: The value of this approach is twofold: 1) it offers specific means to evaluate and meet an institution’s medical education needs, and 2) it is a flexible instrument that can be adjusted to meet the organizational dynamics of any institution and, in turn, each component can be modified as needed.

Clinician-teachers in allied health: motivations for sustaining a parallel career, perceptions of professional identity and learning through boundary crossing

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Els Boshuizen, Faculty of Psychology and Educational Sciences, Open University, Heerlen, Netherlands and Faculty of Education, University of Turku, Finland

Background: A minority of teachers in allied health education in Netherlands sustain an active clinical career. Moving across boundaries of clinical and teaching practices provides opportunities for learning and may result in identity shifts. This study investigated these issues from the theoretical perspectives of dialogical self-theory and boundary crossing.

Summary of Work: A phenomenological interpretative approach was followed using semi-structured interviews with clinician-teachers (n=16) from different allied health programs. Construction of a framework matrix allowed within- and between case analysis and supported interpretation of the data. Triangulation of researchers and respondent validation enhanced credibility and plausibility of the outcomes of the study.

Summary of Results: Motives for a parallel career concurred. Dynamics in working environments influenced identity and feelings of competence in either role. A dominant clinician identity did not prevent successful integration of the teacher identity. The learning potential of working across boundaries of the clinical and academic world was exploited to benefit both.

Discussion: Multiple job holding is often associated with additional strain. Clinician-teachers in allied health manage to successfully combine two jobs through strong feelings of personal and professional enhancement. Findings contrast with teachers of medicine as lack of prestige and recognition of teaching were not experienced by clinician-teachers in allied health education.

Conclusion: Parallel career teachers’ learning opportunities benefit themselves as well as their colleagues, their students and the university in its efforts to improve clinical practice through practice-based research. Our study provides evidence that both educational institutes and clinical practices in allied health profit from supporting clinician-teachers in sustaining a parallel career.

Take-home Message: A better understanding of clinician-teachers’ motives, professional identity and learning is relevant from an organisational perspective and a learning theory perspective. A parallel career impacts clinician-teachers’ well being, career resilience and engagement. A dominant identity position of clinician does not hinder teaching aligned with current educational goals in allied health.
#8DD05 (2380)
Self-perception of the clinical professor in the teaching of medicine at Faculty of Medicine, National Autonomous University of Mexico

Dulce María Patricia Vidal-Licona
Roberto Sánchez-Ahedo, Universidad Nacional Autónoma de México (UNAM), Ciudad de México, Mexico
Javier Aragón-Robles
Sarái Arias-Labastida
María de los Ángeles Martínez-Torres
Nancy Quintanilla-Serrano

Background: The teaching-learning process is based on teachers, learning promoters and students, who develop the skills. Only a few authors talk about the characteristics a good medicine professor should have. Among them are Harden and Crosby (Martínez-González et al. 2008): information provider; model to follow; administrator; adviser; facilitator, pedagogical resources generator.

Summary of Work: Validate an instrument that identifies the self-perception that teachers of the clinical area, Faculty of Medicine, UNAM, have on their teaching performance (classroom and clinical practice) Descriptive and cross-sectional study. Questionnaire of self-perception teacher, 29 questions in class, 34 in clinical practice, all closed. Likert response scale.

Summary of Results: Sample: 282 teachers, 171 men, 110 women. Cronbach’s Alpha: .82. Variables analyzed (Kolmogorov-Smirnov test in classroom/clinical practice): • Organization; • Empathic skills; • Teaching skills; • Skills as a doctor. For the validity of the construct we used 4 points: • Appearance, content, predictive and construct structure

Discussion: The clinical professor should be an expert in his area of specialty and in teaching, considering educational and didactic resources, as well as personal to be able to efficiently support his students so that they achieve the proper development of professional competencies

Conclusion: The questionnaire is valid. Teachers value themselves highly, probably because they go to refresher courses/pedagogical training. It’s necessary to apply the questionnaire to teachers who don’t attend teaching professionalization courses and to students, to compare and to see if they evaluate their teachers high, too.

Take-home Message: Medical Schools must ensure that their teachers are trained in the teaching environment and have the necessary attributes to be good teachers in the classroom and clinical practice.

#8DD06 (2079)
Establishing an Environment for Creativity of Clinical Teachers – Report on Preliminary Outcomes

Chiung-Ju Lin
Wei-Fang Wang, National Cheng Kung University Hospital, Tainan, Taiwan
Chiung-Yu Chen

Background: A creative teacher that can produce novel and appropriate idea or outcome to fit the goal of teaching is therefore, important. We report our preliminary achievement on creativity by establishing a teaching environment for clinical teachers.

Summary of Work: The main strategy included the following activities: 1. A teaching program: “flipped classroom” to foster teacher’s creativity. 2. A teacher contest for teaching innovation and outcome. 3. Multiple ways to reward creative teachers: (1) Best teacher award of each clinical section. (2) The annual election of distinguished teachers. (3) The teachers' photos were posted public space.

Summary of Results: 1. 71.0% of teachers continuously used their innovative teaching methods. 2. The learner had significant improvement in knowledge (67.48%) with the application of innovative teaching methods. 3. 52.9% of teachers published their works after the contest. 4. An average of 91.4% learners from school year 2011 to 2015 were satisfied with the teaching.

Discussion: We collected 157 questionnaires with 123 valid samples from clinical teachers. The effective response rate was 78.34%. 50.0% of teachers agreed that the teaching contest was helpful in inspiring their creativity. This results encourage us to continue to create an atmosphere of innovative teaching.

Conclusion: In addition to the current quantitative evaluation and Kirkpatrick level III outcomes, we will design qualitative evaluation to understand phenomena that most related to teachers' creativity and to explore the impact of our strategy on the learner outcome.

Take-home Message: 1. Establishing "creative teaching environment" is key. 2. Applying creating thinking to clinical teaching.
**#8DD07 (707)**

**Teachers’ Educational Beliefs and Values. Do they matter? Can they be uncovered?**

*Isabelle Cunningham, School of Oral and Dental Sciences, Bristol, UK*

**Background:** Our approach to teaching is driven by our underlying beliefs and values about education, and by core beliefs and values that are central to self. Healthcare educators may accept this concept, but is it possible or worthwhile to research the educational beliefs and values of ourselves and our teacher colleagues?

**Summary of Work:** This qualitative case-study aimed to: i) uncover the educational beliefs and values of two dental teacher colleagues and factors that influenced them, ii) identify effective ways to gain insight, iii) identify potential benefits and challenges. Each teacher participated in three in-depth interviews and completed a beliefs and values questionnaire.

**Summary of Results:** A range of beliefs and values were uncovered for both teachers, together with influencing factors such as past negative and positive experiences as a learner, and personal approaches to learning. Critical teaching incidents were rich sources of data. Benefits included increased self-insight. A number of ethical challenges were identified.

**Discussion:** Such research provides valuable opportunities for teachers to talk in-depth about issues central to themselves and their teaching, encourages reflection, develops self-insight and increases understanding between colleagues. Despite the ethical challenges, such as establishing trust and unexpected participant emotions, all participants recommended the process for teachers and teaching teams.

**Conclusion:** Despite the identified challenges, teachers’ educational beliefs and values can be uncovered and the process has clear benefits for medical educators. Appreciating our own educational beliefs and values, the background to them, and identifying similarities and differences between our colleagues, can aid teacher self-development and develop understanding between faculty teachers.

**Take-home Message:** Individual teachers and faculty are urged to consider educational beliefs and values, a fundamental concept that may be under-appreciated in medical education. They are encouraged to discuss or research this area with colleagues. Course participants are invited to reflect on my research results, and to take home a questionnaire.

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**#8DD08 (2393)**

**How do doctors in training develop a professional identity as clinical teacher? A literature review**

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**Background:** Increasingly, doctors in training are expected to develop teaching roles. Trainees who teach develop teaching competencies and identify their own learning needs. Students benefit as teaching is better matched to their needs. Little however is known about how trainees’ identity as clinical teacher fits in to their overall professional identity.

**Summary of Work:** This presentation reports findings from a literature review using three key search terms – doctors in training, teaching and identity. Searches included synonyms and truncations. 583 resultant papers were screened for relevance (title / abstract) to identify papers that explored trainee doctors’ identity as teachers.

**Summary of Results:** Five articles were identified, in itself demonstrating the dearth of published work in this field. These included quantitative work exploring whether student feedback influenced trainee doctors’ teaching identity as measured using a previously validated tool as well as qualitative work with trainees exploring their understanding of their teaching role.

**Discussion:** Professional identity is socially constructed, integrating personal identity and professional self. Professional identity refers as an individual’s ‘way of being’, rather than a ‘way of doing’. Cruess et al. suggest that focus should shift away from the traditional pinnacle of Miller’s pyramid of ‘does’ to an identity-related ‘is’.

**Conclusion:** Historically, the trainee-as-teacher literature focussed on what trainees do or on outcomes from trainee-as-teacher courses. Through focussing instead on understanding trainees’ sense of who they are as teacher, and thus the concept of ‘is’, educators can begin to develop interventions to promote fuller engagement towards this aspect of professional development.

**Take-home Message:** Exploring an individual’s multiple identities is increasingly recognised as being crucial to understanding what they do and why they do this. Through applying this to the context of trainees as teacher others, barriers and facilitators to development can be identified and addressed.
#8DD09 (751)
Special competence in medical education – nobility obligates

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The committee for special competence, Finland

**Background:** Association for Medical Education in Finland (AMEF) works to reinforce the status of medical teachers. Special competence in medical education was established in 2008 and is now the most popular special competence in Finland. The purpose of this survey was to study the effects of achieving the special competence.

**Summary of Work:** Anonymous electronic survey was sent to all those physicians who had received the competence (N = 227). The e-mail addresses were acquired from the Finnish Medical Association, which officially grants the competence after recommendation by the AMEF’s special competence committee. Two reminders were sent during three weeks.

**Summary of Results:** 132/227 special competence holders participated (56%), 32% of them were male. The most common motive (80%) for applying was a wish to have a documented proof of one’s teaching expertise. The significant benefits gained were the increase in authority (56%), and status as an expert (51%) at the workplace.

**Discussion:** A minority of respondents holding the special competence belonged to the original target group, doctors currently working in hospitals (9%) and primary health care (16%). Instead, they were university based. The benefit had been immaterial, emerging as increased self-esteem and recognized expert status rather than promotion or increased salary.

**Conclusion:** In their free comments the participants emphasized the teaching commitment given by the competence. After a formal recognition of their expertise, they had formed an identity of true medical teachers. Expectations from the community had increased, their suggestions were heard, and their judgment had more weight than before.

**Take-home Message:** The effects of the special competence were not material as expected. The application process itself had been rewarding. It forced the applicants to reflect their role as a teacher and to conceptualize their own learning processes. The increased self-understanding had stimulated their continuous professional development.

#8DD10 (2645)
The IAMSE Medical Educator Fellowship: A novel, international program to foster educational scholarship

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**Background:** The Medical Educator Fellowship offered by the International Association of Medical Science Educators (IAMSE) fosters scholarship in health sciences education. Historically, health science educators received minimal teaching and educational scholarship training; neither has been recognized appropriately for promotion. To assist members and promote teaching, IAMSE launched the fellowship in 2009.

**Summary of Work:** Three Fellowship phases are completed in three years. First, the Association for Medical Education in Europe (AMEE) Essential Skills in Medical Education (ESME) Program. Second, two faculty development courses at IAMSE or AMEE conferences. Third, an IAMSE pre-conference session, project mentoring, and project presentation at IAMSE or other international conference.

**Summary of Results:** Since 2009, 30 fellows representing six countries enrolled. To date, 18 completed the program; nine are completing phase three. Projects addressed active learning, peer review, curriculum, assessment, IPE, and e-learning. In phase three, fellows meet with IAMSE fellowship faculty at the annual conference and via web/phone conference for project mentoring.

**Discussion:** The fellowship supports faculty whose institutions lack educational scholarship expertise. The fellowship provides networking and builds community among participants. There is one limitation of the blended model: following the in-person meeting at an annual conference, subsequent mentoring is via web/phone and scheduling across multiple time zones can be challenging.

**Conclusion:** The Medical Educator Fellowship is an effective model for professional development. Participants have successfully completed curriculum development, assessment, and educational research projects. All have been presented in international, peer-reviewed conferences and a growing number result in publication. Future plans include creating opportunities for participants to connect throughout the project phase.

**Take-home Message:** An international fellowship program, conducted by IAMSE and anchored by participation in the AMEE ESME course, promotes faculty development and scholarship. This supports faculty promotion and the teaching mission. The blended approach using in-person meetings and web/phone consultation is cost-effective, accessible regardless of location, and adaptable for other professional development.

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Scholarship of Teaching and Learning: A Review Study

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Background: History of Scholarship of Teaching and Learning goes back to 1990 when Ernest Boyer emphasized the importance of teaching and defined SoTL in educational contexts. This review study on SoTL literature indicates its discipline-based and theory-oriented nature, underpinning theories and diverse models.

Summary of Work: In this review study, the literature is investigated extensively to present an overview of Scholarship of Teaching and Learning. Diverse databases were searched and finally 145 papers were retrieved through systematized reduction according to the inclusion and exclusion criteria.

Summary of Results: SoT movement was launched by Carnegie foundation, which transformed in to SOTL in the 21st century. Moreover, SoTL was originated from humanities and debated in different disciplines. In addition, SoTL is used in theoretical and experimental settings. Further, several models are available in the literature and underpinning theories of SoTL are discussed.

Discussion: In various disciplines, SoTL is an inseparable part of educational contexts. It is theory-oriented and discipline-based and its theories which are in action in different parts of a SoTL process direct SoTL activities. Also, to improve quality of teaching and learning to follow SoTL models is informative.

Conclusion: To promote quality of teaching and learning, academic disciplines must be aware of SoTL, its underpinning theories and corresponding models to fulfill needs of specific teaching and learning contexts.

Take-home Message: Scholarship of teaching and learning that improves educational contexts is discipline-based and theory-oriented.

Assessment of tutor performance in tutorial groups: pearls and pitfalls

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Background: In PBL, tutors play an essential role in the tutorial process. At our institution, a training course is offered to novice tutors. However, over time, tutors often feel insecure or less committed to PBL concepts and facilitation skills. This study aimed to assess the tutor’s performance and possible affecting factors.

Summary of Work: We constructed an analysis framework for tutor-peer assessment consisting of 20 items grouped in four categories – basic PBL concepts, subject knowledge, ability to facilitate learning and teaching behavior. Thirty-one tutors were evaluated during the tutorial sessions by six experienced PBL tutors. Analysis used a 3-point Likert scale.

Summary of Results: Tutor performance was within expectations in 2/3 of evaluations, and correlated with experience. One-third of evaluations regarding basic PBL concepts were below expected. Performance was not influenced by tutor practice area or gender. Ability to facilitate learning was superior in opening sessions and subject knowledge was preeminent in closing sessions.

Discussion: Initial training was insufficient to avoid some PBL misconceptions among tutors. Failure to state information sources and encourage quiet students was common. Moreover, tutorial sessions should be better balanced, since greater efforts at reasoning and less subject knowledge permeated in opening sessions, whereas the opposite happened in closing sessions.

Conclusion: The tutors’ performances during tutorial sessions were dependent on experience and prone to inconsistency, mainly in process rather than content. Peer assessment proved to be an effective tool to detect key mistakes and successes in group facilitation processes.

Take-home Message: The quality of learning is dependent on the tutor’s performance, which should be assessed on a regular basis. A program of peer observation during tutorial sessions and continued PBL training can reduce variances between tutors and improve their PBL concepts and facilitating skills.
Creating a multiple source feedback tool for clinical teaching fellows

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Background: Many doctors in training expand their teaching skills by working as a clinical teaching fellow for a period. In contrast to training programmes which have formal systems of workplace-based assessment, there are no workplace assessments designed for teaching fellows.

Summary of Work: We therefore decided to create and pilot the Teaching Fellow Multiple Source Feedback (MSF) to seek feedback about our strengths and weaknesses in teaching and education. Seven teaching fellows completed the MSF and we sought feedback on the process from fellows, responders and appraisers.

Summary of Results: Fellows received an average of 9.7 responses from a range of respondents. All the fellows reported finding the feedback useful, and several used the MSF in their annual specialty appraisal, in addition to their teaching appraisal. Appraisers found the MSF useful in providing a rounded assessment of the fellow's skills.

Discussion: Fellows commented that free text comments were particularly helpful because they were written by those interested in education and with more-than-usual training in giving feedback, who therefore provided very specific and actionable feedback. Responders reported several items were difficult to answer as they were unclear and these have been rewritten.

Conclusion: This was a pilot within a single institution, and far too small to assess the reliability or validity of this assessment. However, we have shown that it is feasible, has face validity, and was welcomed by the participating teaching fellows and appraisers.

Take-home Message: • An MSF designed for teaching fellows was welcomed, and is feasible and has face validity within an academic environment. • The MSF provided valuable feedback to both teaching fellows and appraisers. • The tool needs further refinement and assessment of reliability.
Medical students’ emotions related to breaking bad news - a person-oriented approach

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Background: Breaking bad news (BBN) is an emotional event for both the patient and the doctor. At the University of Helsinki, medical students address BBN as part of their communication skills course in the 4th study year. In 2010-2012, students reflected on their emotions concerning BBN in the course’s learning assignment. 

Summary of Work: The students were asked to write a description how they felt about a BBN vignette. 351 (94%) students agreed to participate. Students’ reflections were analyzed first by using qualitative content analysis and then by a person-oriented approach to identify emotional profiles and groups of students with similar profiles.

Summary of Results: We identified ten different categories of emotions. Each student described 1-7 emotions which formed the combinations of emotional expressions. We recognized four major profiles in students: deeply emotional students, emotional students, neutral students, and students with general discomfort with the BBN. 

Discussion: BBN elicits strong emotions also in medical students. With a person-oriented approach, we were able to identify similarities in individual students’ emotional expressions and form emotional profiles. The emotional profiles revealed an interesting contradiction between professional and emotional reactions in students.

Conclusion: By exploring students’ emotional profiles, we can gain a deeper understanding of students’ emotional experiences and support their professional development and coping. Students’ reflections showed differences in the depth of emotionality and in considering the patient’s perspective.

Take-home Message: Students have different emotional profiles. Doctors deal with a variety of emotions in their working life. Medical students need opportunities to share and reflect their emotional reactions and experiences with their peers and faculty to promote their coping with challenging situations, empathetic care and to reduce their possible compassion fatigue.

#8EE02 (398)
Apply SHARE model to guide medical student facing patients and their family, training of communication skills and evaluation workshop - delivering bad news

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Background: 1. Milestone resident competence indicated communication skill most needed improve. 2. Chinese passive communication culture, students covered by attending physician, seldom communicate to patients and family alone, nevertheless delivering bad news. 3. Tension increased between physician and patient, daunting task for learning communication thought tutor intervene still limited progress.

Summary of Work: Apply SHARE, combine SP thru simulation, OSCE to establish communication skills. SHARE model interactive device for patients and physician, after class on paper questions discussion. Use SP in acute intensive care scenarios, students monitor each other communication performance. OSCE evaluates student checklist practice, examiner and SP feedback to encourage and confidence while delivering bad news.

Summary of Results: 1. After class OSCE result “ask patient about diseases” & “choose suitable environment explain disease” score lowest” & “encourage patient positive thinking” & “patient disease process care” score highest. 2. Student acknowledges better in “discuss treatment direction with patient”, but less clear for “avoid nervous mood”. 3. Course satisfactory 92%.

Discussion: 1. Unfamiliar with tenderness and communication, it requires careful expression. 2. Expectation brings pressure to make mistakes. 3. Observe colleague performance, improve learning effect. 4. Tutor demonstration practice, with colleague provides complement to increase self-reflection. 5. By OSCE checklist, guide student gain confidence, anti-pressure, advantage and shortage.

Conclusion: 1. Afraid to face patient and their family alone, thru self-reflections, increase practice to learning effects. 2. Thru checklist assist self-expression, learn advantage and falls, greatly promote communication skill.

Take-home Message: Communication skill is the core ability, while the most difficult self-growth technique, providing various scenario practices to increase student confidence and anti-pressure ability.
The Feasibility and Application of Clinical Pastoral Education in Communication Skills Teaching

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Background: In some Christian hospital, Clinical Pastoral Education (CPE) provide a well-designed course for spiritual and psychological teaching of the theological students may meet the needs of communication skills learning for medical students. The aims of this study are to investigate the feasibility and acceptability of CPE in communication skills teaching.

Summary of Work: CPE consists of 4 X 3.5 hours-course in one semester, including hospital visits to in-patient, listening to sharing of experiences towards illness and dialogue with patient's family member. A verbatim is required for reflection and feedback from the supervisors. A total of 197 junior students were recruited over 4 years.

Summary of Results: The overall course satisfaction was 4.2 +/- 0.7. Subscale of skills in the order of preference were (1) Listening : 4.4 +/- 0.6; (2) Awareness of needs of others 4.3 +/- 0.7; (3) Confidence of dialogue with others 4.3 +/- 0.8; (4) Empathy 4.2 +/- 0.7 (5-point Likert scale )

Discussion: Besides quantitative measure, many students mentioned the valuable experience to talk with patients in their junior course were valuable experiences for them. In addition, listening to patient's sharing of psycho-social and spiritual experiences towards illness were helpful for them to under patient's needs. Those are different experiences from the classroom.

Conclusion: Modified CPE course provides hands-on communication skills learning for junior medical students is a feasible supplementary way of teaching in medical school with affiliated hospitals with religious background. The preference skills with great satisfaction is listening ability. A longitudinal follow-up study for senior medical students is worthwhile in the future

Take-home Message: A modified CPE course is feasible in medical school with religious background even for junior medical students. Listening ability is the most preferred skills learnt by the students. In addition to tutors with medical background, hospital chaplains may be an additional resource to teach communications skills for medical students.

Three-dimensions feedback strategies in Breaking Bad News in medical students

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Background: Breaking Bad News (BBN) is a difficult issue but fundamentally important task for all healthcare professionals. Focused training in communication skills and techniques has been a core of medical curriculum. In general, the Feedback in BBN situations evaluated only by medical staff, these experiences may not provide overall learning performance.

Summary of Work: Of 28 6th-year medical students were assigned in BBN OSCE in 2 scenarios (cancer and fatal pediatric patients). Staff (S), student-self (SS), simulated patients (SP) evaluated students' performance after sessions. SP gave feedback in-depth 8 attitudes of skill including trust, emotion, frightening, empathy, language, asking, manner, comprehension in 5-Likert scales.

Summary of Results: Overall feedback scores both situations were higher significantly in staff compared to SS, SP (6.8, 6.0, 4.6, p<0.05) respectively. Two important students' attitude was empathy and manner. There were positive correlation between S and SP, SS and SP feedback (R = 0.42, 0.40, p< 0.05) but not S and SS.

Discussion: Medical students usually underestimated theirs BBN performance. Contrary, staff feedback was excessively assess, therefore three dimension perspectives were precisely evaluated issue incorporated by owner patients. Idea, perception, feeling and expectation of SP in BBN may be reflected the middle path for disclosing unfavorable information.

Conclusion: Three dimension strategic feedback methods provided further information in BBN evaluation. Single point of view in feedback may be insensitive and insufficiency. Additional feedback by simulated patients and students themself plays role in-depth perspective information.

Take-home Message: Diversity of direction of feedback contributed to various and different perspective views of the learners in breaking bad news scenario.
#8EE05 (1899)
Blended learning for culturally competent communication skills: first year evaluations

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Background: Communications skills is an essential part of the medical education. Available resources are in the English language and relies on the students' ability to interpret the language and health concepts to Cantonese (a dialect spoken by over 95% of the population) whilst balancing lay terms cultural nuances.

Summary of Work: A 3 year integrated clinical communication skills course was developed. The first year consisted of online learning and video workshops and feedback on active listening skills, video demonstrations of triadic consultations, children and elderly, ethnic minorities and consent. The course ran parallel to clinical history taking and ward attachments.

Summary of Results: The first year consisted of 10 videos of 15-20 minutes each. Content included: introduction, communication models, active listening, empathic response, patient competency: child, elderly, triadic consultations, confidentiality, consent and cultural competency. The entire year of 230 students were required to demonstrate skills whilst taking a patient history and complete e-assessments.

Discussion: Student self ratings, surrogate ratings and tutor ratings on video review will be compared. (Last video review on 6th February 2017). Course evaluations will be detailed (Course ends April 2017). Correlation of course performance to communication skills performance in OSCE stations (medicine and surgery) will be analysed

Conclusion: Performance at the video task was variable. Most students were able to demonstrate active listening but struggled to complete all stages of empathic response. Students found the video review and group discussion valuable. Further workshop and video on other tasks e.g. communication with parents, obtaining consent can be considered.

Take-home Message: Communication skills are distinct from history taking skills. Teaching in parallel helps students identify the different skills required. Early use of video feedback in clinical years and feedback from surrogate patient, tutor and peers are helpful for students to raise awareness and to improve his/her communication skills.

#8EE06 (334)
Learning to communicate with people with dementia: measuring the impact of a novel undergraduate simulation session

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Background: Dementia is a common and important condition. It is recognised that there is a failure to equip healthcare professionals with the relevant skills and behaviours to care for persons with dementia(1). An innovative undergraduate simulation programme has been established. Six scenarios focus on different aspects of communication within dementia care.

Summary of Work: A pre- and post-course questionnaire was used to evaluate the impact of the session on student self-reported confidence; and to assess what the student had learnt. A Wilcox signed rank test was used for statistical analysis. Thematic analysis qualitatively evaluated what students felt they had learnt from the session.

Summary of Results: There was a statistically significant increase in confidence post-session across all six scenarios including: de-escalation, performing cognitive assessments and assessing capacity. Feedback was overwhelmingly positive. The main learning themes identified were: de-escalating a distressed patient; awareness of the emotional impact involved; ways to assess a patient for an unmet need.

Discussion: The increase in student confidence and free text analysis suggests that learning outcomes were met. There was a noticeable change of language in the post-course evaluation. Example terminology includes using “distressed” instead of “aggressive”. This unexpected finding may reflect a change in mind-set, suggesting the session may influence underlying values.

Conclusion: This mixed methods study shows that simulation is an effective method to teach advanced communication skills with people with dementia. The session is well received by students and appears to have led to a change in the language used by learners.

Take-home Message: • Simulation is an effective and well received teaching method of communication within dementia care. • There was a change in the language students used after the session. Assessment of this and how language reflects learning requires further evaluation.
#8EE07 (657)
Training 4th year medical students to talk about behaviour change: assessment of a motivational interview curriculum

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**Background:** Clinical communication programs for medical students are introducing specific training for acquiring skills to motivate patients for changing risk behaviors (CRB). These curricular innovations must demonstrate their effectiveness in terms of skills acquisition and impact in patients, but also must be practicable in curricula already heavily loaded with contents.

**Summary of Work:** To assess the effectiveness of a course on "communicational skills for CRB" (4th year medical students), with "experiential" methodology (small groups workshops and individual videotaped encounters interviewing Standardized Patients (SPs) and feedback). Three patients (contemplative stage for quitting smoking, diet, exercise). External observer (EO) and SPs scored all students’ encounters.

**Summary of Results:** Participants: 96 students. EO mean scores for first/second encounters: 39.2/46.7, (t6.96;p<0.001). From first to second, students improved 13/15 skills/tasks. Mean SP scores at first/second interview (26;SD: 5.3/29;SD:4.2)(t:3.956;p<0.001). The SP had better experience progress in their interviews showing a greater use of more patient-centered skills with the specific purpose of helping them to change risk behaviors. Last encounters are perceived by the SP as more satisfactory than the first.

**Discussion:** After the course students with minimal clinical experience progress in their interviews showing a greater use of more patient-centered skills with the specific purpose of helping them to change risk behaviors. Last encounters are perceived by the SP as more satisfactory than the first.

**Conclusion:** Although further research would assess the long term benefits of this training and ultimately its impact on patients’ behaviors, these findings lend support to the implementation of motivational interview training in medical school.

**Take-home Message:** After the course students inquire deeper into patients’ ideas and concerns about risk behaviors and their motivation for change. The training seems to help students for applying more motivational interview skills. SPs perception of the encounters shows congruence with the use of concrete behaviors

#8EE08 (2225)
Accelerate Communication Excellence (ACE): A Web-based Tool for Scaffolding Clinical Success

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**Background:** Health students working with clients require high level communication competence. Students working with patients from social, cultural and linguistic backgrounds different from their own require even higher levels of communication competence. Poor communication competence is a barrier to clinic success and may result in patient mismanagement, satisfaction and student failure.

**Summary of Work:** ACE addresses this risk, embeds communication as a graduate quality, and supports clinical learning for first year health students. ACE: Diagnostic is an innovative, automated web-based program that develops, assesses and provides feedback on professional communication (listening, reading, writing, reasoning, and speaking). ACE: Immersive provides supplementary learning for at-risk students.

**Summary of Results:** ACE was piloted and validated in 2016 with 360 students completing ACE-Diagnostic and 30 attending ACE: Immersive. This was followed by 1,043 first year health students completing ACE-Diagnostic and 100 students attending ACE: Immersive. The 10% of students needing ACE: Immersive scored poorly on listening comprehension, writing, reasoning, and speaking. ACE: Diagnostic transforms their learning experience using interactive learning experiences and diagnostic assessments. ACE allows students to; 1) accelerate their professional communication skills; 2) use self-assessment and confidence ratings and, 3) compare their skills and confidence with peers and experts.

**Discussion:** In addition to embedding communication for first year students ACE transforms their learning experience using interactive learning experiences and diagnostic assessments. ACE allows students to; 1) accelerate their professional communication skills; 2) use self-assessment and confidence ratings and, 3) compare their skills and confidence with peers and experts.

**Conclusion:** ACE is an innovative and cost-effective program for developing vital professional communication skills (listening, reading, writing, reasoning and speaking) in novice students. ACE is delivered initially through an automated online learning platform followed by a blended learning approach with experiential learning activities for students needing additional professional communication learning support.

**Take-home Message:** ACE is an automated web-based program that accelerates the professional communication competence of first year health students. Student performance on the ACE: Diagnostic assessment tasks accurately identifies first year students with poor professional communication competence that may act as a
Take-home Message:

Conclusion:

Medical Studies in English. Overall, the students surveyed longitudinal course FMS at the University of Zagreb, Croatia. This manifests in the 6-year-longitudinal course Fundamentals of Medical Skills (FMS) at the University of Zagreb, Croatia. This manifests in the 6-year-longitudinal course Fundamentals of Medical Skills (FMS), focused on communication, practical and clinical skills. A mentor is still invaluable to guide trainees in identifying gaps and improving their communication skills. A mentor is still invaluable to guide trainees in identifying gaps and improving their communication skills. Faculty input is still invaluable as trainees may not be able to accurately or completely assess their own performance. They were however unable to detect some issues in their interaction with the role-player which faculty had identified.

Discussion: Trainees demonstrated insights into their strengths and weaknesses in their own communication skills by watching themselves in action. They were however unable to detect some issues in their interaction with the role-player which faculty had identified.

Conclusion: Video-based self-assessment is a useful adjunct in formative assessment of communication skills and could be used more frequently in clinical training. Faculty input is still invaluable as trainees may not be able to accurately or completely assess their own performance.

Take-home Message: Video-taped self-assessment is a useful adjunct in formative assessment of communication skills. A mentor is still invaluable to guide trainees in identifying gaps and improving their communication skills.

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Background: Remediation for students in difficulties needs to be developed. The aim of this PhD study was to evaluate the efficacy of iterative coaching sessions focused on interpersonal skills with medical students previously detected as having interpersonal difficulties (IP) during ambulatory consultations using professional actors as standardized patients.

Summary of Work: IP were detected in 4th year medical students using the standardized patient satisfaction questionnaire (SPSQ). One group of 20 students among those having the lower scores attended to 10 coaching sessions. Evolution of the IP was followed using SPSQ on February 2016 (T1), November 2016 (T2) and March 2017 (T3).

Summary of Results: As preliminary results, self-assessment of interpersonal skills tends to increase between T0 and T2 in the group of coached students (+0.6) while it decreases in the group “without difficulties” (-4.3) and it remains steady in the non-coached group (-0.05); p=0.04. Statistical analysis including SP’s assessments are in process.

Discussion: The first results of this study were presented at Glasgow in 2015 (validation of the French version of the SPSQ) and at Barcelona in 2016 (spontaneous evolution of the student’s interpersonal skills between October 2015 (T0) and February 2016). Preliminary results indicate that coaching may improve interpersonal skills.

Conclusion: The last step of the study taking place on March 2017, final results including T3 data and conclusions in term of impact of coaching sessions on interpersonal skills will be available on April 2017.

Take-home Message: Coaching may improve interpersonal skills in students with difficulties.

‘The clinic mimic’: A practical solution to teaching students communication skills in a specialty with limited opportunity for observation

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Ross Cairns

Background: Barriers faced when teaching sexual history taking are well documented (1) (2) (3). A systematic review found insufficient quality data to conclude the best methods of teaching this skill (4). The appropriate approach, use of language and non-verbal skills are challenging to teach out-with the clinical setting.

Summary of Work: Students were asked which method they felt would be most beneficial to learn these skills. Videos simulating clinical encounters involving taking a sexual history were created. They are examples of good practice and an example where common mistakes occur (eg. assumption about sexuality). A facilitators’ guide accompanies the video.

Summary of Results: Students felt observing clinics would be the optimal approach to learn sexual history taking. Opportunity for this is often limited by clinic capacity and patient consent to observation. Therefore, a pilot session was created utilising the videos in conjunction with facilitated discussion to mimic observing clinical and meet students’ needs.

Discussion: This teaching method ensures all students have an equal opportunity to utilise role modelling for the hidden curriculum, and discuss good and bad practice in a comfortable environment, without concerns about clinic capacity. This use of multimedia in this way has been shown to be effective in other domains (5).

Conclusion: This use of standardised media, alongside facilitated discussion ensures students gain a minimum level of exposure to sexual histories, where previously it has been limited. This could be utilised in settings with similar capacity or consent constraints. To further this project, ongoing educator and student feedback will be analysed.

Take-home Message: For education on skills where non-verbal cues and use of language are important, and where clinic capacity or patient consent to student observation are a barrier, media alongside facilitated discussion can be used as an alternative or in addition to observing clinical practice.
**Background:** There are factors that contribute to the success of teamwork: individual competencies, adaptability and group perception. The objective is to determine if there is an association between the effectiveness of teamwork in designated groups and the perception of group performance in medical students of Universidad Andrés Bello Viña del Mar.

**Summary of Work:** A Descriptive, observational study with 41 medical students was performed. Prior informed consent obtained, class grades were retrieved to evaluate efficacy; a self-evaluation questionnaire and group evaluation on collaboration, leadership-decision making, interdependence, communication, problem solving and conflict management was applied. The analysis was performed with Pearson correlation and SPSS 24.0.

**Summary of Results:** It was established that there is a statistically meaningful linear association between obtained efficacy variables and the perception of teamwork in designated groups. The analysis by dimension shows a positive and significant correlation of the perception of group functioning on communication within the work team and the academic results achieved.

**Discussion:** Personal skills and competences of group members (leadership, commitment) lead to teamwork success, perceived as a group and individually. Self-efficacy makes students persist in difficulties, work intensely and participate, which determines part of success. Among evaluated dimensions, stands out a linear relationship between communication and efficacy, correlating with the literature.

**Conclusion:** The perception of teamwork efficacy is directly associated with team success and the perception of how students communicate in designated groups. Communication, identified as a core competency, stands out from the rest of the skills to achieve team and individual success. Leadership and commitment are also identified as key components.

**Take-home Message:** Students assert that successful teamwork is about communication. In medical education, curricular teamwork skills development is far from academic sight. Attention is currently being given to communication skills development in the doctor-patient relationship arena. In the real world, doctors will have to work in teams with many other health professionals.

**#8EE13 (1994)**

**Association Between Efficacy and Perception of Teamwork in Medical Students Designated Groups at Universidad Andrés Bello Viña del Mar, Chile**

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**#8EE14 (1819)**

**Practices of informed consent inquiry in patient care involving medical students – a survey from clinical teachers**

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**Background:** Patients need to be inquired an informed consent for medical students’ involvement in their care. Parliamentary Ombudsman in Finland has declared that consent procedures are insufficient and a written consent from every patients is required. This study explores the practices of informed inquiry in healthcare described by clinical teachers.

**Summary of Work:** The data were collected with a web-based survey addressed to clinical teachers. It consisted of items on informing, asking consent and patients’ refusing student participation. 79 teachers responded, 52% male and 48% female. The respondents were experienced teachers, 46% had over 10 years and 29% 6-10 years of working experience.

**Summary of Results:** Teachers reported that teaching units informed patients by letter (30%) or upon admission (16%). For 33% of the teachers, this informing process was unclear. Most teachers personally asked for consent from patients before teaching with students (always 55%, often 12%). 99% asked consent in spoken and 1% in written.

**Discussion:** This study focuses on teachers’ perceptions of these processes. There are challenges in the chain of the events of the teaching units’ informing patients, teachers’ role in obtaining patients’ consent and documenting the consent in the health record. Similar challenges from patients’ and students’ perspective were recognized in previous studies.

**Conclusion:** It is crucial for clinical skills learning for students to participate in patient care. The process of informing and asking for consent requires commitment from the whole teaching hospital community from leaders to all healthcare professionals. In the digital era, the consent should be stored in the electronic health record.

**Take-home Message:** It is crucial for students’ clinical skills learning to participate in patient care. Teaching units require both systematic directions of informed consent and commitment from the whole healthcare community implementing them in practice. The electronic health record enables capture the state of patient consent across time.
Errors in History and Physical Examination Report Writing

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Background: The first step to diagnosis is history followed by physical examination. Identifying medical errors from the root (the history and physical examination report) can reduce mortality. The aim of this study was therefore to identify the common types of errors in history and physical write ups in medical students.

Summary of Work: This was a retrospective chart review using a cross-sectional study design. History and physical write ups (200) submitted by the semester 2 medical students to the Department of Clinical Medicine for the period September to December 2016 were reviewed. Errors made by medical students in the write-ups were identified.

Summary of Results: This is work progress. Preliminary results indicate that students made errors in the write ups of all four standardized cases (myocardial infarction, cholecystitis, stroke and hyperthyroidism).

Discussion: Errors were identified in the reliability statement, chief complaint, present illness, past medical, social, and family history, review of systems, physical examination, labs, summary, problem list and differential diagnosis; spelling/grammar and miscellaneous.

Conclusion: Several errors were identified in the history and physical reports written by medical students. Identifying these areas can help in the creation of targeted instruction and interventions.

Take-home Message: Knowing in advance the errors students commonly make in History and Physical write-ups, can create better instruction and more targeted interventions and subsequently improved outcomes.
Background: Respiratory therapists (RTs) have experienced caring for dying patients during their daily practices. However, the process of caring for dying and death patients easily lead RTs to anxiety and anxiety. The purpose of this study was to investigate the impact of death education programs on the clinical RTs’ attitudes towards death.

Summary of Work: A prospective, cross-sectional survey was conducted to 54 licensed RTs from a medical center in southern Taiwan respiratory therapist. A structured questionnaire was used for the survey, including demographics and attitudes toward death of professional respiratory care to dying patients (Death Attitude Profile-Revised (DAPR) Cronbach’s α = 0.93).

Summary of Results: The significant findings: RTs in the second group (N=32) had a greater “fear of death” than the first group (N=22) (p <0.001). In the first group, the scores of “death is a terrible experience” and “neither afraid nor welcome for death” were greater than those of the first group (p <0.01).

Discussion: The respondents from RTs of the second group indicated that they experienced a beneficial effect from participating in the course. Statistical analysis showed the death education had positive effects on the attitudes toward death. However, death education allows clinicians to gain more intelligence to provide better care for dying patients.

Conclusion: The death education program significantly reduced the fears of death, also helped the RTs to understand better the meaning of life and to rearrange their life plans. Therefore, extending intensity of continues education on hospice and palliative care is essential to increase the positive death attitudes of respiratory therapists.

Take-home Message: The death education curriculum can improve health care staff’s awareness and attitudes towards death, and the fear of dying in the face of dying patients is low, further to understand whether death education courses can improve the death attitudes of clinical RTs and reduce the anxiety of death.
**Developing a New Service-Learning Course for Palliative Care on First-Year Medical Students**

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**Background:** The needs of a rapidly aging population and advancements in the treatment of cancer and chronic diseases in Taiwan have resulted in increased demand for quality palliative care. Despite the broad support for palliative care training in hospitals, medical school curriculum does not include palliative care, especially for preclinical students.

**Summary of Work:** In 2015, Taipei City Hospital created a 40-hour student-centered service-learning course of palliative care for first-year medical students from National Taiwan University. The course introduced palliative care through three learning modules: in-class principles discussion, communication at a hospice ward, and caring for people with life-limiting illnesses in their houses.

**Summary of Results:** In the beginning, students learned the basic concepts of palliative care and home-based holistic care in the first learning module. Furthermore, they began clinical observership at a hospice ward, joining family meetings and interacting with patients. Finally, students, led by multidisciplinary teams, cared terminally ill patients in the community.

**Discussion:** The course aims to give the students the ability to provide support for people with life-limiting illnesses rather than medical treatment. Also, we assign mentors for each group of students and the mentors know that students might be confronted with a variety of patients and caregivers’ spiritual needs.

**Conclusion:** The curriculum had a 100% student satisfaction in all three modules, and all the preclinical students believe that understanding palliative care and home-based holistic care will be helpful in their clinical training later on. The curriculum has become a formal Service-Learning course in National Taiwan University since 2016.

**Take-home Message:** Palliative care education within undergraduate students has a significant progress worldwide. Our palliative care curriculum will keep providing the first-year medical students the knowledge of palliative care as an integral part of medical education and give them the opportunity to learn how to communicate with patients and families as well.

**The development of the Fellowship Programme in Advanced General Adult Psychiatry in Qatar**

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**Background:** Hamad Medical Corporation (HMC) is a major public healthcare provider in Qatar. General Adult Psychiatrist are needed as 84% of Qatar’s population are aged between 15 to 64 years old. In October 2016, HMC has started the Fellowship Programme in Advanced General Adult Psychiatry (AGAP), a programme unique to the region.

**Summary of Work:** The programme reconciled the American Accreditation Council of Graduate Medical Education International (ACGME-I) standards, fulfilled the local requirements whilst using the established General Adult Psychiatry training programmes (e.g. RCPsych, RANZCP) as model. The programme is designed in accordance with principles of higher training in which “service does not take precedence over training”.

**Summary of Results:** The overarching goal for the programme is to produce fully qualified, competent and safe general adult psychiatrists. This programme adopts the learner-approach which encourages lifelong learning. Needs assessment was carried out before designing the competency based curriculum. Assessments are in the form of formative workplace-based assessments and yearly summative appraisals.

**Discussion:** Efforts were made to ensure continuity and coherence between the residency and fellowship programmes. However, as the residency programme follows the American residency programme, there are new concepts and training approaches introduced in the fellowship programme which are unfamiliar to the local psychiatry training.

**Conclusion:** The AGAP Fellowship is a new programme which will continue to evolve with the change in the service and residency programme, the development in medical education and postgraduate training and with feedback from the stakeholders. The programme can be viewed as perpetual ‘working progress’.

**Take-home Message:** Creating and designing a training programme and curriculum in AGAP specific for Qatar is a dynamic process with many different components. One of the main consideration for creating such training programme is the ‘contextualization’ of knowledge, skills, and experience to the local setting”. (Grant 2014)
#8FF05 (1999)
Systematic feedback from medical students and clinical practice in basic education in Psychiatry

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**Background:** Medical students tend to have lack of clinical practice. Student may have much stress when starting his work as a substitute for the doctor after 4th academic year. Family-oriented and multiprofessional aspects should be developed. Patients with mental disorders visit often general practitioners. Lack of specialists in psychiatry is threatening.

**Summary of Work:** Systematic feedback from medical students in the Psychiatry course (12.0 credits) in the 4th academic year was gathered electronically and in group meetings concerning learning and clinical practice. Electronic questionnaire contained quantitative and qualitative questions including Readiness for Interprofessional Learning Scale RIPLS. The aim was to study clinical learning.

**Summary of Results:** 138 students fulfilled the questionnaire in 2015-16. One week practice in psychiatric units was appreciated. About 90% considered the week progressing well. 63% reported increased interest in psychiatry. In RIPLS the statement “Patients would ultimately benefit if health and social care students / professionals worked together” was agreed by 94%.

**Discussion:** Medical students like clinical work-oriented practice also in Psychiatry course. They learned about working with families and had attitudes favoring multiprofessional aspects. Almost two thirds of the students got more interested in psychiatry.

**Conclusion:** Clinical practice may increase the interest in psychiatry in medical students. This should be taken account in the curriculum.

**Take-home Message:** Doctors dealing with patients with also mental disorders and their families are needed. Clinical practice tend to increase the interest in psychiatry in medical students, which should be taken account in the curriculum.

#8FF06 (1180)
Implementation of Evidence-Based Medicine in Psychiatry Clerkship

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**Background:** Stigmatization of psychiatry service still exist in the medical society, and could be partly explained by the deficiency in evidence-based psychiatry clerkship program, resulting in misunderstanding and misinterpretation of evidence once medical students graduated. This study aimed to explore the impact of implementation of evidence-based medicine (EBM) in psychiatry clerkship.

**Summary of Work:** In this 3-year study, totally 130 fifth-year Taiwanese medical students in one university hospital were included. In the first two years, the instructor applied traditional psychiatry educational program, and in the third year (2015-2016), evidence-based practice was introduced. The response was recorded after the 4-week psychiatry clerkship and compared annually.

**Summary of Results:** Five-point Likert scale was applied. Clerks agreed psychiatry practice is evidence-based after the introduction of EBM in the program (“Fully agreed” improved from 73.91 to 85.37%). Furthermore, they became significantly more satisfied with the clerkship (76.09 to 90.24% overall), specifically in the subscales of “history taking” and “medical ethics.”

**Discussion:** Despite the limitation of small sample size and lack of follow up results after graduation from medical school, this is the first study in Taiwan attempted to explore the impact of implementation of EBM in psychiatry clerkship program. Further qualitative studies are needed to clarify the difference between subscales responses.

**Conclusion:** Implementation of EBM in psychiatry clerkship may directly improve medical clerks’ opinions regarding psychiatry as an evidence-based specialty. Furthermore, this program not only improved the overall satisfaction rate of psychiatry clerkship, but more specifically improved the satisfaction rate in learning “history taking” and “medical ethics.”

**Take-home Message:** 1. Stigmatization of psychiatry may associate with the deficiency in evidence-based psychiatry education. 2. Implementation of EBM in psychiatry clerkship may improve students’ satisfaction on training program, and directly altered their opinions on psychiatry practice. 3. EBM may improve students’ perception toward “history taking” and “medical ethics” in psychiatry training.
Practical Prescribing in the era of e-Prescribing

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Background: In an era of e-Prescribing, barriers to teaching future prescribers may be related to access to e-Prescribing systems. Final-year medical students consistently report the thought of prescribing as daunting and lack confidence in this area. Therefore, we set up regular sessions to familiarise soon-to-be prescribers with the practicalities of prescribing.

Summary of Work: Final-year medical students were tasked with completing an inpatient drug chart in the following scenarios; acute myocardial infarction, exacerbation of chronic obstructive pulmonary disease, upper gastrointestinal bleeding and palliative care prescribing. This took place either in a classroom setting with pre-written scenarios, or on the ward using patients as examples.

Summary of Results: Feedback forms were collected from 53 students. 52 out of 53 (98%) felt more confident after the session and feel further prescribing practice would be useful.
An average score of 2.8 out of 5 (43 responses) was attained from the statement pertaining to having had adequate prescribing practice.

Discussion: Our experience shows that prescribing remains a great source of apprehension for final year medical students. There was a common thread that students felt they had lacked adequate practice but felt more confident following the session. This was despite their perceived understanding of pharmacology and access to information sources.

Conclusion: We have shown that practical prescribing can be taught effectively both in the classroom and at the patient bedside with beneficial effects on perceived confidence in prescribing. When facilitated with a tutor, safe prescribing practices can be emphasised that may carry over into clinical practice.

Take-home Message: The principles of safe prescribing can be taught effectively irrespective of access to e-Prescribing systems. While the ideal format for teaching prescribing remains unclear, it is our feeling that students should have regular practicing opportunities so that the apprehension surrounding prescribing can be allayed.

Advancing Oral Health Knowledge and Attitudes of Physician Assistant Students through the Implementation of STFM's "Smiles for Life" Oral Health Curriculum

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Background: In the last two decades there has been a greater emphasis placed on integrating oral health into the physician assistant (PA) curriculum. This is the first study evaluating the effectiveness of the "Smiles for Life" curriculum as the sole component of the oral health curriculum in a PA program.

Summary of Work: Pretest and posttest surveys were administered to didactic year PA students in one PA program. The surveys assessed the attitudes and knowledge of PA students in regards to oral health prior to the start and after completion of the Society of Teachers of Family Medicine's (STFM) "Smiles for Life" modules.

Summary of Results: The results of this study show a statistically significant improvement in the attitudes of PA students toward oral health and a statistically significant increase (23%) in oral health knowledge after completion of the STFM's "Smiles for Life" comprehensive oral health curriculum.

Discussion: Implementation of oral health into the PA curriculum has not occurred in some PA programs due to the presence of significant barriers. The biggest reasons given for not implementing oral health are the lack of available class room time and the lack of faculty with oral health content expertise.

Conclusion: STFM's "Smiles for Life" oral health curriculum is a comprehensive curriculum that is an effective teaching tool for PA students. One of the benefits to using this curriculum is that it can be implemented without requiring additional class time or faculty expertise as all modules and testing are completed online.

Take-home Message: The Society of Teachers of Family Medicine "Smiles for Life" oral health curriculum is an effective teaching tool for PA students. This curriculum can be implemented without requiring additional class time or faculty expertise, which are two significant barriers contributing to the lack of oral health implementation in PA programs.
#8FF09 (229)
Revealing Challenges in Teaching Health Economics in Thailand: a national survey throughout 37 medical education centers in Thailand

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Background: The Medical Council of Thailand clearly lists the ability to apply the principles of health economics (HE) in clinical practice among the core competencies of medical graduates. However, there is little information concerning HE teaching in the medical education centers of the university-affiliated medical schools (MECs).

Summary of Work: An online questionnaire consisting of 5 questions was sent to all 37 MECs in Thailand to obtain information about HE teaching: Is there HE teaching?; How many hours of teaching?; Are materials and references provided?; Are instructors employed in the institutions?; What support is needed to facilitate HE teaching?

Summary of Results: Out of 37 MECs, only 16 (43.7%) provide HE teaching. Teaching duration varied from 1 to 9 hours. Only 9 of the 16 institutions have their own instructors, and have reference materials provided in the curriculum. All MECs indicated the need for support, such as reference material and resource persons.

Discussion: Despite being a requirement, more than half of MECs do not offer HE teaching in their clinical curriculum. Results also revealed inconsistent standards among those MECs with HE teaching, reflected in a variety of the HE teaching hours, and the lack of materials and resource persons needed.

Conclusion: Owing to both the absence and inconsistent standards of HE teaching, efforts should be made to facilitate the implementation of standardized HE teaching in all MECs in Thailand.

Take-home Message: MECs currently experience challenges in integrating HE teaching into medical education, in terms of both provision of teaching and inconsistency of teaching standards. Interventions, which could provide standardized HE teaching in all MECs, are in need.

#8FF10 (254)
When the Medical Students of Mozambique are Introduced to Competencies in Intimate Partner Violence? Preliminary Results

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Background: Intimate Partner Violence (IPV) is a critical public health issue. In general, the quality of care for survivors of IPV has been poor worldwide. The literature suggests that IPV contents should be introduced in the preclinical and continued in clinical years, however, few medical schools adequately address IPV contents.

Summary of Work: This study was guided by self-direct questionnaire for medical students (N167), in five medical schools in Mozambique, to get a reported self-mastery in relation to their perceived mastery of a critical list of IPV competences and to identify the gaps in curriculum contents.

Summary of Results: Until now, 167 medical students (RR 51%) participated in the survey. Our preliminary results showed that Mozambican medical students reported minimal previous training in IPV contents (18%) and that most students (40%) have been introduced to this contents only in the 5th years of their medical course.

Discussion: In our study, the highest mean score for perceived competencies on IPV for medical students was in attitudes. The questionnaire was also intended to help medical students that participated in the study to be aware of, be sensitive of, and examining, their own knowledge, attitudes, and skills on IPV contents.

Conclusion: • Low levels of self-mastery in relation to students perceived KAS on IPV. • There is the need for more comprehensive training on KAS to deal with survivors of IPV.

Take-home Message: Further research is needed to identify the approaches used and assessment procedures in the teaching-learning process on IPV curriculum content at Mozambican medical schools. The results can be judged as to implement an innovative IPV mitigation curricula for medical students as designed by the medical schools, or to improve it.
Exploring the Views of Applicants for Medical School about Sex and Gender Medicine using a gender-sensitive Video Assignment

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Background: Sex and gender are important determinants of healthcare. To achieve gender-sensitive healthcare students need to be educated about sex/gender. Education is more effective if applicable to students. Our research questions: What are the views of applicants for medical school about sex/gender medicine and which objectives and activities do they formulate?

Summary of Work: We performed a qualitative document analysis by investigating selection procedure assignments of 50 successful applicants entering a Dutch medical school. The applicants watched a gender-sensitive video consultation of a female patient with angina pectoris, providing explanation regarding the sex/gender differences. Students were asked to formulate learning objectives and learning activities.

Summary of Results: Students considered sex and gender self-evident topics in medical education. To gain an understanding of sex/gender they preferred to gain basic biomedical knowledge of sex differences before acquiring gender-sensitive communication skills. Students differed in their interpretation of the video, some showed gender bias. Teachers were mentioned as important role models.

Discussion: Our study offers students’ views on sex/gender medicine from the very beginning, which may help to develop and optimize medical education. Students became aware of sex/gender differences and were eager to learn about sex/gender medicine. Despite of the selection procedure, we believe students felt they could openly discuss their views.

Conclusion: We advise medical schools to teach sex/gender medicine from the very start, by firstly focusing on sex differences in health and disease followed by gender related themes, such as communication skills. As students may interpret gender-sensitive information differently, structurally embedding reflection on sex/gender medicine with gender competent teachers is necessary.

Take-home Message: • Aspiring medical students consider offering gender-sensitive healthcare necessary.
• Students are eager to learn about sex/gender medicine.
• Students first want to acquire basic biomedical knowledge, followed by gender-sensitive communication skills. • Students interpret gender-sensitive information differently. • Teachers are important role models in learning about sex/gender medicine.

Child Abuse, Spotting the Signs: A Pilot Program to Increase the Detection Skills of Pediatric Residents, Using a Combination of Simulation-Based and Didactic Training

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Background: Child maltreatment is the harmful treatment of a child, through abuse or neglect. In 2014, over 700,000 children in the U.S. were victims of maltreatment - 1,500 succumbed to fatalities. Providers can protect children by reporting maltreatment, but only if they can recognize the subtle signs of abuse and neglect.

Summary of Work: We developed a simulation, a clinical visit for an infant with a viral respiratory infection; cigarette burns on her skin were hidden. Pediatric residents were divided into groups: Group A received a lecture on child maltreatment, then entered the simulation. Group B participated in the simulation first, then the lecture.

Summary of Results: Fourteen pediatric residents participated. In Group A (n=6), 67% of residents correctly identified signs of child maltreatment during the simulation. In Group B (n=8), 25% did so correctly. The 43 percentage point increase is marginally significant (p, one-tailed = 0.06). Qualitative analysis of a debriefing session is underway.

Discussion: Potentially, Group A could have been primed by the training and distracted from detecting other health problems. Encouragingly, participants readily identified the respiratory infection – there were no significant group differences. This is a pilot. We'll adapt the program and replicate the study in other settings, beginning in emergency medicine.

Conclusion: Based on diagnoses made in a simulated setting, we find suggestive evidence that resident skills at identifying child maltreatment can be increased using targeted lectures. An early qualitative finding from a debriefing session was a request from participants that the combined lecture-simulation be repeated during every year of residency.

Take-home Message: Pediatric residents may overlook signs of maltreatment, without specific training. We find suggestive evidence that a lecture-based training session increased successful detection of child maltreatment in a simulated setting. The increased ability to spot signs of child abuse did not decrease residents’ abilities to detect other underlying health issues.
Assessment of Knowledge and Satisfaction after participating in School-based Student-guided Child Accident Prevention Activities

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Background: Because accidents are the most common causes of death among Thai children. Child Accident prevention module was first introduced in pediatrics course for 5th year medical students at Sunprasitthiprasong Hospital in 2015. This study was aimed to assess students’ knowledge and satisfaction after completing the Child Accident Prevention modules.

Summary of Work: 47 5th year medical students were assigned to develop activities and/or tools to be used in kindergarten or primary school in Ubonratchathanee, based on childhood accident and injury prevention guideline. Their knowledge was assessed using pre-and-post-test questionnaire. Results were analysed using paired t-test. Students’satisfaction was assessed after completing the activities.

Summary of Results: There was a significant improvement in students’knowledge on child accident prevention (Mean scores = 10.2 and 12.4 for pre and post activities, mean= 2.2, p <0.001). 30(63.8%) reported high satisfaction after participating the activities. 33(70.2%) admitted improvement in their knowledge and confidence to incorporate anticipatory guidance for child accident prevention.

Discussion: Assigned grouped tasks to develop accident prevention activities and/or tools enhanced students’ self-studying and discussion among participants in the group had an effect on students’ knowledge. The finding was corresponded with their satisfaction and increasing in their knowledge and confidence to incorporate anticipatory guidance for child accident prevention.

Conclusion: School-based Student-guided Child Accident Prevention Activities helped enhance knowledge of 5th year medical students about child accident prevention.

Take-home Message: School-based Student-guided Child Accident Prevention Activities might be beneficial for reducing risks of accidents and injuries in children.

Hand Hygiene: Knowledge and Technique Among Medical Undergraduates

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Background: Healthcare-associated infections (HCAI) are associated with significant morbidity to the patient and cost to the NHS, thus infection prevention is vital. Hand hygiene is a preventative measure against HCAI. There are World Health Organisation (WHO) guidelines on hand hygiene. To assess knowledge and technique of hand hygiene among medical undergraduates.

Summary of Work: 100 participants completed an anonymous questionnaire and then performed hand hygiene as they usually would before (HANDRUB), and after patient contact (HANDWASH). Fluorescent lotion (GlitterBug®) was used to simulate HANDRUB. Technique was assessed using a UV hand-inspection cabinet (Glow&Tell) after HANDRUB and again after HANDWASH to identify missed areas.

Summary of Results: Questionnaire: 49% aware of WHO guidelines; number of steps for hand-rub and handwashing known in 38% and 6% respectively. Technique: areas missed on dorsal surface after HANDRUB and HANDWASH: left thumb (16, 21), and right thumb (29, 14). Only 16% did not miss any areas on dorsal surface after HANDRUB.

Discussion: Majority of participants were unaware of the WHO guidelines, correct number of steps and duration of either method of hand hygiene. Most commonly missed areas are the digits and nails. Undergraduates exhibited discrepancies in knowledge and technique despite having ‘simulated practice’ and written information available in their Clinical Skills Passport.

Conclusion: Good hand hygiene is one of the most important practices in clinical care as around 80% of diseases are transmissible through touch. Further education and training is essential to emphasize the importance of hand hygiene especially in the clinical stages of undergraduate training and to potentially reduce HCAI in hospitals.

Take-home Message: 51% of clinical medical undergraduates were unaware of the WHO hand hygiene guidelines. Hand hygiene is a key preventative measure against healthcare associated infections. There is room for further education and training of clinical undergraduates in hand hygiene in order to reduce the spread of micro-organisms.
#8FF15 (1597)
Addressing the needs of health professionals working with children with developmental disability and challenging behaviours: the case for providing training to clinical staff

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Background: Medical curriculums are often tailored for mainstream health consumers. People with developmental disability (DD) experience significantly greater health problems and difficulties accessing health services. This is often due to service infrastructure limitations and lack of experienced healthcare staff. These issues make healthcare interactions stressful and affect treatment success and compliance.

Summary of Work: An electronic questionnaire was administered to clinical staff working in two paediatric tertiary institutions in metropolitan Sydney, Australia. Staff were asked to rate statements pertaining to their attitudes, knowledge, skills and experience in relation to caring for people with DD. Data were available for 160 respondents.

Summary of Results: Staff reported positive attitudes towards working with children with DD. However, many lacked confidence in knowing how to manage challenging behaviours of patients with DD. Respondents supported the proposition of undertaking further training in DD (96.9%) with preference for an online learning format.

Discussion: Our survey revealed that clinical staff have an expressed need for developmental disability awareness training to improve their skills and confidence in managing children and young people with DD. Areas identified as important to address include strategies for managing difficult behaviour and more effective communication skills.

Conclusion: Current medical training does not prepare graduates to work with people with DD. Accessible, high quality professional development resources need to be available so that clinical staff can enhance their skills to provide better quality of care for people with DD and learn to mitigate negative experiences.

Take-home Message: There is an urgent need to develop high quality and accessible continuing professional development programs and resources for the health workforce caring for people with DD in Australia. Some suggested approaches are discussed that include adult pedagogical methods and program delivery.

#8FF16 (883)
Students’ attitudes towards the integration of English medium teaching in the clinical years at Lampang Hospital

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Win Techakehakij

Background: Although the ability to communicate in English in clinical practice is a key success for physicians to serve non-native patients in Thailand, there was no English-integrated program during the clinical years. The Medical Education Center at Lampang Hospital (MEC) has initiated a program for clinical students with partial English integration.

Summary of Work: A survey was conducted among 65 medical students approximately 3 months after launching the English integration program. Three main groups of questions were used to assess students’ attitudes: 1) students’ demand for English learning, 2) provision of an English consultant at the MEC, and 3) challenges concerning the program.

Summary of Results: Eighty-seven percent of students agreed that English is important in clinical practice; 63.8% wanted clinical classes in English; over 90% reported that the English consultant helped improve English communication skills; but about half revealed that, due to language difficulties, they sometimes missed important contents and hesitated to ask questions.

Discussion: Positive feedback on the provision of an English native consultant was observed. However, challenges concerning the effects on students’ learning uptake and hesitation to ask questions during clinical classes owing to a language barrier are also noted.

Conclusion: This study assesses the MEC’s first attempt to integrate English usage partially into medical education. Although students’ feedback points rather in favor of the program, some challenges still remain. Re-evaluation of the program in the next 6 months is planned to gain further understanding about this new intervention.

Take-home Message: Despite some challenges, provision of a program with partial English integration seems promising in response to students’ demand to improve their English proficiency in clinical practice.
Effect of medical students’ participation in interdisciplinary convergence research

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Background: Research competence of medical students is becoming more important. It is also necessary to provide medical students with opportunities to conduct interdisciplinary convergence research. The purpose of this study was to investigate the difference of research efficacy, research interests, university life satisfaction, and major satisfaction among the three groups.

Summary of Work: 44 of interdisciplinary convergence research group, 32 of medical science research group and 27 of non-research course group were participated. The questionnaire consisted of the items about research efficacy, research interests, university life and major satisfaction. This study also analyzed the effect of participation in interdisciplinary convergence research using qualitative methods.

Summary of Results: Students who participated in interdisciplinary convergence research had lower life satisfaction than the other two groups. They showed the highest score of research self-efficacy. Three essential theme and thirteen subjects were analyzed in the reflective essays. The three essential themes were recognition, effect and demand for interdisciplinary convergence research.

Discussion: We hope that this study will contribute to the development and activation of research program for medical students.

Conclusion: The students who participated in the interdisciplinary convergence research had low life satisfaction but the highest research self-efficacy (p<.05). They also recognized that interdisciplinary convergence research was important and necessary. And it has shown positive effects such as teamwork, intellectual growth, pleasure of research, and career exploration.

Take-home Message: The Interdisciplinary convergence research program promotes research self-efficacy and is effective in recognizing the importance of research to medical students.

Key for students’ success in manuscript writing: learning by doing

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Aphaphun Narenpituck

Background: Medical students practice to conduct research and prepare manuscript by themselves in the community medicine course. Manuscript writing is important and integral parts of the research development. The purpose of this overview is to provide students to avoid common mistakes and improve manuscript quality by teachers’ suggestions.

Summary of Work: There are often slight variations from one journal’s format to others, but every journals which have instructions to authors are available on their website. We designed to write for Srinagarind Medical Journal. The content is the title, abstract, main text (Introduction, Methods, Results, Discussion, Conclusion, Acknowledgements and References.)

Summary of Results: We explore common mistakes made by students: One is in the discussion part, such as information being unrelated to the purpose of the study, another is in the results part, incomplete reported outcomes and inappropriate formatting data in the tables and the other is discontinuity of the article.

Discussion: Manuscript writing has similar basic principles and guidelines, but it can be a problem to students, especially, for their first time. They should practice and receive some suggestions for improving their writing skills. This writing practice need to understand every parts of research development.

Conclusion: At the end of this course, students can write valuable articles by themselves because of the suggestion of teachers. Their articles are concise, pertinent and complete message providing the accurate technical basis. They can apply this principles not only for writing, but also reading all of other articles.

Take-home Message: Manuscript writing is a big challenge for students. We should use “learning by doing” process to improve student skill. This practice is an important experience that allows them to have more confidence for submit their significant articles in the future.
#8GG03 (2457)
The University of Liverpool Scholar Programme: an opportunity to develop clinical academics within undergraduate training

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Background: The University of Liverpool Medical School Scholar Programme aims to accelerate the development of research skills by embedding medical students within an active clinical research department. This gives scholars a unique experience and provides insight into how the evidence base is developed and translates to clinical practice.

Summary of Work: Partnership with a research department provides medical students with an extended opportunity to develop and implement a research project; conducted over years 2-5 of training. An action plan supports each element of project development, with Scholars required to submit summative assessments that parallel the sequential stages of the study.

Summary of Results: SB, AR and DC are Scholars in Palliative Medicine, working on projects in Hydration, Medical Education and Psychological Intervention, respectively. All have made excellent progress in the development of study protocols, securing ethical and Health Research Authority ethical approval, collecting patient data and securing presentations at national and international conference.

Discussion: Against a backdrop of crowded training curricula, there is increased focus on doctors to understand and engage critically with the development and application of research evidence. This programme creates an efficient way for students to practically explore both the critical relevance and application of research evidence.

Conclusion: The Research Scholar Programme may be an effective way to enable academically focussed medical undergraduates with the opportunity to understand the critical relevance and application of research evidence whilst developing transferable research and critical thinking skills, applicable throughout their training and professional career.

Take-home Message: The Research Scholarship Programme aims to develop future clinical academic leaders who will facilitate evidence-based medicine to improve care for patients internationally.

#8GG04 (353)
Doing a research step by step: model of teaching

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Background: Community medicine is a course for training doctors. This course prepares students to properly conduct research by themselves. Students practice many skills throughout the course. Such as, searching information, gathering data and statistic calculating. They're required to appraise medical papers. Students also visit the community and learn about health promotion.

Summary of Work: The course begins with a lecture about research knowledge. Students create research questions, review literature, make conceptual frameworks, questionnaires and case record forms. To collect data students do a workshop or use google document, they double check data entries and practice to use a statistics program.

Summary of Results: Students present in class after each step of work, write an essay, a manuscript and a poster. Students have written and oral tests. There’s also time for students and teachers to exchange feedback and thoughts. The result is useful for the hospital, medical education center and the community.

Discussion: Students practice many skills from doing just one research. They learn how to collect data and compile that information using technology. They practice appraising paper and giving presentations. Students also gain experience in community living. They work hard and learn to solve urgent problems.

Conclusion: This is a good method of teaching because it teaches students many skills. They practice all the steps to conduct a research, how to work with others and to manage time. These courses help them to become a fine doctor in the future.

Take-home Message: Learning the right theory and do a real practice step by step with the coverage make the student understand the process more and more and can apply the skills with their future life. The best way of learning is by doing with supervisors.
#8GG05 (269)
Facilitating Undergraduate Research through Teaching and Mentoring via Social Media

Nishan Silva, International Institute of Health Sciences, Welisara, Sri Lanka

**Background:** Undergraduates rarely engage in Research. Those who do however, have a higher tendency to excel in Academics. In the present IT and social media dominated era, it is justifiable to ask, “Can a social media based mentoring program stimulate Health Care Undergraduates be to conduct and disseminate Research?”

**Summary of Work:** An interventional study was conducted from 2013 – 2015 among 262 Sri Lankan Allied health students. A mentoring program was conducted to aid in the design, conduct, analysis and dissemination of undergraduate research, using popular social media platforms, to facilitate mentoring. A post interventional analysis was done on the outcomes.

**Summary of Results:** Out of the 262, 239 students (91.2%) completed their research projects. Out of these 129 were presented. 54 were individual and 31 were Collaborative projects (24.03%). Most presentations were by Nursing Students (78%). 72.86% were from the Diploma level. 32 students went out of the country to present their researches.

**Discussion:** Social media was useful to promote student-teacher interactions in terms of communication, information sharing, providing feedback (in both directions), collaborative learning and for self directed learning. Over 90% of students completed their researches and close to 50% presented them. The success rates were particularly high among the junior students.

**Conclusion:** It seems that the use of social media was not merely an adjunct, but at times may be the main content delivery mode for some aspects of research teaching. Further research should be done on a more structured content delivery plan balanced between classroom teaching and using social media.

**Take-home Message:** Though junior students seem to engage heavily in social media almost to a level of addiction, a positive attitude towards these behaviors can produce better educational outcomes than negative confrontation. Properly structured strategies through social media can promote positive results even in a difficult domain such as Health Care Research.

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#8GG06 (2762)
On becoming a (biomedical) scientist in the 21st century

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Lisa Adriaansen, University Medical Center Utrecht, Utrecht, Netherlands
Rinze Benedictus, University Medical Center Utrecht, Utrecht, Netherlands
Berent Prakken, University Medical Center Utrecht, Utrecht, Netherlands

**Background:** At Utrecht University and University Medical Center Utrecht a debate about quality and relevance of (biomedical) research has started under the name ‘Science in Transition’. It critiques current reward systems where research is mainly judged by the amount of publications (rather than contributions) and scientific excellence (instead of societal impact).

**Summary of Work:** Initially (bio)medical students and teachers were not involved in the discussion. We organized two focusgroup sessions with participants from the Faculty of Medicine. Last May we discussed with high-level faculty members (25 attendees) how to change the (bio)medical curriculum. In November we discussed this topic extensively with students (30 attendees).

**Summary of Results:** Staff members agreed that students should know how science works and how scientific knowledge interacts with policy and society as they are very unfamiliar with the current research system. Students should engage more in critical thinking and should practice working in multidisciplinary teams. Exemplary behavior of teachers must support this.

**Discussion:** Currently the curricula support research by doing internships and obtaining theoretical knowledge. Success of research internships is considered linked to publishing in journals with a high impact factor. The curricula should have a more explicit focus on ‘good science’ and educating ‘good scientists’ with e.g. focus on skills and awareness.

**Conclusion:** Science in Transition aims to improve quality of research and enhance the relevance. However, you need to educate ‘good science’ to students, our future researchers. Teach students to be critical and make them aware of the future research community. Support role models and learn students the skills they need.

**Take-home Message:** We engaged students and faculty staff members in the discussion on doing good science, as we reckon that academic education is at the core of creating good scientists. Future scientists need to be better prepared. This will benefit future researchers, science as a whole and of course larger society.
#8GG07 (768)
To be or not to be a great supervisor? - Medical students’ views on the roles and responsibilities of research project supervisors

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Background: In order to develop scientifically proficient clinicians, many medical curricula include individual authentic research projects. The quality of supervision is of importance not only for the success of the project, but also for learning outcomes. The purpose of this study was to examine medical students’ recommendations for good supervisory practice.

Summary of Work: A cross-sectional questionnaire study. 650 students registered on a compulsory research project between 2011 through 2013 were e-mailed a questionnaire after completed course. 452 (70%) returned the questionnaire; 309 students (mean age 26 years; 63% females) answered the question about the supervisors. The answers were analyzed by manifest content analysis.

Summary of Results: Totally six categories emerged: Perceptiveness, Tailoring the project in line with guidelines, Engaging in student learning, Accountability, Encouraging self-efficacy in research competencies, and Subject knowledge. Regular meetings and feedback are important in creating the sense of continuity and avoiding mistakes. Supervisor should encourage students to take ownership of the projects.

Discussion: That students were found to particularly appreciate supervision features connected to the supervisor-student relationship and supervisor’s commitment and willingness to introduce the student in the research community may indicate aspects of superviship that are sometimes overlooked. Several practical recommendations were identified.

Conclusion: Commitment and accountability are highly desired features of students’ research supervisors.

Take-home Message: Engaged and accountable supervisors are superb.

#8GG08 (3015)
Four step approach by Peyton’s as a tool for teaching Statistical Package for Social Sciences software among undergraduate Medical students: An experience from Pakistan

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Background: Four step Peyton’s approach is a combination of different learning theories. To compare the performance of medical students of year 4 in using Statistical Package for Social Sciences (SPSS) version 23 taught through the four step approach by Peyton’s versus traditional teaching at Shifa College of Medicine (SCM), Pakistan.

Summary of Work: A cross sectional study was carried out in year 4 of SCM. 50 students were exposed to 4 step approach while 50 students were taught through traditional approach. All students were assessed regarding SPSS skill through same hands on exercise carried out at one time on their laptop.

Summary of Results: 94 students completed the study. Mean score among the 4 step approach group was 3.83 ± 2.09 while the score in other group was 3.03 ± 2.71. Independent samples t test was found to be statistically significant among mean scores. Feedback was taken from all students.

Discussion: variety of instructional approaches with multiple steps to deliver technical skills to students have been described. A model that is becoming popular in medical education is Peyton’s 4 step approach. It leads to quicker learning and better performance when students undertake this learned skill for the first time.

Conclusion: Students learn SPSS software better when taught through 4 step approach by Peyton’s as compared to traditional teaching. This approach should be utilized to help learners to develop better understanding of the skills like SPSS, which students consider hard to learn.

Take-home Message: Faculty should be innovative in its methods of teaching skills like research and SPSS. These subjects are not only harder to teach but also harder to grasp for the learners. Adding some innovation in the teaching strategies will help learners to grasp the idea better.
The effect of self-efficacy, perceptions of research, curiosity, and need for challenge on intrinsic and extrinsic motivation for research among first-year medical students

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Background: Engaging students in research enhances their skills necessary for physician-scientists. To stimulate engagement, knowledge of what affects intrinsic and extrinsic motivation for research is needed. Based on Social Cognitive Theory, this study investigates the effect of self-efficacy, perceptions, curiosity, and need for challenge on motivation for research.

Summary of Work: First-year medical students (N=315) were surveyed in the first semester to study factors contributing to motivation for research. Self-efficacy, perceptions of research, curiosity, and need for challenge were scored on a 7-point Likert scale. Multivariate regression analysis was used to examine the effects of these constructs on motivation for research.

Summary of Results: Self-efficacy for research, perceptions of research, curiosity, and need for challenge positively affected intrinsic motivation. Perceptions of research and need for challenge were also significant predictors of extrinsic motivation. Perceptions of research mediated the relation between self-efficacy for research and extrinsic motivation.

Discussion: Believing in your own capabilities is more important for intrinsic motivation than it is for extrinsic motivation. Since this study suggests that self-efficacy for research is an important predictor of intrinsic motivation for research, the Social Cognitive Theory seems applicable in the context of motivation for research in medical education.

Conclusion: Motivation for research can be enhanced by stimulating students’ positive self-efficacy beliefs, positive perceptions of research, and their curiosity. With regard to need for challenge, students can be motivated for research through continuous emphasis on the importance of understanding and doing research for future doctors.

Take-home Message: Motivation for research can be enhanced by promoting positive self-efficacy beliefs, perceptions for research, and curiosity, and by meeting their need for challenge through emphasizing the importance of undergraduate research and offering challenging projects.

Supporting Research skills development for medical students

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Connie Yu, University of Bristol, Swindon, UK
Anthony Kerry
Kevin Jones

Background: Evidence based practice has been a cornerstone in modern medical education and practice and as such, it is essential that medical students obtain the skills for effective critical appraisal. However, students feel unprepared to be involved with research or critical appraisal.

Summary of Work: We designed an interactive workshop covering research skills, scientific papers reading and appraising. The students wrote a critical appraisal. During their attachments students presented a succinct critical appraisal of a topical scientific paper in a peer-learning environment. Where interesting debate, students collaborated to produce a response to the journal editor.

Summary of Results: The workshops and sessions are due to commence in February. At the time of writing this abstract data collection and analysis are incomplete and the results are therefore tentative. We will use descriptive statistics to assess the confidence pre-and post-workshop. The students’ reflections will be analysed thematically.

Discussion: We hope such intervention is sufficient to develop students’ skills in critical appraisal. We also hope students gain further practice and utilise skills gained by publication of collaborative letters to editor. Following on from this, we hope to offer this teaching intervention to subsequent cohorts of students at other academies.

Conclusion: This study continues and aims to be complete by 6th June 2017. At this time an entire academic year of teaching will have been reviewed and analysis generated.

Take-home Message: Early intervention is better tool produce life-long critical thinkers; Regular mini appraisals can consolidate appraisal skills and keep students interested in research; Self reflection on progress is a useful assessment tool.
That’s Not What We Taught You! EBM Behaviors of Medical Students

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Dorice Vieira, NYU School of Medicine, New York, USA
Jeff Williams, NYU School of Medicine, New York, USA
Adina Kalet, NYU School of Medicine, New York, USA

Background: With rapidly expanding medical literature, it is critical that modern clinicians to be both highly skilled at efficiently finding evidence and evaluating evidence. Although evidence-based medicine (EBM) skills have been formally taught and evaluated since the early 90s, little is known about how these skills transfer to the clinical environment.

Summary of Work: Following a standardized patient encounter, medical students were given 10 minutes to complete an EBM activity from question formulation through finding an answer. Student performance of the tasks was recorded via screencasting and assessed by an experienced medical librarian. Search sequence and patterns were described qualitatively.

Summary of Results: Analysis of searches revealed four main approaches to searching for evidence. The most common approach involved students beginning their search in a point of care tool, following this up by looking for further evidence in the literature using PubMed. Only a small percentage read full articles and evaluated evidence found.

Discussion: It was surprising how differently each student approached the same scenario. Most arrived at the same few articles, but they all took very different paths. Strikingly, few started out a search in PubMed, as they had been taught to do in our EBM curriculum.

Conclusion: While we teach and advise students to practice EBM searching in a particular way, analysis of their search patterns reveals that they are able to find evidence without adhering to what they have been taught. Greater emphasis in instruction should be placed on question formulation and critical analysis.

Take-home Message: This has serious implications for how this set of skills should be taught and assessed. In a world where fake and real information is being produced at alarming rates, we must understand how our students approach framing and answering clinical questions to better tailor our instruction and assessment of EBM.
#8HH Posters: Doctor in Difficulty

Location: Hall 6

#8HH01 (2314)

What are the challenges for the management of residents in difficulty in a Swiss Primary Care division? A pilot study

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Cédric Lanier
Melissa Dominé Dao
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Marie-Claude Audétat

Background: Residents in difficulty are a major concern in medical education. Nowadays most Swiss training hospitals do not have specific processes to manage them. The aim of this study was to explore the challenges perceived at different hierarchical levels of training and supervision regarding the possible implementation of a remediation program.

Summary of Work: We conducted an exploratory qualitative study at the Primary Care Division (Geneva University Hospitals). Three focus groups with senior residents, attendings and residents, and one interview with the division’s physician in chief were held. Data were transcribed, coded, and analyzed qualitatively using a content thematic approach and Fishbein’s conceptual framework.

Summary of Results: Supervisors usually identified correctly residents in difficulty but felt ill equipped and did not set up systematic remediation strategies. Remediation processes depended heavily on individual motivation and perceived utility. This contributed to create heterogeneous contexts and increased supervisors’ apprehension towards evaluation and remediation at all levels.

Discussion: We identified different factors contributing to the lack of a programmatic approach for the management of residents in difficulty. Thus, this process depends on residents’ attitudes regarding their own performance, the type of difficulties identified, and on both hierarchical involvement and institutional support.

Conclusion: Similar and divergent factors regarding the implementation of such a programmatic approach are present at the different hierarchical levels and need to be addressed specifically before implementing a remediation program.

Take-home Message: Residents in difficulty are well identified by supervisors but are not managed in a systematic way. A remediation program (including supervisors’ training and coaching, processes implementation) should be set up, but should be initiated and supported by the institution in order to be sustainable and effective.

#8HH02 (3273)

How does a period away from paediatric surgical training affect a trainee’s position in their Community of Practice on their return?

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Simon Blackburn
Joe Curry

Background: An increasing number of trainees are taking a period away from paediatric surgical training. A prolonged absence may alter a trainee’s perception of their role within their Community of Practice, which may have an impact upon their reintegration into the workplace. To investigate this, trainees’ experiences were explored.

Summary of Work: A qualitative study, of semi-structured face-to-face interviews, was undertaken. Trainees who had taken at least six consecutive months away from training were invited to participate. Anonymised transcripts were analysed using Grounded Theory and themes were identified. Participants reviewed preliminary results and provided feedback. Ethical approval was sought but not required.

Summary of Results: Seventeen trainees were approached, of whom 12 participated. Themes identified were: 1) Administrative difficulties; 2) Fears prior to returning to work; 3) Confidence difficulties; 4) Trainer influences; 5) Ideas for potential solutions. Loss of confidence emerged as a major factor. Returning to work less than full-time (LTFT) contributed to this.

Discussion: Trainees reported “no-longer feeling part of the team” on returning to work. This was attributed to the absence itself, loss of confidence, LTFT working and colleague support. This hampered trainees’ reintegration into their Community of Practice. If these difficulties were not addressed, negative consequences included long-term sick-leave and leaving training.

Conclusion: A perceived or genuine alteration to an individual’s previous role in the Community of Practice can impact upon reintegration into the workplace, learning, confidence and ability to do their job. Our participants recommended a range of interventions to assist trainees returning to work, from administrative measures to bespoke support.

Take-home Message: A prolonged absence can alter an individual’s position within their Community of Practice. Senior clinicians should be vigilant for potential problems in returning trainees. Ensuring trainees successfully reintegrate into their Community of Practice is paramount. Return to work programmes and guidance should reflect this need.
Doctors With Differing Training Needs: The Development of a Model To Identify Doctors at Risk of Receiving Adverse Outcomes In Annual Training Reviews

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Jan Illing, Newcastle University, UK
John McLachlan, Durham University, UK
Simon Forrest, Durham University, UK
Namita Kumar, Health Education England North East, UK

Background: UK postgraduate trainee doctors are assessed to ensure they are competent and able to progress to the next stage. Approximately 5% experience some difficulty and need additional training. The aim was to identify those most at risk of needing additional training and identify potential solutions to support their progression.

Summary of Work: A three phase study was conducted. The third phase involved a grounded theory study to identify a model about those at risk, and how to support them. Trainers and trainees were interviewed in one region of the UK. The focus was on those trainees who had received adverse outcomes.

Summary of Results: Interviews were conducted with trainers (n=57) and trainees (n=21). Three main factors were identified which could affect the progression of specialty trainees. 1) Individual factors such as; personality and working patterns.2) training environment factors such as: the training system itself, 3) System factors such as; changes in the training structure.

Discussion: A model has been developed involving three major factors which facilitate training or create barriers to progression. The model will help to identify those at risk and highlight those in need of early invention.

Conclusion: Factors have been identified that impact on doctors having difficulties during their training. There was some agreement on the issues identified by both groups, but from different perspectives.

Take-home Message: We believe that findings and recommendations from this research may help to identify trainees most at risk and by intervening early, reduce the number of doctors having difficulty progressing through their training.

Accommodation, Wellness and Remediation of Residents in the Era of Competency Based Education

Susan Glover Takahashi, University of Toronto, Toronto, Canada
Linda Probyn
Glen Bandiera

Background: Managing diverse resident needs in the era of competency based medical education (CBME) is increasingly complex. Requests for accommodation are rising, wellness needs are increasingly complicated and defining remediation is more challenging. This retrospective study identifies the ‘real’ problems to help coordinate and manage accommodation, wellness and remediation of residents.

Summary of Work: This multi-method quantitative and qualitative study looks at almost 100 resident cases for common issues and trends in managing accommodation, wellness and remediation of residents. Additionally the retrospective study inventories the variety of referral systems and support processes, resources as well as available outcomes information.

Summary of Results: Almost 100 residents on remediation from 3 years studied. Most of the residents on remediation were also receiving or referred to wellness services (70%). Most residents (90%) on remediation had either primary (i.e. pre-existing) or secondary (i.e. stress or anxious due to remediation) wellness problems.

Discussion: Wellness plans and remediation of residents need to work effectively together to support resident success. For example, a resident with professionalism issues (unexplained absences, not providing care for patients) may need both a Remediation coach to ensure learning and other supports including Resident Wellness to identify those challenges impacting performance.

Conclusion: With a better understanding of the diversity of resident needs, we can improve outcomes and systems. Accommodation works best with advance planning and well-developed teams and systems. Careful attention to wellness is important in CBME and remediation. Monitoring and assessment systems play an important role in resident progress and outcomes.

Take-home Message: A diverse collaborative team of people and integrated systems are needed to effectively manage and support the accommodation, wellness and remediation of residents.
#8HH05 (2883)
Perception of Junior Doctors on difficulty in passing the medical specialty entrance exam in Myanmar

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Background: In Myanmar, the first postgraduate course began in 1964. After serving two years as civil doctors, they are eligible to sit theory examination for a particular subject and English Language Test. The selections of number of candidates depend on the need of country, national health plan, and national health resources.

Summary of Work: The aim is to understand perception of recent graduates on passing specialty entrance exam in Myanmar. A questionnaire survey was conducted to attendants of continued medical education program. They were asked which factors had hindered to pass the specialty entrance exam.

Summary of Results: We found that major barrier to passing the exam was excessive work load followed by insufficient amount of study time and limited slot for each specialty. Female doctors have more difficulty as they have additional house work and maternity role.

Discussion: The doctors encountered several and long working hour resulting in excessive work load in clinical environment. The doctors do not secure enough leave to dedicated study time due to doctors shortage in hospitals. Although there are few spot available to each specialty, the number of doctors sitting the exam are skyrocketing.

Conclusion: Achieving a shared understanding between colleagues near the exam period is the key to improve passing the exam. These doctors are then identified to further examine these factors and access targeted early support. Additional slot for training is strongly needed to cope current situation

Take-home Message: It is essential to know why recent graduate have difficulty in passing the specialty entrance exam to upgrade specialty recruitment policy, post graduate medical education, and training in Myanmar.

#8HH06 (1251)
Personality in burnout risk, how does it relate? A study among Dutch medical residents

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Background: Burnout among medical residents is a significant problem. This study aims to examine whether personality traits are related to burnout. Furthermore, we assessed if burnout prevalence varies among different specialties and whether associations between personality traits and burnout differ between these specialties.

Summary of Work: A cross-sectional study among Dutch medical residents was conducted. The Maslach Burnout Inventory was used to ascertain burnout. Personality traits were assessed with the Big Five Inventory (covering: openness, extraversion, neuroticism, agreeableness and conscientiousness). Logistic regression analysis was used to assess associations with burnout. Analyses were stratified by specialties.

Summary of Results: 1231 residents participated, 185 (15.0%) met the criteria for burnout. Burnout was most common among surgical residents (18.1%). Neuroticism was associated with increased risk for burnout in surgical residents (OR:4.39), general residents (OR:1.91) and supportive residents (OR:6.77). Extraversion was only associated with reduced risk of burnout (OR:0.25) in surgical residents.

Discussion: Personality traits are associated with burnout, this effects differs per personality trait. Interestingly, associations are different when stratified by specialties. To our knowledge this finding has not been researched before in medical residents. In line with previous studies a neurotic type of resident is more at risk for burnout.

Conclusion: When it comes to burnout, personality does matter. Although for some personality traits, type of specialty need to be taken into account. Overall a neurotic type of medical resident is at highest risk for burnout among all types of specialties.

Take-home Message: These results could be helpful in early recognition of burnout among medical residents and for the development of future prevention models. More research is needed to further explore the interaction of different types of specialties on personality associated risk for burnout.
Qualitative study on interns' resignation of training in Korea

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Background: Recently, about 7-9% of medical school graduates have stopped their internship training in South Korea. In order to send qualified medical professionals to society, it is important to find out why they gave up their training in the first year of graduate medical education (GME).

Summary of Work: 2-hour, semi-constructed, depthly, and personal interviews were conducted to 12 interns who resigned their internships of 3 teaching hospitals in the past one year. The working environment, the factors of job stress, burning out, and intrinsic factors that caused them to giving up training were analyzed.

Summary of Results: As results of the interviews, the important factors were physical and emotional burning out, which was already well-known due to excessive working hours, low quality of training program, identity confusion as a low-wage worker rather than a doctor, and distorted medical system centering on non-insurance field.

Discussion: Management of clinics is maintained in the non-insurance field such as cosmetic procedures regardless of the specialized subject that they were trained during GME in Korea. Distorted health care systems affect the attitude of young physicians to training.

Conclusion: Young doctors gave up training because of the effects of distorted health care system, not just because of burn out. This shows that not only the need for a stress management program for each individual intern in trouble but also the overall improvement in the training program is needed.

Take-home Message: Career guidance from the medical student's early years, the stress management for interns who are currently experiencing difficulties, and changes in training programs is needed. Fundamentally, this finding also gives implications on the improvement of distorted health care system in Korea.

Coping with Burnout – The Perceived Effectiveness of Hugs, Kisses and a Listening Ear

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Background: Burnout may be associated with negative implications on residents and patient care. Studies have shown significant burnout rates among general surgery residents. The lack of recent data on burnout among residents in our program prompted this study to measure burnout, and determine if and what preventive measures are necessary.

Summary of Work: Thirty-nine residents were invited to participate in a survey. The survey comprised the Maslach Burnout Inventory (MBI), and a custom-designed questionnaire for residents to rate the effectiveness of 12 coping strategies on a 5-point likert scale, with 1 being “not at all effective” and 5 being “extremely effective”.

Summary of Results: Thirty-eight residents responded to the MBI, and 27 to the questionnaire. Twenty-eight (74%) residents met criteria for burnout on at least one MBI subscale. Coping strategies rated most effective were “Support from family and friends” and “Support from peers and colleagues”, with average scores of 4.3 and 4.1, respectively.

Discussion: The high burnout rate is consistent with studies of other resident groups, implying the necessity for preventive measures. It is crucial for the program to initiate coping strategies that strengthens residents’ social network support, which 15 residents have rated as the single most effective strategy to combat burnout.

Conclusion: The findings from this study will aid the program in managing resident burnout. Knowing the burnout rate and the coping strategies residents perceive as most effective, the program is better informed to develop measures suited to residents’ specific needs. The baseline data is also useful for facilitating future studies.

Take-home Message: We should not underestimate the power of hugs, kisses and a listening ear. The right amount of social support may be the best medicine in helping residents cope with the burnout from working in a highly stressful environment.
Bridging the gap – primary and secondary care developing together with trainees in difficulty

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Background: Workplace supervisors can find trainees with performance difficulties exhausting but also developmental for their educational skills. Debriefing with educator colleagues on such cases can help formalise the opportunity for reflection and development, allowing events to be discussed in order to enhance learning from peers.

Summary of Work: HEE Wessex facilitated a series of three half-day action learning sets, over three months, bringing educational/clinical supervisors in primary and secondary care together. Attendance at all sessions was encouraged but not compulsory. All participants had supervised a trainee who was not progressing for personal, health, competence or professional reasons.

Summary of Results: Evaluation of the sessions indicated overwhelmingly positive responses from both primary and secondary care supervisors. Key themes emerged relating to: support, shared learning and management planning. The understanding gained from cross-specialty working led to development of ‘tools’ and resources for dealing with specific areas.

Discussion: Supervisors felt out of their depth when managing poorly performing trainees. The issues encountered were similar in both primary and secondary care; individually they were small but cumulatively added up to a lack of development and poor trainee performance.

Conclusion: Joint, mutually supportive, learner-led protected time for hospital/community consultants and general practice trainers was valued. The ability to discuss the problems with colleagues helped the supervisor’s development and assured them that they were handling the situation in the best and fairest way for the trainee.

Take-home Message: Mutual, cross boundary primary and secondary care peer group support for supervisors can be beneficial and help to calibrate how they manage situations when dealing with their trainees who are in difficulty.

The use of psychological questionnaires for interacting with residents in daily educational settings

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Background: It has been known that residents are often mentally affected by stressful situations and present mental disorders, including depression. Daily interaction with residents based on psychological backgrounds is considered useful for the early detection of intervention in their psychiatric disorders.

Summary of Work: Psychological questionnaires including the assessment of depression, self-esteem, and ways of coping were applied to individuals three times a year at Kyoto University Hospital. Professors performed an interview for all of them based on the results of the initial psychological assessments. The results were given as feedback in the interviews.

Summary of Results: Among 117 residents, 15 were mentally affected and 4 of the 15 appeared to be present through observation records. Abnormal scores in general health and depression were observed in 9/15. Some of them were unique in resilience and stress coping. 3/15 did not submit the questionnaires.

Discussion: General health, depression, and resilience and stress coping style would predict the appearance of residents’ mental illnesses during the course of their training. Observation records, for example, regarding attitudes and performances of residents are helpful to get information of their illness.

Conclusion: The combination of psychological tests and interviews is effective for detecting mental disorders in residents and treating them in daily educational settings. One problem in applying questionnaires is the collection rate since some of the individuals with mental disorders do not submit them.

Take-home Message: The integration of psychological assessments, observation records, and face to face interviews is meaningful for dealing with residents’ mental health care. A theme is how to collect questionnaire more accurately from all of the residents who are at risk for mental disorders in the future.
#8HH1 (2412)
Sleep Quality and Affected Factors in Residents of Tertiary Care Hospital

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Background: Extended work hours, interrupted sleep, and shift work are integral parts of medical training. These can result in acute and chronic sleep deprivation, which can impact the well-being of residents and patient care. This study was aimed to determine sleep quality of residents and factors contributing to poor sleep quality.

Summary of Work: Pittsburgh Sleep Quality Index (PSQI) were surveyed among 60 residents from four major specialties which measured seven sleep components. Scoring of each component is based on a 0–3 scale. Global sum of 5 or greater indicates a “poor” sleep. Chi-Square and Mann-Whitney-U test were used to determine factors affected sleep quality.

Summary of Results: 63.2% of residents had poor sleep quality. Number of overnight duties affected sleep quality significantly (p=0.01). Surgery residents were the poorest sleepers (p=0.01) which corresponded to the highest number of overnight duties (p 1 cup of caffeine caused sleep disturbance significantly (p=0.01). Reported snoring was significantly affected daytime dysfunction (p=0.01).

Discussion: A great percentage of residents had poor sleep quality. Number of overnight duties was the key factor contributing to poor sleep quality. However, inadequate sleep duration, amount of caffeine intake, and sleep disordered breathing should be considered.

Conclusion: Sleep deprivation and poor sleep quality have several adverse effects on patient care and residents themselves. Limitation of overnight duties, sleep hygiene educations, and sleep disordered breathing management are recommended to improve resident sleep quality.

Take-home Message: Good sleep quality is needed to function effectively.

#8HH12 (1339)
The urgency of burnout prevention: Prevalence and associated variables for residents’ burnout

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Background: Residents face multiple burnout risk factors, and its prevalence is high with a tendency to increase. There is a need of methodologies for burnout prevention. The aim was to evaluate the prevalence of burnout and its associations with sociodemographic variables, in residents of Pontificia Universidad Católica de Chile (PUC).

Summary of Work: An electronic survey was sent to specialty and subspecialty residents of PUC. It included the "Maslach Burnout Inventory" and sociodemographic questions. Burnout was defined as a high score on depersonalization or emotional exhaustion subscales. Statistical analysis included an univariate analysis.

Summary of Results: 56% residents answered. 42% had burnout, 34% emotional exhaustion, 25% depersonalization and 19% low personal accomplishment. In the subgroup analysis, the highest prevalence was in surgical specialties (57%). In the univariate analysis, only marital status was associated with burnout, with higher risk if single (OR 1,75 IC95%, p = 0.012).

Discussion: These global rate of burnout is consistent with international studies but our residents have a lower rate of depersonalization and a higher rate of low personal accomplishment. The association between being single and burnout could be explained by well-being models where social support and healthy relationships are crucial.

Conclusion: Specialty and subspecialty residents have a high prevalence of burnout. There is a need of teaching and learning methodologies for burnout prevention. There is also a need of a focus group to verify the understanding of burnout’s constructs in our residents.

Take-home Message: Residency is a stage of high risk of burnout. There are many risk factors. There is a need of prevention.
An important cause of stress: Conflict Between Nurses and Doctors

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Background: Residency is more stressful especially if there is a conflict between doctors and nurses. According to the literature searches, junior doctors have more job stress than nurses. We aimed to assess this content with a survey.

Summary of Work: We investigated the occupational stressors and modifiers of residents and nurses in order to find the measurements for control of the job stress. The survey was conducted by face to face and included Goldberg’s General Health Questionnaire. The views of 33 young doctors and 12 nurses were obtained on work, stress, and professional relationships.

Summary of Results: We found a significantly high level of stress among the young doctors if there is a conflict between doctors and nurses. High stress may have negative effects on cognitive functioning, learning, and patient care. Hence, young doctors need support and subsequent interventions to cope with stress.

Discussion: Most doctors expressed that the conflict between doctors and nurses is one of the biggest demotivated issues in hospital. The increased levels of stress indicate a decrease in the physician’s psychological health, which could impair the their behavior, diminish their learning, and affect the care of patients.

Conclusion: The doctors have more job stress than that of nurses. This study is useful for encouraging the more collaboration and understanding is needed between nurses and doctors. Recommendations for improvement in communication between young doctors and nurses include use of joint grand rounds, patient care seminars, and interprofessional dialogues according the literature searches.

Take-home Message: Collaboration between nurses and physicians is no longer a choice.

Doctors’ lifestyle-related clinical parameters in the first year of residency compared to non-physician workers

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Background: The rigors of residency training require young physicians to undergo dramatic changes in lifestyle. Previous studies have reported residents engage in less physical activity and sleep, while having more stress. Little is known about clinical ramifications of these changes on body mass index (BMI), body fat, and laboratory measures.

Summary of Work: We conducted a retrospective matched-cohort study of all first-year postgraduate (PGY-1) residents between 2004 and 2015 at St. Luke’s International Hospital. For each resident, two controls from participants in a community health check-up program were chosen, matched by age, gender, and BMI. Univariate and multivariate analyses were performed.

Summary of Results: 281 residents and 562 controls were included. Per mixed effect model, BMI (β coefficient: 0.15, 95% CI: 0.08-0.22), body fat percentage (β coefficient: 0.47, 95% CI: 0.29-0.63), and LDL (β coefficient: 1.34, 95% CI: 0.17-2.50) showed statistically significant increases in residents versus controls. Residents reported shorter duration of sleep (OR: 0.77, 95% CI: 0.51-1.04).

Discussion: To our knowledge, this is the largest study exploring clinical factors in resident physicians after starting residency training. Compared to non-physician employees, observed differences in BMI, body fat, LDL and sleep suggest deterioration in nutrition and physical activity among young residents. Changes during these years may carry longer-term health consequences.

Conclusion: Delterious changes in BMI, body fat, LDL, and sleep in first-year resident physicians were significantly higher than those of people in the general working population. Self-care education provided early in residency may be an important component for young physicians’ training. Further studies of intervention for prevention are warranted.

Take-home Message: Despite the rigors of residency training, young physicians require health maintenance in order to prevent future consequences of deterioration of their metabolic health.
#8HH15 (372)
Worried sick: a survey of anxiety levels among Foundation Year 1 (FY1) doctors in the UK

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**Background:** Previous studies show that psychological distress is prevalent among junior doctors and that stressed doctors are more likely to make clinical errors, take time off work and to leave medicine. This study aims to investigate self-reported anxiety among newly qualified doctors in order to identify causal factors and high-risk groups.

**Summary of Work:** We collected UK data about FY1 doctors using an online survey over 2 years (n=2883). An ordinal regression model was used to analyse likert scale responses to the Leeds Self-assessment of Anxiety General Scale and self-reported workplace factors that may exacerbate/alleviate anxiety (e.g. “I feel part of a team”).

**Summary of Results:** 28.6% of doctors screened were pathologically anxious. High anxiety levels were significantly correlated with feeling underprepared, poorly supported, unfamiliar with the ward/equipment and being forced to work beyond perceived competency. Age did not influence anxiety, but female doctors were significantly more anxious than men in 5/6 domains across both cohorts.

**Discussion:** Our findings may inform future foundation induction programmes by targeting reversible causes of anxiety such as perceived isolation and unfamiliarity with the workplace. Our study also generates new questions; why are female doctors more anxious and how can we help? Does anxiety among FY1 doctors predict burnout later on?

**Conclusion:** This study shows that anxiety is highly prevalent among first year doctors and that females are a particularly high-risk group. We have identified several sources of anxiety but further research is required to establish whether they could be alleviated by measures such as better ward inductions and team building exercises.

**Take-home Message:** • First year doctors in the UK experience high levels of anxiety, which are likely to contribute to clinical errors and burnout. • Female doctors experience higher anxiety levels than males. • It may be possible to reduce anxiety with measures targeting team/colleague factors, preparedness for practice and knowledge of the working environment.

#8HH16 (780)
Resilience and Tolerance of Uncertainty Among Depressed and Burnt Out Trainees: Cross-Sectional Study

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**Background:** Depression and burnout are highly prevalent amongst physicians-in-training, with profound implications for physician wellbeing, patient safety, and quality of healthcare delivery. Little is known about modifiable and dynamic personality variables—such as resilience and tolerance of uncertainty—that may predispose to these conditions. Residents routinely face uncertainty when making medical decisions.

**Summary of Work:** The authors surveyed 86 residents in paediatric residency programs from four urban freestanding children’s hospitals in North America in 2015. Stress from uncertainty, resilience, depression, and burnout were measured using validated scales with analyses performed that assessed for confounders.

**Summary of Results:** Higher levels of stress from uncertainty correlated with lower resilience (r=-.60;p<.001). Residents with high levels of stress due to uncertainty were significantly more likely to be burnt out (44.0[8.5] vs. 38.3[7.1];p=0.02) and depressed (51.6[9.1] vs. 38.7[6.7];p<0.001). The same findings held for residents with lower resilience.

**Discussion:** This study adds new knowledge by comprehensively evaluating relationships of tolerance of uncertainty, resilience, depression and burnout. Our findings suggest it is important to develop interventions that acknowledge and embrace uncertainty in clinical environments as this attribute (which is amenable to change) appears to be protective against burnout and depression.

**Conclusion:** We found strong correlations between stress from uncertainty, resilience, depression, and burnout. How to stem the rise of burnout in healthcare professionals is an important unanswered question. Efforts to enhance tolerance of uncertainty and resilience among residents may provide opportunities to mitigate resident depression and burnout.

**Take-home Message:** A strong correlation exists between tolerance of uncertainty and resilience. Tolerance of uncertainty and resilience appear to be protective against depression and burnout. This provides areas to target for curriculum development - these attributes are known to be states not traits, thus amenable to change through educational and experiential processes.
Higher emotional intelligence is associated with less perceived stress among preclinical medical students: an interview-based study from Saudi Arabia

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Background: Emotional Intelligence (EI) is defined as the ability to monitor one’s own and others' feelings and emotions and use this information to guide one’s thinking and actions. EI has been shown to affect a student’s ability to deal with stress and act as an integral factor in their academic performance.

Summary of Work: The study aimed to assess the level of emotional intelligence and its correlation with perceived stress in the students of our institute through an interview-based approach. The participants included students from year 1-3 academic years from different cultural backgrounds. We focused on intrapersonal and interpersonal intelligence, adaptability, and emotional regulation.

Summary of Results: The total number of students who were interviewed was 28, with 57% males and 43% females. The EI showed strong inverse correlation with perceived stress. Students with higher EI had less perceived stress and vice versa. Female students showed higher EI and lower perceived stress as compared to male students.

Discussion: It is the first interview based study to assess EI from the gulf region. Pronounced negative correlation was observed between adaptability and PS. Students who scored high in adaptability experienced less stress. Females showed higher EI due to their better empathy, impulse control, and improved interpersonal skills compared to their male colleagues.

Conclusion: EI provides students with the necessary skills to successfully cope with a highly stressful environment, such as medical school. EI is rapidly growing in its significance and slowly marking its place in the eyes of educators, but still more research is needed to examine the impact of EI on medical students.

Take-home Message: As EI has an important interpersonal aspect, our study showed that an interview-based study will allow a more in-depth assessment of EI traits and will be able to yield results surpassing self-reporting questionnaires. Incorporating EI traits into medical curriculums has the potential to make medical student better cope with stress.

Prevalence of Generalized Anxiety Disorder (GAD) and its effect on the academic and study habits of medical students

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Background: Generalized anxiety disorder (GAD) is one of the most common mental illnesses. It often exists with other comorbidities such as depression and stress, which have a high prevalence among medical students. Anxiety scores of medical students are higher than others. Medical students may have GAD because of chronic stress.

Summary of Work: We conducted a cross-sectional study at Alfaisal University using a 23 item questionnaire, which was prepared in Google Forms and distributed to all medical students. The survey included items measuring GAD prevalence, students’ study habits, scholarship status and extracurricular activities. The prevalence was measured using the self-report GAD-7 questionnaire.

Summary of Results: With a sample size of 87, the prevalence of GAD was 17%. Most had a severity of mild or minimal on the GAD-7 anxiety scale, 46% and 37% of students respectively. Another 10% had moderate anxiety and 7% percent had a severe form of anxiety.

Discussion: GAD is prevalent among medical students, even more so than the general population. Most often these cases are not diagnosed in a clinic. This could possibly be because of low awareness of GAD among medical students and also because symptoms of GAD are not specific and often confused with stress.

Conclusion: Due to the amount of stress that medical school entails, the prevalence of GAD is likely higher among medical students than among the general population, especially if they are not well equipped to cope with stress. Further investigations are needed to reveal the relation between GAD and extracurricular participation.

Take-home Message: GAD is one of the most common mental illnesses that are diagnosed. GAD is more prevalent amongst medical students than amongst general population. This could be because many medical students go through a lot of stress throughout medical school and hence many may develop an anxiety disorder.
#8II03 (2212)
Perceived stress and its influence among Undergraduate Dental students in Lahore

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Background: Stress among dental students during the course of their studies has appeared as major concern among dental educators and this phenomenon has been reported earlier. Focus is now on measurement of perceived stress among dental undergraduate students and determination of factors influencing their performance and health.

Summary of Work: The study included 316 students studying BDS in 6 dental colleges of Lahore. The study, data entry and analysis were completed in a period of one year. Stress was measured using a modified Dental Environment Stress (DES) questionnaire which consisted of 38 questions that are applicable to undergraduate dental students.

Summary of Results: The primary sources of stress in the present study are five factors; assigned workload, self-efficacy belief, and faculty and administration matters, patient’s treatment followed by their clinical performance pressure. These findings are almost universal phenomena in different countries with different education systems and curricula.

Discussion: The results of this study support the existing evidence in the previous literature, indicating that dental students are subject to numerous work-related and academic stressors that may adversely affect their health which is consistent with findings of other studies.

Conclusion: Student should be exposed to the nature of the profession and study environment, prior to applying. Entrance interview should be conducted to evaluate the candidate interest and suitability for the course. There is a need for the establishment of student advisors and counselors combined with a faculty advising system.

Take-home Message: It is difficult to eradicate all stressful problems in a dental education program. To become a responsible dental professional, students have to reach high levels of knowledge and professional skill, as well as developing good attitudes towards patient care: all within a short period of time.

#8II04 (1521)
Perceptions of cheating in a UK medical school

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Background: Research suggests that cheating is a concern in medical schools worldwide. Cheating can encompass a range of behaviours; from plagiarism, to the use of cognitive enhancing drugs. This qualitative study aimed to explore which cheating behaviours are perceived to be more serious than others and how participants justify these opinions.

Summary of Work: Participants consisted of eight 1st year and 4th year medical students, and five members of staff from Leeds Medical School. During an interview, participants were asked to place 6 hypothetical scenarios on a scale from ‘definitely not cheating’ to ‘definitely cheating’. Interviews were recorded, transcribed and analysed using thematic analysis.

Summary of Results: The scenarios about having an expert family member or using caffeine tablets were typically placed in the ‘not cheating’ side of the spectrum. OSCE station sharing, essay lending, and collaboration were viewed as more serious forms of cheating. Medical students’ use of cognitive enhancing drugs stimulated significant debate during interviews.

Discussion: Medical students and staff generally had a similar understanding of the scenarios. Participants considered the fairness of the action itself and contextual factors; such as the student’s underlying intentions, the medical school guidelines and society’s values. Faculty was also concerned about the impact of the student’s behaviour on future practice.

Conclusion: This study revealed that faculty’s values were aligned with their students’ attitudes. However, participants often struggled to define a consistent argument throughout the interview.

There is currently little public debate around students’ use of cognitive enhancing drugs. The lack of a society consensus might explain the participants’ discrepancies in opinions.

Take-home Message: This study identified that defining the boundaries of cheating is complex and challenging. Therefore, students and staff may need clearer guidance from Universities about academic misconduct. There is currently no research on medical students’ use of cognitive enhancing drugs in the UK. This is a topic for greater exploration.
#8II05 (1159)
Impact of Student Perceptions of the Educational Program on Burnout in Medical School

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Background: Adult learning theory (ALT) suggests that educational programs should focus on: 1) internal motivation, 2) prior experiences, 3) relevant materials, 4) preparation to learn, 5) self-direction, and 6) problem-centeredness to maximize learning. Thus, viewing the educational program as incongruous to ALT may result in stress that can lead to burnout.

Summary of Work: We conducted a cross-sectional survey study of medical students (n=238) at a single institution. The questionnaire contained 4 sections: 1) demographics, 2) known factors associated with burnout, 3) an instrument to assess students’ perceptions of how well the learning environment aligned with ALT, and 4) a measure of burnout.

Summary of Results: The response rate was 52%. Burnout was highly prevalent (76%; 95%CI 67-84%). Regression analysis indicated that perceptions of the educational program, defined in terms of alignment with ALT principles, is inversely related to burnout after controlling for depression, anxiety, and subjective workload.

Discussion: The principles of ALT have been used with the goal of creating a climate where students can maximize learning. The results of this study suggest that educational programs aligned with ALT principles may also minimize negative psychological sequelae often seen in stressful learning environments, such as medical school.

Conclusion: Medical students’ perceptions of the alignment between the educational program and ALT principles may be inversely associated with the presence of burnout.

Take-home Message: Though ALT is the subject of rich debate, the results of this study suggest that promoting educational activities that are aligned with ALT principles may promote a healthier learning climate that reduces negative psychological sequelae.

#8II06 (165)
Sleep behavior prior to examination among medical students of Maharat Nakhonratchasima Hospital, Thailand

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Background: Medical students in Thailand study very hard. Most of them sleep less than 8 hours/night, especially prior to examination phases, they sleep less than their usual duration. The study is aimed to determine a correlation between one night sleep behavior prior to examination and outcome of their academic performance (GPA).

Summary of Work: The evaluation forms were sent to medical students of Maharat Nakhonratchasima Hospital. 236 forms were collected. The data related to sleep behavior, demographic data and GPA were recorded.

Summary of Results: The mean sleep duration among the students was 5.88 hours/night and the mean GPA of them was scored at 2.92. Only the night prior to examination, 58% of the students sleep less than their usual duration (mean 2.1 hours) and the mean GPA of this group was scored at 2.90.

Discussion: Majority of students have a perception that the more doing revision a night prior to examination, the more they acquire good academic performance (GPA). Consequently, majority of medical students sleep less than their usual sleep duration (58%) and some of them even do not sleep at all (1%).

Conclusion: Sleeping less than regular duration a night prior to examination is not related to good academic performance (GPA).

Take-home Message: Medical students should be advised to read books consistently rather than intensively doing revision in one night before the exam.
### #8II07 (176)
#### Association of sleep hygiene and other factors on morbid stress of Medical Students at Clinical Level

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**Background:** Medical education is perceived as being stressful as a result of its highly demanding professional, increased responsibility and academic requirement. We focused on the relationship between sleep and stress; hence, poor sleep quality and morbid stress may have a negative effect on learning process of students in a medical school.

**Summary of Work:** This study enrolled all of 4th – 6th medical students. Data were obtained through self-administered questionnaire. Primary outcome was morbid stress (height to severe stress level). Logistic regression was used to identify association of sleep hygiene on morbid stress and presented in term of adjusted Odd Ratios and their 95%CI.

**Summary of Results:** Overall prevalence of morbid stress was 56%(95%CI:44.1-67.5). The 5th year showed the highest prevalent(72%;95%CI: 50.6-87.9). Factors associated with morbid stress included sleep hygiene scores(AOR=1.90; 95%CI:1.20-3.02) and year of study. The 5th year shown morbid stress 11.12 times (AOR=11.12; 95%CI: 1.80-13.02), the 6th year (AOR=1.24; 95%CI: 0.28-5.53) when compared with the 4th years.

**Discussion:** The prevalence of morbid stress in medical students were higher than in the general population, but lower than previous studies from Thailand. Consisted with other studies, this study did not show association of stress with GPA. However, it has strong association with sleep hygiene and year of study.

**Conclusion:** A high prevalence of morbid stress was found, specifically among 5th year students. Caffeine consumption and year of study impact their stress level. This were supporting data of their executives to develop campaign to reduce stress level in target group in order to support their academic performance and health status.

### #8II08 (469)
#### Impact of an integrative mindfulness and lifestyle program on medical student coping abilities

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**Background:** The teaching of mindfulness in medical schools is gaining momentum, however, comprehensive, core-curriculum, integrated student wellbeing programs remain a rarity. The ESSENCE+ program at the School of Medicine, Notre Dame Fremantle is one such initiative and aims at improving the wellbeing of medical professionals at the outset of their careers.

**Summary of Work:** Aim: To determine the psychological effects of ESSENCE+ on 1st year students’ ability to cope with the stressors of medical school.

**Methods:** The effects of participation in ESSENCE+ on students’ stress, resilience and compassion were measured at 3 time points (before, immediately after and 4 months later) using validated scales.

**Summary of Results:** ANOVA revealed highly significant differences between the 3 time points for all scales (p<0.0001). Post hoc analysis - significant decrease in stress from before to after the program and a significant increase at 4 months. Resilience and compassion unchanged before and after the program with significant fall at 4 months.

**Discussion:** The number of students engaged in mindful practices changed significantly in the keeping with the changes in stress levels (i.e. increased immediately post course and returned to pre course levels at 4 months). The ESSENCE+ program may have ameliorated the students’ stress as they approached their first medical school exams.

**Conclusion:** This study provides preliminary evidence that mindfulness based programs may impact on students’ psychological state. However, engagement with practices decreased over time with a subsequent return to or worsening of pre program psychological states. Strategies to encourage students’ ongoing commitment to mindfulness practices may be of benefit in the future.

**Take-home Message:** Integrated mindfulness based wellbeing programs can be shown to improve the psychological state of medical students in the short term. This effect appears to follow the degree of students’ engagement with mindfulness practices. Efforts to improve the long term engagement of students with these practices is required.
#8II09 (626)
Medical students will lower stress by attending a meditation course

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Background: Every medical school in Thailand offer a meditation course for their students. There are at least 2 courses in six years. We propose that the results of the meditation courses will reduce student’s stress. Objective: To study the effects of meditation on stress reduction in fifth year medical students.

Summary of Work: Twelve, fifth year medical students who enrolled in the study filled in questionnaires and took stress tests (saung-prung stress test) before and after attending a 7-day meditation course.

Summary of Results: Half of the students had lower stress after taking the course. Meditation course did not significantly lower stress by statistical analysis (Pair T Test=0.03). Ten out of twelve of them intended to take a meditation course again. All of them stated that they benefitted from the meditation course.

Discussion: The cause for the increased stress levels in half of the students was due to long time of meditation course. However, all of the students had positive attitudes in the meditation. Eleven out of twelve of them stated that they would continue meditation at home.

Conclusion: Meditation courses are beneficial for those who take them.

Take-home Message: We should continue meditation courses for all medical students.

#8II10 (1843)
The Effects of Working in Healthcare on Grief

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Background: Bereavement affects everybody differently thus it is important to identify influencing factors. This study considered whether patient care has an effect on healthcare workers grieving for family and friends. This link is not currently understood and no consideration given to build resilience for medical staff to deal with this.

Summary of Work: A 24-part questionnaire on personal bereavement was completed by 121 staff at the William Harvey hospital, Kent, UK. The respondents included both those with direct patient care and those without. Main measures were rate of grief resolution and a self-reported effect of job on grief and acceptance of death.

Summary of Results: Workers with direct patient care reported with significance (p<0.01) that their job had an effect on their grief. Whilst some healthcare workers reported that exposure to death at work worsened their grief, overall healthcare jobs largely helped the grieving process. Other measures failed to reach significance.

Discussion: This preliminary study highlights the significant effect of grief on healthcare workers. Whilst limited by sample size, initial results suggest that exposure and understanding of death might positively influence grief. However, some healthcare workers find their job very difficult when grieving. This emphasises the need for further studies.

Conclusion: Healthcare workers believe direct patient care and exposure to patient death has an effect on personal grief. This effect needs to be explored in more detail. Education is needed to build awareness and coping strategies with particular emphasis on where patient care worsens the grieving process.

Take-home Message: Despite placing emphasis on death and dying, medical education lacks awareness on how patient care affects grieving. Further research is key to understanding these effects. With further study, management strategies should be incorporated into medical curricula.
Is Mindfulness the new black? A pilot project with student-organised Mindfulness Based Stress Reduction courses at the University of Copenhagen

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Background: Mindfulness was the thing at AMEE in Glasgow. A survey from our Medical School, examining the wellbeing of the students showed that half of the students experience physical stress symptoms regularly. An intervention was much needed. We decided to go back home and see if mindfulness could be the answer.

Summary of Work: We designed a free-of-charge Mindfulness course (an extracurricular activity after school for 6 weeks) for 30 medical students with the help of a mindfulness instructor. All seats filled up on the first day of registration. To evaluate the effect of the course we used the surveys; WHO 5, Mindfulness skills, and PSS-scale.

Summary of Results: Results from the surveys are pending. Included students filled out the baseline surveys before starting the course, and are currently filling out the same surveys after having finished the course. We have a control group (no intervention). The qualitative feedback on the course showed a decrease in perceived stress.

Discussion: Mindfulness Based Stress Reduction is the only stress reducing tool we used. Further courses with different approaches are necessary to determine whether mindfulness is the best solution for all. Students were largely involved in designing this course, and the challenge is now how to best make stress management part of the actual curriculum.

Conclusion: Mindfulness is the new black in Copenhagen! This pilot mindfulness project served as a feasibility study for us, hence showing that it was indeed possible for a group of students to put together a course that managed to reduce the level of perceived stress among peer students.

Take-home Message: Students must be included in designing curriculum aiming at developing mindfulness skills and reducing stress, as the students are experts in their own and their peers needs. Also, medical students are more open towards exploring new techniques when the context is peer-to-peer learning.

Equine-Assisted Activities and Therapies (EAAT) Improve Mindfulness in Medical Students

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Background: Cultivating mindfulness and empathy skills in physicians can reduce medical error, improve accuracy of diagnoses, and patient compliance. There is debate whether these skills can be taught.

Summary of Work: All participants completed pre- and post-intervention surveys including: Five Facet Mindfulness Questionnaire (FFMQ) and Experiences Questionnaire (EQ) which measured mindfulness, while the Interpersonal Reactivity Index (IRI) measured empathy. In addition, the intervention group completed a qualitative survey and debrief data was collected.

Summary of Results: Medical students who completed the M&H Program had significantly higher post-intervention mindfulness scores in the subscales of nonreactivity and decentering compared to controls. Attention, self-awareness, connectivity, and confidence were also found to be increased in the analysis of the qualitative survey.

Discussion: Results from this study indicate that medical students may benefit from an M&H Program by teaching mindfulness skills, building confidence, and developing empathy through EAAT. An M&H Program may supplement traditional educational approaches as a unique form of experiential learning.

Conclusion: This study used a mixed methods design with both quantitative and qualitative data to examine changes in mindfulness and empathy in medical students. Our results suggest that structured interactions with horses through EAAT may be a useful intervention in medical education.

Take-home Message: The Medicine and Horsemanship (M&H) Program uses equine-assisted activities and therapies (EAAT) to teach emotional well being and communication skills to medical students. The M&H program is an innovative method for improving mindfulness among medical students.
#8II13 (1248)
Tools for resilience: Can a weekly yoga class improve medical students’ wellbeing?

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Karolina Mazan, Weston Area Health Trust, Weston-super-Mare, UK

Background: A medical career demands resilience to deal with stressful situations whilst maintaining empathy. Yoga and mindfulness practices are recognised to improve wellbeing and have been used to improve resilience. We investigated the effect of weekly yoga sessions on medical students’ wellbeing during their placement at Weston General Hospital.

Summary of Work: Students voluntarily participated in weekly 1 hour yoga sessions, delivered by a clinician who was also a qualified yoga instructor. They attended >80% of 8 consecutive sessions. Participants completed a pre- and post-course validated Perceived Stress Scale, and attended a post-course focus group to ascertain impact on student wellbeing.

Summary of Results: Thematic analysis of the post-course focus group highlighted numerous gains; a ‘sense of calm’, ‘time to focus on myself’ and ‘ability to forget about worries’. Students also felt ‘a sense of community’ taking classes with other staff. Most had a reduction in their Perceived Stress from pre- to post-course.

Discussion: All participants found the yoga classes overwhelmingly positive. It gave students space to devote time to themselves, subsequently increasing their sense of calm and wellbeing. It was difficult to reliably assess whether the improved wellbeing translated into everyday life, or whether it had any longevity beyond the structured course.

Conclusion: Resilience is vital for physicians; the General Medical Council have suggested emotional resilience training to be a part of the medical curriculum. The impact of a clinician leading these sessions in our hospital has led to significant benefits for students and offers them a role model for prioritising resilience themselves.

Take-home Message: Regular yoga sessions are an effective tool for emotional resilience, allowing space to foster an increased sense of calm and wellbeing, alongside a sense of community in the workplace. Sessions led by a clinician may help students to appreciate the immediate benefits of such practices alongside a medical career.

#8II14 (870)
Measuring Strength of Motivation and Dedication Factors in Thai Medical Students

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Background: Approximately 15% of medical students encounter academic failure at some stage of their programme. To understand factors affecting medical students’ performance, we investigated influences of motivation on academic performance. The research incorporated the Strength of Motivation to Study Medicine1 (SMMS) questionnaire and dedication factors to being a doctor.

Summary of Work: SMMS questionnaires, measuring three subscales (willingness to sacrifice, readiness to start, and persistence), were administered to 178 fourth-year to sixth-year Buddhachinaraj medical students. The scores ranged from 16 (the lowest motivation) to 80 (the highest). The National License Tests results were used to classify academic achievement. Demographic variables were recorded.

Summary of Results: The average SMMS scores were moderate (mean = 52.29). Poorly performing students showed higher scores than others (N= 31, mean 53.03; N=147, mean 52.14 respectively; p=0.514). Test scores, work hours, and irrespective specialty choice were the three highest-scoring items, with substantial financial debts the lowest.

Discussion: Although motivation directs behavior and positive correlation in students’ academic achievement, it is not the sole factor causing poor academic performance. Many unsuccessful test-students are willing to invest more time and energy to overcome academic failure and to continue studying medicine while relatively reluctant to continue with substantial debts.

Conclusion: This research reveals moderate results for overall motivation in students studying medicine. The poorly performing students were not caused by lack of motivation. Most students were willing to dedicate time and energy, and disregard their specialist choices to pursue studying medicine, but not at the expense of educational debts.

Take-home Message: To identify potential causes of academic failure, medical educators should also observe other aspects causing poor academic performance outside the limitations of motivation such as instructional models, self-efficacy, or student support services.
Could students helping each other out be a pathway to training happier and more caring doctors?

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Zoe Boulot, Faculté de médecine Lyon Est, Lyon, France  
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Gilles Rode, Faculté de médecine Lyon Est, Lyon, France  
Jerome Etienne, Faculté de médecine Lyon Est, Lyon, France

**Background:** Lyon Est Faculty of Medicine made students’ well-being a priority. They backed a structure created by students to help fellow students in difficulty. After creating a network of professionals they could rely on to help them, students thought it was important to build a student network to support each other.

**Summary of Work:** The aim of the structure is to offer all medical students the help they need (social, financial, personal, work, stress, etc.). They can contact the structure and volunteer students answer and guide them towards the appropriate help. Students are also offered to choose a volunteer student sponsor for additional support.

**Summary of Results:** Students have developed an accessible system to help those who need it. They provide useful contacts and ensure students get an answer in less than 48 hours. This structure also aims to break a long lasting taboo: doctors and medical students should be allowed to be in a tough spot.

**Discussion:** This structure’s recent existence makes it hard to measure its impact, but several students have already benefited from it. Students have taken interest in helping each other, and many projects such as sponsoring each other, relaxation sessions, debates and conferences should emerge, creating a supportive student network.

**Conclusion:** In addition to providing help for those who need it, this structure, developed by volunteer students, has made student well-being a major concern for the Faculty. Moreover it has brought awareness on student malaise, and aims to break a taboo in the medical world: doctors can face problems too.

**Take-home Message:** Take care of your students! Students need to understand that they can only take care of their patients if they take care of themselves. And if you help them take care of each other, they could become more caring and happier doctors.
#8JJ Posters: eLearning

**Location:** Hall 3 Foyer

**#8JJ01 (3183)**

**The Importance of Being Digitally Literate**


**Susan Kennedy, Health Education England, London, UK**

**Background:** The Digital literacy of the healthcare workforce is essential to supporting patients and to realise the full benefit technology offers in education and medicine. Becoming a digitally-literate doctor involves developing functional skills, attitudes, values and behaviours to equip someone for living, learning, working, participating and thriving in a digital society.

**Summary of Work:** Six domains of digital literacy were tested with doctors in a workshop, asking them to produce “I can...” statements about their digital skills and then self-assessing their competence against these. For example, “I can send an email” (basic); “I can record a podcast” (intermediate); “I can build a website” (advanced).

**Summary of Results:** Participants were asked to rank the “I can” statements in order of complexity against the six domains and to mark their perceived current skill level. Participants tended to perceive their skills to be poorer than they actually were, tending to compare themselves to experts in the field rather than novices.

**Discussion:** Conscious competence theory suggests participants will rate themselves higher if they are unaware of the demands of a skill and lower if they are more proficient. In this workshop, the majority of doctors perceived themselves to have lower competence, rating themselves lower, suggesting they were more proficient than their self-assessment.

**Conclusion:** The perceived competence doesn’t always match the actual competence when comparing skills against existing competency frameworks. Further work needs to be done to develop an accurate competency framework for digital literacy that reflects modern digital skills and can be used to benchmark an individual’s level of digital literacy.

**Take-home Message:** When self-assessing their digital literacy, participants tended to rate themselves lower than their actual level of competence due to conscious or unconscious perceptions of their skills against others.

**#8JJ02 (2187)**

"Heal Me Up": Using Technology Enhanced Learning to Feature Skin Wound Healing by Integrating Cell Biology, Mathematics, History and Arts

**Zeinab El Maadawi, Faculty of Medicine, Cairo University, Cairo, Egypt**

**Background:** Technology enhanced learning considers the use of digital technology to support and improve learning experience. Studying non-medical disciplines plays an essential but often overlooked role in medical education. Special attention should be drawn to the possible integration of mathematics and humanities within traditional biomedical sciences through innovative learning modules.

**Summary of Work:** Studying wound healing has a long journey over the ages as it involves highly complex multi-cellular interactions. By using digital technology, the process of normal/abnormal wound healing is explained by integrating biological processes with mathematical models and relating them to the art of wound healing in the ancient Egyptian history.

**Summary of Results:** Pre- and post-intervention surveys demonstrated not only significant improvement in medical students’ retention of topic related knowledge and skills but also appreciation of other character associated competencies and attitudes such as empathy, cultural sensitivity, diversity, visual literacy, critical thinking, problem solving, and professionalism.

**Discussion:** The rapid advancement in biomedical knowledge results in disregarded social, psychological, and ethical aspects of clinical practice. The increasing constraints upon medical students’ schedule interferes with incorporating non-medical disciplines. Technology can be used to adequately integrate multiple disciplines and to reinforce humanistic values that are lacking in today’s medical practice.

**Conclusion:** Technology enhanced learning can be utilized as a tool to design and develop new innovative learning modules that are engaging and interactive while combining multiple non-biomedical disciplines that are crucial for a holistic medical education curriculum.

**Take-home Message:** Effective assimilation of diverse biomedical and non-medical disciplines that is supported by technology enhanced learning can be further implemented in other subject matter clinical fields.
#8JJ03 (3179)
The Next Step for Online Multimedia Learning – The effect of dialogue narration
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Gabrielle Finn, HYMS, York, UK
Paul Scott, HYMS, York, UK

Background: Online multimedia learning has become a mainstay of undergraduate medical education. Medical schools operate over large areas. The ubiquity of technology in curricula demands modern techniques in technology enhanced learning. Underpinned by the Personalisation Principle (Mayer et al. 2004) this study investigates the effect of dialogue narration in online multimedia.

Summary of Work: The study design is a pre-test, post-test randomized control trial. Participants are recruited from the MBBS course and randomised. The intervention group watches a presentation narrated in dialogue, the control group in monologue. Focus groups will contextualise data and ascertain perspectives on multimedia learning. Work ongoing, we are currently recruiting.

Summary of Results: Data will be available in April 2017. Results from the quantitative arm will be analysed using the paired T-test. The effect size estimated is 0.3, an effect similar to other studies (Finn et al. 2010). Focus group transcription will be analysed by thematic analysis.

Discussion: Dialogue narration may have an effect on learning. Evidence has shown that informal language improves results in transfer tests but not recall (Mayer et al. 2004). Dialogue narration may be more dynamic and engaging. Limitations of the study may include inability to recruit enough students for 80% power.

Conclusion: The personalisation principle is known to improve learning. Based on this theory, the dynamism and social environment of dialogue narration may lead to more engagement from the student and thus improved retention and ability to apply knowledge. This will hopefully be made clear by the qualitative and quantitative results.

Take-home Message: Online learning is ubiquitous in medical curricula. We should continuously innovate in order to keep up with the constantly developing area of technology-enhanced learning. When writing online multimedia one should use informal language and use the most engaging delivery. Hopefully this study will show that dialogue narration achieves this.

#8JJ04 (2681)
Open Osmosis: Promoting the Global Diffusion of Open Education Resources
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Sean Tackett
Kyle Slinn
Tanner Marshall
Rishi Desai

Background: Free online educational resources can make high quality content available to learners anywhere and may overcome faculty shortages and curricular disrepair in low resource settings. Here we describe preliminary evaluation data for videos from Open Osmosis (https://open.osmosis.org/), an initiative targeting health professions learners.

Summary of Work: From December 20, 2015 through August 1, 2016, medical illustrators overseen by physicians created 125, 8-15 minute, disease-focused videos and placed them on YouTube. We analyzed viewer data by topic and World Bank economy classification: High Income (HIC), Upper Middle Income (UMIC), Lower Middle Income (LMIC), and Low Income (LIC).

Summary of Results: From September 1-30, 2016, there were 471,968 views and 1,233 days of watch-time, reaching 200/218 (92%) World Bank economies. 197,647 views (42%) were not in HICs. In HICs, depression was most-watched; pneumonia was most-watched elsewhere. Diabetes mellitus, HIV, and hypertension, despite high global morbidity, were 12th, 29th, and 45th most-watched.

Discussion: This is the first study which described viewership of free online content designed for health professions learners and demonstrated that media-sharing sites can reach a significant number of individuals all around the world with relevant content in a short period of time.

Conclusion: Future work will be needed to understand the significance of topic watching patterns in relation to health needs, demographics characteristics and motivations of individuals who access these videos, and how such content can be optimally integrated into health professions curricula.

Take-home Message: The creation of these educational videos required only a small team and modest capital. Faculty at many academic medical centers are likely to be able to replicate these methods and achieve a similar global reach. More broadly, educators seeking to optimize their impact should consider posting resources to media-sharing sites.
What we learn from surveying our university students’ attitudes and preferences towards various modes of e-learning and curriculum delivery

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Background: Universities across the globe are utilizing various platforms in curriculum delivery. Primary modes of non-electronic curriculum delivery include live lectures and comprehensive lecture notes while the dominant e-learning mode is webcasted lectures. To a large extent, these approaches are premised upon the school’s idealized expectations of what students need.

Summary of Work: This study aims to understand the students’ attitudes and preferences towards the different modes of electronic and non-electronic curriculum delivery offered. This includes: live lectures, comprehensive lecture notes and webcasted lectures, in various combinations. Ideally, it should provide some information on students’ real requirements and expectations in our university.

Summary of Results: A questionnaire was administered to students from non-medical and medical cohorts. Students used webcasted lectures to replace missed live lectures, annotate notes and to better understand the lecturer. Students would like to have better audio quality, subtitles and summary points to enhance the engagement and usefulness of webcasted lectures.

Discussion: As universities are routinely creating more electronic resources (i.e. webcasted lectures) in the name of e-learning, one common mistake made by institutions is to neglect the quality of the learning resources for students’ usage. Students have expressed the highest preference for an improvement in current webcasted lectures’ audio quality.

Conclusion: Poor audio quality is detrimental for students’ usage as it disrupts their primary means of understanding, retrieving and annotating. This could consequently affect their overall experiences and attitudes towards webcasted lectures.

Take-home Message: Improving audio quality, addition of subtitles and summary points will enhance current webcast and e-learning platforms. Original webcast should not be used as a substitution for e-learning materials and efforts must be made to create such materials.

Effectiveness of a Multimedia Program in New Nurses’ Pain Assessment Learning

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Background: Pain is the fifth vital sign, with assessment and treatment comprising key factors for patient care. Pain assessment is crucial for nursing-newcomers. Multimedia-assisted instruction may increase opportunities for teachers-learner interaction, providing opportunities to clarify thoughts. The study aims to develop a pain assessment multimedia-assisted teaching program for nursing-newcomers.

Summary of Work: A quasi-experimental design: 86 nurses (control group=39, experimental group=47) purposively sampled from a medical hospital in Taiwan. The control group received traditional one-way teaching method; experimental group received multimedia-assisted teaching. The multimedia-teaching program was established using the ADDIE model. Knowledge and satisfaction assessed via pre-post-questionnaires; data were analysed via SPSS.

Summary of Results: The satisfaction score of the experimental group was higher than the control group (27.67±3.76vs.31.36±3.42, p < .001). The experimental group also made more progress in knowledge about pain assessment (12.85 ± 1.75vs.11.85±1.11, p < .001). Newcomers have more ability to perform pain assessment (26.58 ± 3.01vs25.08 ± 3.32, p < .05).

Discussion: The multimedia-assisted teaching program can improve the ability of nursing-newcomers in pain assessment, including learning satisfaction, knowledge, and competence. Especially, those newcomers can more voluntarily respond to patients in pain, which is very important for the pain assessment. As a result, care quality and patient safety can be secured.

Conclusion: From this study, it would be beneficial to apply a multimedia-assisted teaching program more extensively so that nursing newcomers’ learning about pain assessment can benefit. This can also, be used as a reference in other areas of learning.

Take-home Message: Multimedia-assisted teaching programs, when effectively developed, can out-perform traditional teaching methods. It is suggested that in the future, a multimedia teaching program should be constructed carefully and based on the needs of the learners.
An international online course in translational histopathology

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Eeva Rainio
Sari Mäkelä

Background: In medical research, mouse models for human diseases are widely used. In order to understand human diseases in mouse models, the normal mouse histology and its similarities and differences to human must be understood. We developed an international online histology course for biomedical students utilizing an internet–based microscopy solution.

Summary of Work: The five-week online course (5 ECTS) was implemented as a part of NordBioMed.net, which is a collaborative network between universities of Bergen, Eastern Finland, Turku and Karolinska Institutet. Course was performed in the NordBioMed.net Moodle, which allows registration with own university passwords. Feedback from students was collected after the course.

Summary of Results: Of 47 students, who passed the course, 21 gave feedback, and 85% of them found the course excellent or very good. The training was chosen by the University of Turku as “the course of the year 2016”. It was evaluated as an excellent example of digital learning and virtual mobility.

Discussion: As the course was valued by the biomedical master students of Nordic universities and the University of Turku, we will develop it further and modify it suitable also for doctoral students. For example, we are planning to add tools to increase student-student interaction during the course.

Conclusion: Our experience encourages to develop more international online courses, especially in the fields that need special expertise.

Take-home Message: Virtual learning can be successfully applied in the fields, which are traditionally taught in classroom settings, such as histology and pathology.

A Student-run Online Platform Enhanced the Communication of Hidden-curriculum In Autonomous Virtual Community

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Background: The most popular mobile social networking application in China - Wechat - has owned over 800 million registered users. Wechat public platform is an interactive blog that is run by a team or person, can be freely subscribed by users, and has become a highly effective tool to distribute information.

Summary of Work: A group of medical students in Fudan University established a student-run Wechat public platform – Yi Linji (aka the Scale of Medicine) since July 2015. By initially inviting medical students to write their clinical rotation experience, the team soon expanded the topics to clinical updates, scientific advances, and medical humanism.

Summary of Results: YLJ has gained over 3,000 stable subscribers including students, faculty members, physicians and even non-medical people within 20 months. Over 300 articles written by students and professors have been published with more than 320,000 readings in total (by January 2017). YLJ has made nationwide influence and featured by media.

Discussion: The hidden curriculum in medical education is traditionally shared by person-person communication. YLJ provides a platform for exchanging personal experience, encouraging peer-to-peer communication, building connections between teachers and learners, and promoting health communication. It plays a unique role as a beneficial supplement to the hidden curriculum teaching.

Conclusion: YLJ, a student-run Wechat public platform, has been demonstrated as an effective information exchange platform and online virtual community for medical students, faculty members, health professionals and general population. Further detailed evaluation will be performed to assess and optimize the project.

Take-home Message: It should be noticed that autonomous virtual community plays an important role in contemporary professional learning, especially for the “cyber generation”. The key concerns are to select the most suitable online service according to different needs and to run the project by an efficient and mature cooperation team.
Challenges in the individualized monitoring of learning in distance education: ongoing actions on a Family Health post-graduate course

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Background: The development of actions without individualized follow-up in Distance Education (DE) requires an orientation of pedagogical norms and differentiated service structures. The challenges faced include the qualification of health professionals and the need to analyze reality and theorizations to adapt this modality to the experiences, profile and expectations of students.

Summary of Work: We present data from an exploratory study analyzing difficulties of students from a Family Health post-graduate course and discussing individualized care. Problems are related to self-regulation and digital skills (use of knowledge, skills and attitudes related to the use of technologies).

Summary of Results: Data from 284 medical students was analyzed. A total of 344 messages were received from 110 students. 92 had individualized follow-up because they presented difficulties: organization in the accomplishment and posting of activities in the virtual learning environment (50); recognition of the evaluation process (32); communication student-tutor (10).

Discussion: Through contacts and individual study plans the difficulties were solved. The individualized monitoring in DE is related to the pedagogical approach that allows student/course interaction. Adapt specific strategies for the student engagement enhances the generation of attitude, the motivation not the learning process and the incentive to self-regulation.

Conclusion: The qualitative analysis of the data shown that besides the content to be learned, the study in the distance modality requires digital and self-regulating abilities for achieve an optimum performance. The data showed the importance and the feasibility of individualized care in DE.

Take-home Message: Individualized attention in distance education favors and narrows the links with students, minimizing impacts of geographical barriers, keeping the student motivated and qualifying the teaching/learning relationships.
"Please do not turn off your devices": The Use of Nearpod in a GP Module to Showcase Integration of Primary and Secondary Care

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CJ Taylor, BSMS, Brighton, UK
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Background: Nearpod is a technological platform, which allows students to follow and examine material more closely using their own device. Online quizzes, comments, webpages and resources can be pre-selected and accessed. The tutor has overall control of the pace and order of the slides, enabling forward movement of the session.

Summary of Work: Utilising Nearpod, we created 8 patient-GP journeys using multi-media materials. Students are able to control the pace and direction of discussion to the learning needs of the small group. The literature suggests this is the first time Nearpod is being used within medical education to create a blended learning experience.

Summary of Results: We have started evaluation of the impact of the ‘Nearpod approach’ to both students and GP facilitators. Methodology includes written evaluation with an additional exploratory qualitative enquiry via focus groups (due May/June 2017). Results will be available in July 2017. This project has had research ethics granted from BSMS.

Discussion: Initial student evaluation is positive. However, an emerging theme is the reduced confidence and anxiety initially displayed by GP facilitators with regards to technology. This theme will be fully explored in the focus groups. We often study student experience but this project showcases the importance of teacher evaluation and support.

Conclusion: Students enjoy the multimedia approach to re-creating a patient story, whilst considering clinical practice dilemmas. These 'integrated cases' are flexible to allow the group (size 8-10) to formulate their discussions based on their learning need and interest. However, before implementing technology into the curriculum, facilitator digital literacy should be considered.

Take-home Message: Concepts such as the ‘patient journey’, integration of primary and secondary care and GP dilemmas can be difficult for students to grasp during limited clinical placements. Using created content (e.g. video consultations over time, audio clips, discharge paperwork) and by inviting technology into the classroom may help develop this understanding.

The Blended Learning Model in Nursing Training Program for Improving the Quality of Indwelling Tubes and Catheters

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Background: Indwelling tubes and catheters, such as Foley, nasogastric or tracheostomy tube, is a common clinical procedure. The traditional nursing orientation program (TOP) which begins by senior nurses’ lecturing and mentoring might not be enough. This study aimed to evaluate a blended-learning program (BLP) on improving the quality of indwelling procedures.

Summary of Work: This study was a randomized controlled trial where new nurses (N=66) were randomly assigned to have the TOP or BLP. The BLP consists seven pre-class online videos, in-class problem-based learning discussion and practicing on mannequins. We used valid and reliable pre-post questionnaires to evaluate the effectiveness of the BLP.

Summary of Results: A total of 66 new nurses were included from 2015/9 to 2015/11 in Taipei City Hospital. Differences in pre- and post-BLP scores on patient safety, knowledge, catheter care, critical thinking, technical ability and indwelling skills among the new nurses were significantly larger than those having the TOP.

Discussion: The blended learning program this study used has been well designed by recording the eLearning videos, creating problem-based learning resources, and writing the teaching guide by experienced nurse educators. The new-nurse-centered learning environment allows new nurses not only learn from their mentors but also learn from evidence-based clinical case studies.

Conclusion: The blended learning model provides novice nurses to learn basic concepts and methods by watching online videos before attending to the problem-based learning discussion class. During the class, new nurses participate in the simulated patient care scenarios within a specific clinical situation and learn from peers and experienced nurse educators.

Take-home Message: Indwelling tubes and catheters is a common clinical procedure and the blended learning program including the eLearning videos, in-class problem-based learning discussion and practicing on mannequins could improve new nurses’ care quality. It might be necessary to add this blended-learning program into the traditional nursing orientation program for patients’ safety.
#8JJ13 (2366)
The learning analytics with Moodle: the practice of statistical analytics and visualization of Moodle data

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Background: Moodle is one of the most popular LMS (Learning Management System). Although Moodle has a lot of modules and can store the various learning records in the database, the feature of data visualization is a little weak. It is a little difficult to analyze learners' activities by Moodle alone.

Summary of Work: Learning records of learners were exported from Moodle database. Then they were analyzed and visualized with R. The sample datasets were: (A) postings of the forum (B) the trial of the lesson module as the decision-making exercises and (C) the trends of the answers of the drag & drop quiz.

Summary of Results: (A) Not only the posted dates, but also the networking of the discussion were visualized. (B) The decision-making flows on the lesson modules were visualized as a weighted network. (C) All trials of learners were mapped on the one background image and the variance was analyzed.

Discussion: In this work, most of analysis was mainly based on simple statistical methods such as correlation, and visualization such as plotting the data on the image file. In this case, some BI (Business Intelligence) tool such as Tableau would be also useful. These analytics might be useful for IR (Institutional Research).

Conclusion: Discussions on the forum, decision-making flows and attempts of quizzes were analyzed and visualized. Other modules such as assignments and more fundamental data such as login attempts can also be used. These results would be effective and efficient for learning analytics and evaluations.

Take-home Message: Moodle stores a lot of the learning records on the database. Using some tools such as R or Tableau, statistical analysis and visualization of the data would be easier and more effective. These learning analytics data might be useful for IR.

#8JJ14 (3103)
Improving the learning management system - A student-led survey study

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Ida Lagerström
Caroline Salminen Frisendahl

Background: A well-functioning learning management system (LMS) is of great educational importance. Medical students had repeatedly reported issues with the current use of the system to the medical students' society. We therefore aimed to investigate general student opinion on the LMS in order to identify areas of improvement and implement changes.

Summary of Work: A 19-item survey including free-text and multiple-choice questions, as well as statements to be scored on a 7-point Likert-scale (7 indicating highest agreement), was constructed. A link to the survey was published on social media and emailed to all registered medical students (1760) at Karolinska Institutet.

Summary of Results: The response rate was 30%. The majority of students found it difficult to locate the information they were looking for in LMS. Students rated the structure of LMS as the most important area for improvement (mean score 6.30±1.25), more so than interactive tools (mean score 2.5±1.61).

Discussion: LMS are a useful tool for collecting course information. However, students find it difficult to efficiently access information they are looking for. This could be improved by harmonizing the structure and nomenclature between courses. Consequently, we have constructed a uniform template for LMS to be implemented in our medical programme.

Conclusion: Students were not satisfied with the usage of the LMS, mainly because of the lack of structure. Basic structure is of greater importance than advanced interactive features and is an essential area for improvement.

Take-home Message: Student opinion on the LMS is essential in order to tailor its features to the needs of its main users. Student engagement projects can lead to improvements in educational tools such as the LMS.
How can we use e-learning to teach medicine in Syria?

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**Background:** The Syrian conflict has left a limited supply of adequately trained healthcare providers to address Syria’s increasing healthcare burden. There have been calls to provide innovative, self-sustaining modes of educational support, such as those offered by distance learning.

**Summary of Work:** We undertook a scoping exercise of the issues involved in delivering distance medical education to countries affected by conflict by conducting semi-structured interviews with key stakeholders in this field.

**Summary of Results:** Distance learning interventions in countries affected by conflict have delivered sustainable, case-based teaching on clinical reasoning, patient-centeredness, teamwork, evidence-based research, and apprentice-based attitudes to medical education. Interventions also facilitated relationships, reciprocal learning, and, unpredictably, ‘brain drain’ phenomena. Enablers were; collaborations with medical education organisations, government bodies, local stakeholders, and expatriates; feedback; social media; availability of online scripts; and the ability to supplement learning with on the ground interventions. Barriers were assumptions, politics, and cultural differences. Internet access could either hinder or facilitate interventions, depending on the platform and country in question.

**Discussion:** Delivering distance medical teaching to Syria requires; a thorough needs assessment of the target recipients; co-ordination with medical education organisations, government bodies, local stakeholders, and expatriates; feedback; social media; availability of online scripts; and the ability to supplement learning with on the ground interventions. Barriers were assumptions, politics, and cultural differences. Internet access could either hinder or facilitate interventions, depending on the platform and country in question.

**Conclusion:** There is scope for the UK to deliver distance teaching, guidance, and mentorship on non-practical medical specialties in Syria.

**Take-home Message:** The attitudes, preferences, and needs of Syrian healthcare providers must be further explored to comprehensively assess the feasibility of delivering distance medical education in Syria.

Brighton and Sussex Medical School (BSMS) SmartDrug, an interactive resource to stimulate learning about core drugs

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Michael Okorie, Brighton and Sussex Medical School, Brighton, UK

**Background:** Medical students are not confident at prescribing after graduation 1. A personal drug formulary enables medical students to prioritise learning about commonly used (core) drugs with a view to becoming safe prescribers 2,3. BSMS has developed an e-learning resource to encourage active learning about drugs in a clinical context.

**Summary of Work:** Clinically relevant scenarios, highlighting the core drugs, were written by subject area experts in Phase 2 (Years 3 and 4) of the BM BS course. Each scenario includes questions that encourage rational therapeutic decision making and self-directed learning about the drugs through a personalised drug information record.

**Summary of Results:** BSMS has developed a mobile-friendly e-learning resource that enables students to learn about drugs in a clinical context as they progress in their specialist rotations in Phase 2 of the course. Students may also utilize the resource in clinical areas and refer to their personalised drug information record.

**Discussion:** BSMS SmartDrug has received positive student feedback in Phase 2 of the BM BS course. It has enabled students to learn about the core drugs in a clinical context, whilst also encouraging self-directed learning. This concept could also be introduced into Phase 1 of the BM BS course.

**Conclusion:** BSMS SmartDrug is an interactive resource that facilitates experiential learning about therapeutics and stimulates medical student engagement with a view to making them safe and effective prescribers. It is possible that this resource can be extended to use in the early Foundation Doctor years.

Digital tagging of lecture videos and webcasts promote active learning

Judy Sng, National University of Singapore, Singapore
Maxime Marzin
Edmund J.D. Lee

Background: The current practice for webcasted lectures exploits the electronic lecture as a repository to assist curriculum delivery. Students are not actively engaged in learning while watching webcasted lectures but instead, utilised as an alternative platform to retrieve lecture content rather than a learning platform.

Summary of Work: Digital tagging provide useful enhancement for videos as it offers better navigation facilities such as searchable keywords. It also allows the creation of a variety of modalities through the dynamic hyperlinking of learning materials and videos for students to explore and used as an aid to self-directed learning.

Summary of Results: In this study, we created and revamp two educational videos and digitally tagged them on a video digital-tagging platform known as Stand Alone Media (SAM) Network. To test the webcasted lectures digitally tagged, students were recruited to evaluate two platforms versus two different video styles and the students completed questionnaires.

Discussion: In brief, the students liked SAM-Po network as they can see the hyperlinks, annotations and the chapters. However, our current platform have desirable features, that could be incorporated into SAM-Po. We also measured the learnability aspect of the platform and they attain good ratings on the SUS score.

Conclusion: As a future work, we intend to work on a series of lectures and test them on first year undergraduate students who are currently under the grade-free system for further evaluation.

Take-home Message: Amalgamating digital tagging to our current webcasted lectures integrates the vast amount of information on the internet for an easier search for information. This promotes active watching, critical thinking and also promotes the navigationist learning paradigm.
#8KK Posters: Portfolios/Medical Education Research
Location: Hall 3 Foyer

#8KK01 (1097)
Mirror, Mirror on the Wall. What could extracurricular activities teach us all?

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Background: After a decade of implementation, reflective writing of extracurricular activities, which was previously one of the six compulsory portfolio contents at Chulalongkorn medical school in 2005, is the only material remained. We thus conducted this research to study what students had learned from extracurricular activities in terms of curriculum outcomes.

Summary of Work: Year 1-3 medical students could reflect upon any extracurricular activities they participated. 1,784 reflective writings from 895 students were analysed. The chi-square test was used to investigate the difference between the three batches of students.

Summary of Results: All 12 curriculum outcomes were reflected, notably in leadership and teamwork (84.70%); professional and personal development (59.64%); and professional communication (28.20%). The ratio of 12 outcomes reflected by Year 1 students differs statistically significantly from Year 2 and 3 students (p < .001).

Discussion: Extracurricular activities seem to play an important role in developing students’ interpersonal skills. Meaningful extracurricular experiences can be enhanced by providing immediate reflection. Further study should be conducted if extracurricular activities contribute more than intra-curricular experiences to the achievement of these outcomes.

Conclusion: Our quantitative analysis of students’ reflective writing has shown that, most students could see their own development in interpersonal skills through extracurricular activities.

Take-home Message: Let’s encourage and support students to engage in extracurricular activities.

#8KK02 (1452)
Constructing a teacher-student real time interactive learning portfolio management system at Shantou University Medical College, China

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Shaomin Ou
Mianhua Yang
Junhui Bian

Background: The promise of the organ/system-based integrated medical curriculum implemented at Shantou University Medical College has not been fully realized since teachers are mostly content-centered, lacking effective feedback and interactions with students. The assessment emphasized memory-based knowledge rather than competencies of learners in knowledge application and problem solving.

Summary of Work: We constructed a learning portfolio management system (LPMS) in which specific learning goals as described in terms of student competencies were progressively set for the curriculum and student learning was monitored in real time as students, under the guide of teachers, work to meet these goals successively.

Summary of Results: Results of student surveys indicated that LPMS benefited learners by (1) providing clear, milestone-like, and competency-oriented learning objectives; (2) establishing progressive benchmarks; (3) assessing student competencies over time; (4) monitoring student learning in real time; (5) giving timely and individualized feedback.

Discussion: Medical education moves towards standardized learning outcomes (competency-based) medical education through assessment of competencies. Portfolios have been claimed to support competence-based medical education as they support the longitudinal recording of evidence of experience and achievements, feedback received, and future plans.

Conclusion: The Learning Portfolio Management System provides a standardized medium for teachers and learners to communicate their expectations on medical competencies clearly and monitor learning in a timely and individualized manner.

Take-home Message: 1. Medical education moves towards competency-based education. 2. Assessment for health professions is required to focus on competencies composed of knowledge, skills and attitude. 3. Portfolio increases learners’ self awareness and engagement in reflection. 4. LPMS increases the interactions between teachers and learners, improved feedback to students.
Folio: application for the construction of portfolios in a Family Health post-graduate course

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Márcia Rosa da Costa, Federal University of Health Sciences of Porto Alegre, Porto Alegre, Brazil
Maria Eugênia Pinto, Federal University of Health Sciences of Porto Alegre, Porto Alegre, Brazil

Background: This work describes an application (app) designed to help students and tutors of a Family Health post-graduate course, offered in a distance learning modality, to prepare and supervise the teaching-learning mediated by portfolios. The app calls “Folio” and it was engineered by a multiprofessional team (Pedagogy, Computer Science, Medicine).

Summary of Work: Professionals mapped out the students’ and tutors’ difficulties to construct and evaluate portfolios during the distance activities. Folio was created to solve the demand for a qualified tool for record of: the learning process during the reflexive activities; tutor interventions; student-tutor interactions. Also the app was designed to work asynchronously.

Summary of Results: The app made possible the creation of remote portfolios even in the absence of internet connection. Folio has a system that storage the information recorded in absence of connection and send this data immediately when internet connection was achieved. A chat system between student and tutor was incorporated to app.

Discussion: The poor or lack of internet connectivity is a concern in distance learning. In this way the Folio functionality of work asynchronously takes an important place. However app Folio has been thought to be used on a Family Health post-graduate course, it could be used on other knowledge areas.

Conclusion: App Folio is a promising tool to be used to create portfolios on distance learning courses.

Take-home Message: The created app is a reliable tool, positively responding to pedagogical demand for an tool that works offline.

Active participation rather than good performance in learning portfolio competition is a better predictor for learning outcomes – Is it a good indicator for active learners?

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Background: Portfolio, considered as an important assessment in clinical training, allows medical students to increase self-awareness and reflection, and to improve student-tutor relationships. Although many reports have described the benefits of portfolios in medical education, its association with clinical learning outcomes remained unclear.

Summary of Work: Portfolio competition was set as a compulsory course for year 5 (M5), yet optional participation for year 7 (M7) medical students. Portfolios were scored by clinical teachers and student self-evaluation. The relationship between portfolio performance in M5 students, participation in M7, and final learning outcomes was analysed.

Summary of Results: Totally 40 students were enrolled. Compared with the remaining, M7 students who opted for portfolio competition had better performance in OSCE examination (P=0.005) and the final clinical assessment (P<0.001). But there was no statistical difference in terms of learning outcomes between students with top one-third portfolio performance and the remaining.

Discussion: Active participation in the portfolio competition needed students to long-term and actively record and reflect on their learning process without an external force, and thus, may serve as a good indicator for active learning. Better performance in the compulsory portfolio competition, however, may just reflect a better ability to organise.

Conclusion: Active participation in the optional portfolio competition rather than good performance in the compulsory competition is more predictive for better clinical learning outcomes, which depend more on an active learning attitude.

Take-home Message: The trait of active learning attitude observable by the active participation in an optional portfolio competition is more important than portfolio performance per se, in terms of future clinical learning outcomes and competency.
Electronic logbook: more than just a personal monitoring tool

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Background: Logbook is usually used to monitor student’s clinical experience. However, benefits of logbook data analysis in the literature are quite limited. We, therefore, conducted this study to identify difference of clinical experiences in procedures, based on logbook records, between students in 4 training sites studying in the same curriculum.

Summary of Work: Chulalongkorn medical students in 2013-2015 academic year recorded their two-year clinical experiences on web-based logbook. The records of students’ logbooks at (1) King Chulalongkorn Memorial Hospital (KCMH), which provides quaternary care, and (2) the three affiliated hospitals (AH), which provide secondary-to-tertiary care, were compared using effect size.

Summary of Results: AH students reported more experiences in 62 out of 77 basic procedures than KCMH students. This superiority had moderate-to-strong effect size in 25 procedure, for example, normal labour, and CVP measurement. Venipuncture and urethral catheterization were the only two basic procedures KCMH students had more experiences with moderate-to-strong effect size.

Discussion: Different teaching sites did affect clinical opportunities in performing procedures. In order to maintain standard of students in the same curriculum, extra-teaching sessions for KCMH students in a simulation center, for example, is essential. Providing practicing experiences in other training sites could also benefit students in their remaining year.

Conclusion: Our analysis of electronic logbook data has shown differences in clinical learning opportunities between quaternary and secondary-to-tertiary hospitals.

Take-home Message: Electronic logbooks can be more easily utilized for monitoring student’s clinical experiences than paper-based ones. Using the analysis results, curriculum developers could design interventions to create more motivating learning environment by giving students more access to practicing procedures safely with patients.

Using e-portfolios in Outreach Training to Create a Transformative Student Learning Experience for Postgraduate Orthodontic Students

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Elizabeth Hopkins

Background: Primary care dental practitioners require postgraduate education which minimizes time out of clinical practice. 96% of dental care is delivered in primary care locations, so, where possible, education involving clinical care of patients should be provided in an environment most appropriate for the patient, and ideally in the practitioner’s workplace.

Summary of Work: Dental postgraduate programmes are delivered in approved outreach centres, using clinical case e-portfolios to link tutors with students. Students treat patients in their own practices, upload clinical case material onto their e-portfolios, and receive feedback from tutors. The e-portfolio is a learning tool, and used for formative and summative assessment.

Summary of Results: Educational technology within a primary care clinical environment, is ideally suited for orthodontic education. Clinical case e-portfolios allow an interactive dialogue between students and tutors, enabling both feedback and clinical support. It is a valuable learning and assessment tool, facilitating more interactive education and is integral to case based learning.

Discussion: Outreach based part-time courses enable students to carry out clinical treatment within their own workplaces, supported by e-portfolio technology which facilitates remote tutor support for students, increasing their ability to apply learning in their own clinics, aiding reflective practice and providing structured learning in a patient and student friendly environment.

Conclusion: This model uses clinical case e-portfolios, which include a reflective student commentary, as a learning and assessment tool. Students have a visit by visit record of case progression facilitating tutor and group discussion. The use of e-portfolios is significant in developing understanding of orthodontic case assessment, diagnosis and treatment mechanics.

Take-home Message: Clinical case e-portfolios are valuable learning and assessment tools allowing immediate tutor feedback. They facilitate interactive education in students own working environment and are integral to case based learning. They enable interactive, peer group case-based discussion and are significant in developing understanding of orthodontic case assessment, diagnosis and treatment mechanics.
#8KK07 (497)

Does an ePortfolio stimulate student reflective practice and professional growth in a conference setting?

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**Background:** A unique feature of the University of Melbourne MD program is the annual MD Student Conference (MDSC), which brings together all 1400 MD students in a conference setting. Conference sessions are guided by the graduate attributes of the MD course and the students interpret these to develop the conference program.

**Summary of Work:** MDSC is a credit-point subject in the MD program. When it originally began assessment consisted of an extended reflective essay on any aspect of the conference program. In recent years, the student body has advocated for, and developed in collaboration with the Medical School’s Education Technology Team, an ePortfolio platform.

**Summary of Results:** The rationale for the introduction of an ePortfolio was to allow students to create reflective ‘snap-shots’ that could be uploaded in real-time during the conference. These snap-shots could consist of text, audio, video or social media elements allowing students to create their own narrative around their conference experience.

**Discussion:** This presentation will discuss the pedagogy behind the use of portfolios to document student learning and reflect on the introduction and development of the ePortfolio platform for MDSC. De-identified examples of student content will be presented to demonstrate its use as a tool to stimulate student reflective practice and professional growth.

**Conclusion:** Anecdotal evidence suggests students produce narratives which demonstrate deep engagement with, and reflection on, the conference content; further work is required evaluating the merits of an ePortfolio to allow students to choose how to demonstrate their learning and translation of this to other areas of their clinical and professional practice.

**Take-home Message:** MDSC and the ePortfolio platform are examples of innovative curricula development and demonstrate models for effectively engaging students in the creation of teaching and learning resources. The challenge is to evaluate whether they provide ‘value of money’ and genuinely assist students to develop their reflective practice and demonstrate professional growth.

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#8KK08 (552)

ePortfolio Video Module: Providing Peer Support and Advice

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**Background:** The ePortfolio serves as an online multimedia curriculum vitae for medical students based on reflection around the CanMEDS roles. Program evaluation of the uOttawa Medicine ePortfolio program cohorts (2007–2013) showed considerable variation between coaching style and student experience from group to group.

**Summary of Work:** In an effort to improve the program, we set out to develop a video tool to support mentorship from experienced coaches to new coaches on the group process and for enabling meaningful student reflection. Using a modified Delphi approach, we analyzed the ePortfolio Program Evaluation Report, selecting specific themes.

**Summary of Results:** Based on feedback from senior coaches, program leadership, and medical students, interview questions and a group meeting script were developed. A 15 minute instructional video module was developed which includes interviews, group meeting re-enactments, and educational content. This medium enables accessible support with flexibility, at a time convenient to coaches.

**Discussion:** Students reported lack of consistency and limited professional/personal growth, while coaches recognized a need for more flexible faculty development. As a result, the program was not functioning optimally for all parties. In working on a solution we prioritized content that was easy to digest, accessible, and based in reality.

**Conclusion:** The video module is meant to be accessible to all ePortfolio coaches, both current and incoming. It provides two frameworks: one for best practices in how to conduct face-to-face ePortfolio group meetings and one for enhancement of coaches’ oral and written feedback to stimulate students’ reflection skills.

**Take-home Message:** New tools need to be developed to provide mentorship education to faculty to ensure that ePortfolio programs and those similar to it are most effective. We created one such tool through the development of a video module based on data from previous program evaluations, expert opinions and student consultation.
Making the First Cut: Analysis of Academic Medicine’s Reasons for Rejection after Internal Editorial Review

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Background: The study builds on Bordage’s reasons for rejection to increase transparency of Academic Medicine’s internal editor review process and provide suggestions for improving submissions. Guides for external peer review rejections leave a gap in the literature about how to avoid rejection at the first round of journal rejections, editors’ review.

Summary of Work: Editors’ comments for manuscripts submitted in 2015 (n = 369) and rejected prior to external peer review from Academic Medicine (AM) was performed. Comments were analyzed using content analysis, constant comparison and mapped to a framework informed by Bordage’s work. Descriptive statistics of categories was conducted.

Summary of Results: Editors’ comments were analyzed and nine categories emerged. The top five are 1) ineffective study question and/or design (n=338, 92%), 2) suboptimal data collection process (n=180, 49%), 3) weak discussion and/or conclusions (n=165, 45%), 4) unimportant or irrelevant topic t (n=137, 37%), and 5) weak data analysis and/or presentation of results (120, 33%).

Discussion: A key finding acknowledges that manuscripts need to move the current literature forward. Specifically, the research question sets the stage for the study design, and both, are informed by, and subsequently inform the literature.

Conclusion: Our analysis updated Bordage’s reasons for rejection to increase transparency of Academic Medicine’s internal editor review process and provide suggestions for improving submissions. Guides for external peer review rejections leave a gap in the literature about how to avoid rejection at the first round of journal rejections, editors’ review.

Take-home Message: Communication between authors and editors can help improve the quality of manuscripts submitted. The findings clarify the internal editorial review process and offer concrete suggestions for authors to increase the likelihood of moving to external peer review.

Using Maxwell dimensions of quality to assess impact in a systematic review in medical education: Comparing the incomparable

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David Taylor, The University of Liverpool, School of Medicine, Liverpool, UK

Background: Systematic reviews of medical education have no universal standard or tool to measure or synthesize impact meaningfully. Evidence might vary considerably in breadth/depth and research tradition yet still require a way of reporting impact. Kirkpatrick levels of effectiveness have limited applicability. Maxwell’s dimensions of quality (from health care) might help.


Summary of Results: From the 80-article scoping-review, this ‘effectiveness-review’ used 26 articles (including three systematic reviews). Most featured Kirkpatrick-3 evidence (17/26, 65%). On agreeing Maxwell dimensions (stimulating much discussion), evidence for impact involved: Appropriateness to need for 25/26 (96%); Acceptability, Acceptability, or Effectiveness=~77-81%; Efficiency=9/26; Equity (broadly interpreted)=4/26. Median Kappa=0.65 on the six dimensions.

Discussion: Summarizing evidence systematically in medical education requires various tools and concepts, extending notions of ‘effectiveness’ beyond ‘does it work?’. Here, Maxwell dimensions supplemented Kirkpatrick levels of effectiveness, widening the view of ‘impact’ and stimulating useful dialogue. Summarizing main messages from a poorly developed evidence-base is difficult and needs more attention.

Conclusion: Adapting Maxwell dimensions of quality is feasible, useful, and potentially reliable for exploring impact in medical education systematic reviews, possibly countering some criticisms of suitability, sensitivity, and specificity of Kirkpatrick levels. This might allow a more nuanced summary of the disparate, messy, and exasperating (albeit important) evidence characterizing some topics.

Take-home Message: Maxwell dimensions of quality are worth considering as an extra lens to view impact in systematic reviews of troublesome topics in medical education. The ‘three As and three Es’ allow a meaningful summary of impact of educational support on learners, curricula/institutions, patient care, and beyond, stimulating discussion of apparent gaps.
#8KK11 (1283)
A scoping review of medical education research in neurosurgery
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Hung-Yi Lai
Shih-Tseng Lee

Background: Little is known about the state of medical education (ME) research in neurosurgery. As ME started to develop in neurosurgery in recent years, it is important understand the current status and develop theory for advancement. The aim of this study was to undertake a review of ME neurosurgery literature.

Summary of Work: MEDLINE, SCOPUS and PubMed database were searched. Inclusion criteria: English language; full text available; January 2005 to December 2015. Research Questions included: numbers of published papers per year; journal types; most cited articles; frequently researched topics; and research design. Search term includes neurosurgery, medical education, teaching, training, learning and curriculum.

Summary of Results: Data analysis is on-going and preliminary results reveal that 7875 references were found across 3 databases, after remove duplication, 5184 references were found. Stage 1: three researchers screened titles/abstracts for duplicates and exclusion/inclusion criteria. Stage 2: from remaining manuscripts, conference papers and non-peer-reviewed papers were excluded.

Discussion: The preliminary result of this scoping review indicates that medical education is developing and play an important role in the field of neurosurgery because of the increasing numbers of results as year progress. However, trends of some limitation of certain topics compare with other topics are concerned.

Conclusion: This study highlights need for increased of medical education research in neurosurgery. The results provide guidance for future research programs. A rigorous database of current literature helps us identify areas of highest priority and provides us with a rationale for future grants applications and decision-making in this field.

Take-home Message: ME in neurosurgery in developing in recent years. From the results of scoping review plays an important role in developing future research of ME in Neurosurgery.

#8KK12 (2414)
Developing and piloting a research instrument for perceived stress, wellbeing and study performance among students in medicine, dentistry and psychology
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Jussi Saarinen, University of Helsinki, Faculty of Medicine, Helsinki, Finland
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Marko Elovaainio, University of Helsinki, Faculty of Medicine, Helsinki, Finland

Background: Perceived stress is strongly associated with subjective wellbeing and functional ability. At tolerable levels, stress increases the level of performance. However, high-level, continuous stress has a negative effect on health and performance. The stage and content of studies may affect the perceived stress related to performance of an individual student.

Summary of Work: A research instrument for studying the students’ stress, wellbeing and study performance was developed in Helsinki by combining validated tools for studying health behavior, stress and wellbeing. The new instrument is piloted in 2017 among the students of medicine, dentistry and psychology at various phases of studies.

Summary of Results: The data will be collected with a web-based survey. These data will be combined with the data from the entrance examination and the study register. An ethical approval from the Research Ethic Board of the Faculty of Medicine is in process. The participants’ privacy and confidentiality will be strictly guaranteed.

Discussion: We will explore a relationship between the background and psychosocial factors (i.e., family background, social relationships and study performance at school), studying strategies and life-style factors (i.e., sleeping habits, nutrition, exercise), and perceived stress, study performance and wellbeing.

Conclusion: Results of this pilot study will be implemented in the development of methods for supporting the students, as well as in incorporating elements that support wellbeing into the reformed curricula.

Take-home Message: Students’ wellbeing and study performance are likely to be related to a diversity of factors involving both background, psychosocial factors and variety of factors related to life style, behavior and studying strategies. Understanding these relationships is important in targeting appropriate support for students and in the development of the curricula.
Is your work being seen outside of academia? A descriptive analysis of journal article altmetrics

Lauren Maggio, Uniformed Services University, Bethesda, USA
Holly Meyer, Uniformed Services University, Bethesda, USA
Anthony Artino Jr., Uniformed Services University, Bethesda, USA

Background: To complement traditional citation-based metrics, academia has begun considering altmetrics to track alternative dissemination outlets, such as weblogs and Twitter. Little is known, however, about how health professions education (HPE) research is shared among altmetric channels. This study examines altmetric attention and the characteristics of top articles in HPE.

Summary of Work: The authors searched Altmetric Explorer for HPE articles that had an altmetric event (e.g., a tweet) between 2011-2015. The search retrieved 6,265 articles from 13 journals. These articles were then analyzed using descriptive statistics. Additionally, the top 10 articles based on total Altmetric score were identified and key characteristics extracted.

Summary of Results: Articles received varied attention from 14 altmetric outlets; the top three outlets were Mendeley, Twitter, and Facebook. Between 2011-2015, HPE articles with an altmetric event increased by 15%. In 2015, five journals had 50% or more of articles with at least one altmetric event. Themes included social media and blogging.

Discussion: Altmetric attention for HPE articles has increased, suggesting interest in HPE research outside academia, especially in social media channels. Social media attention may signal a desire to share HPE research and an opportunity for broader dissemination. Shared article themes suggest that those about social media itself are quite popular.

Conclusion: This study provides a snapshot of HPE research dissemination via altmetric channels. Rising altmetric attention to HPE articles suggests broader interest in HPE research and the need for further investigation. Knowledge of popular and underutilized outlets may help investigators target their research for wider dissemination inside and outside of HPE.

Take-home Message: Altmetric attention to HPE research is increasing. Researchers should consider altmetric outlets as resources to help disseminate and promote their research. Further research should explore the utility of altmetrics as complimentary to traditional citation-based metrics to determine overall research impact.
SESSION 9
Tuesday 29th August: 1600-1730

#9A  Symposium: The future of MOOCs in the medical education continuum: hype or panacea?
Location: Hall 1

Peter GM de Jong, Leiden University Medical Center, Netherlands
Ken Masters, Sultan Qaboos University, Sultanate of Oman
James D Pickering, University of Leeds, UK
Marlies EJ Reinders, Leiden University Medical Center, Netherlands
Terry Poulton, St George University London, UK
Beerend P Hierck, Leiden University Medical Center, Netherlands

Summary: Massive Open Online Courses (MOOCs) are a relatively new form of interactive online learning, with high quality academic content available to learners from around the globe (usually) without a subscription fee. The online and free characteristics of this type of education generally result in a very high number of participants which can provide unique engagement benefits, including patient and public health care education. However, the role of MOOCs within health care education remains unclear. Current research has focussed on the idea that the power of MOOCs lies exclusively in the field of continuing professional development for healthcare professionals, while others believe that MOOCs can successfully be integrated into undergraduate blended learning curricula for campus-based students. In this regard, online (master) programs and establishing a credit system for online learning are topics of discussion. This symposium will present original thoughts and visions of the educational concept of MOOCs. Alternate ways of offering MOOCs as an effective learning resource will be discussed based on examples from university level MOOCs within medical education. The first example highlights the role of a single MOOC on undergraduate students; the second example shows the value of offering clinically-based MOOCs to medical professionals as part of their continuing professional development. The symposium will conclude with a sneak preview into the future, and how the medical education community envisions the use of MOOCs in the next 10 years.

Who should participate in the symposium? This symposium will be beneficial to all colleagues from within the healthcare education community who have an interest in open online learning resources, and who would like to learn more about utilising MOOCs in their teaching. It will also be of interest to those who are involved in longer-term policy-making for healthcare education programs.

What will they gain from participating? Participants in the symposium will gain a better insight into the philosophy behind open online learning, and in the ways resources like MOOCs can be effectively incorporated into existing teaching models and programs. Participants will also gain a better vision on the value and role of MOOCs in the upcoming decade.

#9B  Symposium: Wicked Issues in Contemporary Medical Education
Location: Hall 3a

Glenda H. Eoyang, Human Systems Dynamics Institute, Minneapolis, Minnesota, USA
Stewart Mennin, Department of Medicine Uniformed Services University of the Health Sciences Bethesda, MD
and Human Systems Dynamics Institute, Minneapolis, Minnesota, USA

Summary: This session brings an innovative community of medical educators together to address their most complex and perplexing issues as individuals, teams, and institutions prepare the future workforce to serve the health of their communities. Using a large-group facilitation method called Open Space Technology (http://openspaceworld.org/wp2/), participants will be invited to engage in collaborative Adaptive Action as they ask: WHAT? Ask the most wicked issues and challenging questions they can imagine about the theory and practice of medical education. SO WHAT? Draw a group of their colleagues together to explore the question and propose options for action for themselves, their organizations, and the field as a whole. NOW WHAT? Share what they discover and engage others in shared Adaptive Action to make a difference to tame the most wicked issues in contemporary medical education. Questions, conversations, and emerging options for action will be documented and reported to the field in an article for Medical Teacher. The article will expand the collective Adaptive Action to engage professionals across the international AMEE network in identifying, addressing and taking action in our most pressing issues.

Who should participate in the symposium? Anyone who feels passion and responsibility for the future of medical education at any level should participate in this session. It will be a time of shared inquiry and collective innovation, so those with authentic questions and open minds will be most engaged in the process.

What will they gain from participating? Experience a generative and exciting facilitation approach; Learn more about complex, contemporary challenges in medical education; Engage in generative dialogue about an issue that affects your work; Practice Adaptive Action to respond to wicked issues.
#9C  Symposium: Push your performance toward excellence: Let the ASPIRE ACADEMY help!

Location: Hall 3b

Debra Klamen, Southern Illinois University School of Medicine, USA
Pedro Greer, Florida International University, USA
Pat O'Sullivan, University of California San Francisco, USA
Danai Wangsaturaka, Chulalongkorn University, Faculty of Medicine, Thailand
Kim Whittlestone, Royal Veterinary College London, UK
Marko Zdravkovic, University Medical Centre Maribor, Slovenia

Summary: The purpose of this symposium is to examine standards for excellence in order to motivate and guide programs/organizations in identifying priorities for their own growth and improvement. The standards for excellence from the ASPIRE* program will serve as frameworks for this examination; they differ from other standards because of the depth with which they tackle the four challenging areas (assessment, faculty development, social accountability and student engagement). As educators are often called upon to defend the excellence of what they do and as metrics are difficult to define in critical areas of our curricula, a careful consideration of a set of standards in the four ASPIRE areas will help programs target initiatives for themselves. Experienced facilitators from six culturally diverse ASPIRE award winning schools will lead the discussion. They belong to the ASPIRE Academy and their goal is to help other schools reach their potential by using the well-defined ASPIRE criteria for excellence as a rubric, and their own excellence as a springboard to help others seeking to improve programs at their own institutions.

*ASPIRE program (http://www.aspire-to-excellence.org) provides schools who excel in one or more of the areas (assessment, social accountability, faculty development, student engagement, and soon, simulation) a chance to be recognized as such through a rigorous peer review process.

Who should participate in the symposium? Everyone interested in enhancing assessment, faculty development, social accountability and/or student engagement programs at their own institutions.

What will they gain from participating? Participants will:
recognise the value of the existing standards of excellence and gain a deeper understanding of what it takes to be excellent in one or more of the current ASPIRE areas;
identify how ASPIRE excellence criteria can direct action;
identify priority categories for their institution in at least one area; build a network with ASPIRE Academy members for support in future endeavours.
#9D AMEE Fringe: Fringe 2

Location: Hall 3c

#9D1 (3140)
Medicinarklubben Thorax - 65 years of laughter

Robert Östman, Helsinki University, Helsinki, Finland
Oscar Holmström
Daniel Folger
Lotta Sakari
Daniela Gotthardt

Summary: Medicinarklubben Thorax, the Finnish student organization for Swedish-speaking medical students, has produced its spex for 65 years. It's the longest running tradition of student theatre in Finland today. The first spex, "The Pubic Wars" (a typical student pun of the Punic Wars), was performed in Helsinki in 1952 to commemorate the 21st birthday of the organization. Since then, Thorax has produced its Spex annually and in 2017 Thorax performed it’s 62nd Spex, "Circus Willi - Or murder in the ring".

So, what exactly is a spex? Spex is slang for the word spectacle, which actually happens to be quite a fitting description. Spex is a form of student theatre, traditionally based on historical events or well-known stories. The idea is to reinterpret the story in a silly way, presenting the audience with "what really happened". Other important elements in a Spex is the music, the humorous writing with medical influences, and just the right amount of story (usually not a significant factor). The audience participation is what sets Spex apart from regular theatre, with the audience having the option to shout "Omstart" meaning "Again" in Swedish. This signals the actors to perform the scene again, but with an improvised twist. That's what makes Spex magic - No one show is ever the previous alike.

Studying medicine is a demanding endeavour. Spex brings medical students together outside of the normal curricular activities of school, creating bonds between younger and older students - and future colleagues. Our presentation is that of the history of spex and how extracurricular projects between students can help them with the hard and stressful education, functioning as a coping mechanism for the tired medical student. Because how could you be stressed out while wearing a funny hat?

#9D2 (3212)
How can we become agents for change toward a better, greener world?

Peter Musaeus, Aarhus University, Center for Health Sciences Education, Aarhus, Denmark
Elizabeth Crossley, Hull York Medical School, York, UK
Matthew Mueller, Des Moines University, Des Moines, IA, USA
Caroline Wellbery, Georgetown University Medical Center, Washington DC, USA
Karina Pavão Patrício, Botucatu Medical School, UNESP, Botucatu, São Paulo, Brazil

Summary: In spite of the increasing global urgency of social and environmental impacts on health, medical students and other health professionals do not necessarily appreciate their potential role in becoming agents for social change. Research demonstrates a variety of barriers exist which prevent us from driving the conversations about climate and health. Whether perceived or actual, these barriers can be overcome by providing the tools necessary for us to be confident public health advocates. Using imagery and metaphor we will identify obstacles between medical students and social action, and present a means for encouraging students and others to be green social change agents.

The Activity: A balloon will be decorated to look like the earth, and the audience will be required to try to keep the balloon in the air. One participant will be identified as the student. We will identify barriers the student may face by attaching objects to the balloon (external barriers) or to the participant (internal barriers), thus increasing the difficulty of suspending the balloon. We will then identify solutions to these barriers and gradually remove the objects, leaving the participant unimpeded. Finally, we will conclude with a brief summary of the importance of breaking down barriers to students acting as agents of social change, whilst demonstrating that in order to engage students, the challenge must also be made exciting and compelling.
Chinese Whispers

David Topps, University of Calgary, Calgary, Canada
Maureen Topps
Doug Myhre

Summary: We talk to iPhones but they don’t listen to us; we talk to our cars but they never hear us; the Net hasn’t time to stop and hear what we say; we talk to them all in vain. This fun romp through the perils of interacting with our world, its devices and cyborgs will attempt to illustrate some of the fallacies in our thinking. Our online world may be getting smarter but are we smarter in how we use it? The watchers do seem to be getting smarter about us: what we watch; what we buy; how we choose; how we think? We claim the right to privacy but happily divulge all manner of personal data for the sake of convenience. If the world of commerce is busily tracking everything we do and everyone we talk to, then forming opinions about us, how do we know these are valid or even vaguely reflect what we think? More data points refine the picture, or so Google and the NSA would have us believe. We are certainly more closely observed than most of us realize. And, if this is so, does it not seem specious to shy away from such detailed tracking of professional behaviours in our learning environments? Using a combination of people, virtual people, 3rd parties, 4th walls, and 5th dimensions, we will explore the perceptions, misperceptions and reperceptions of pattern recognition in teaching and learning.

Celebration of knowledge: singing and dancing in large, undergraduate medical classroom

Qushay Malinta, Hasanuddin University, Makassar, Indonesia

Summary: In Indonesia, high school graduates who wishes to become a physician may apply to medical school directly without having to attend pre-medical or undergraduate program. This national policy has its own benefits, but is also risky for medical students whom are just happen to need more adjustments than their peers to major life changes, especially during the first year when the groundwork lies upon. Facing new academic setting, new social environment, and in some cases, new country to live in, these students need all help to ease the transition. One of the ways to alleviate stress to do some kind of art, such singing and dancing. These are the hallmark of a kindergarten class but is almost unheard of in medical classrooms. Why the limitation? Time constraints due to ever-condensing curriculum in the ever-expanding medical field; highly diverse academic and cultural background of the students, rigid educational bureaucracy; you name it. Benefits of merging science and art has been proven over and over. Yet most medical schools in Indonesia seems to be oblivious of this approach due to the aforementioned hindrances. So why not utilize child songs and lullabies along with dances and silly movements to convey a slide, or even of whole lecture? As a student in the medical school and then in graduate school myself few years ago, I know the value of a good laugh amidst dense, grin-inducing lecture slides compiled from dozens of textbooks and journals.
#9D5 (3251)
'The Necessary Dream – Perpetual'? Fiction as a Means of 'Making Strange'

Steve Durant, Wilson Centre for Medical Education, Medical Psychiatry Alliance & University of Toronto, Toronto, Canada
Brian D. Hodges, Wilson Centre for Medical Education, University Health Network & University of Toronto, Toronto, Canada
John P.M. Court, Centre for Addiction and Mental Health & University of Toronto, Toronto, Canada
Ayelet Kuper, Wilson Centre for Medical Education, Sunnybrook Health Sciences Centre & University of Toronto, Toronto, Canada
Fiona Webster, Wilson Centre for Medical Education & University of Toronto, Toronto, Canada

Summary: As a health policy and education researcher with an interest in institutionalized responses to violence, it can be difficult to position my work in conversations and textual genres that emphasize person-centredness and fighting stigma. My aim has never been to undermine these projects, but rather to explore and extend their limits, and also to complicate the simplified and objectified discourse about inner realities that is often found in well-intentioned statements about reform, awareness and public attitudes. In my dissertation, as I tried to bring these issues into a conceptual discussion about empathetic imagination beyond the limits of conversation and relatability, I noticed an eerie overlap between what I was trying to say and my interpretation of nearly every passage of a short story by the Canadian author Margaret Laurence. In this presentation, I show how I used Laurence’s words in ‘Horses of the Night’ (1970) – including the ones in my title – to introduce each of my chapters, then engaged with them to illustrate concepts and offer insights that would be misleading or oversimplified if I offered them directly in social-science language. I describe fiction as a powerful means of ‘making strange’, and its potential for promoting empathy and critical reflection on difficult topics in medical education.

#9D6 (3004)
The Neurological Examination in 6 Songs

Wendy Stewart, Dalhousie, Saint John, Canada

Summary: Neuroscience is notoriously challenging for students. There is a huge volume of material due to the different types of diseases, neuroanatomy and physiology. When patients present with a specific problem, there are three questions the students need to ask: 1. Is the problem neurological?; 2. Where is the lesion?; and 3. What is the etiology? The ability to integrate their knowledge to localize the lesion and differentiate upper versus lower motor neuron problems, for example, can be challenging for learners. Students struggle to integrate the physical findings and remember the different components that comprise the neurological examination. They are awkward when initially performing the examination, and without regular practice they find it difficult to recall the components and how to test the different parts of the nervous system.

Music can be used in many different ways to learn, particularly if a familiar tune is used and the words changed. Our brains are primed to respond to music, and engaging in fun activities to music could assist students in recalling the elements and how to perform the different components of the neurological examination. Using 6 different songs, this interactive presentation will engage the audience in the art of using a structured and integrated approach to performing the different parts of the neurological examination: cognitive assessment, cranial nerve examination, motor examination, sensory examination, cerebellar and gait examination. The audience will have the opportunity to sing along, and will learn the structure of the neurological examination and how to perform each task. This could provide a fun way to engage and train medical students in key aspects of neurological examination skills.
Exercising notions of patient-centered care in medical education: whose interests are being served?

Rene Wong, Wilson Center for Research in Education, Toronto, Canada
Simon Kitto, Department of Innovation in Medical Education, Ottawa, Canada
Cynthia Whitehead, Wilson Center for Research in Education, Toronto, Canada

Introduction: Patient-centered care (PCC) is widely considered to be essential for clinical practice, yet we lack evidence about how to best teach these skills. Most literature on teaching PCC emphasizes experiential learning, reflection and communication skills. However, considering the debate and discussion around hierarchies in health care, notably in chronic disease management, it is somewhat surprising theories that consider issues of power, knowledge and expertise have been overlooked. To design curricula that are maximally effective at fostering PCC, we need to fill this gap and critically examine the roles of power, authority and hierarchies in the social construction of PCC.

Methods: This research was informed by Foucault’s concept of discourse that offers a critical and historical context to explore how language affects and is affected by clinical and educational practices. Using diabetes as a specific example of chronic disease, we conducted a Foucauldian discourse analysis of a textual archive of relevant policy documents, professional and educational literature texts, to explore the evolution, principles, and underlying assumptions associated with patient-centered approaches. We also conducted in-depth, open-ended interviews with a purposive sample of academic family physicians and specialists to understand their experiences in providing and teaching PCC. Our analysis sought to understand: When does PCC emerge as a means to improve care, and how does it evolve over time? What objects, practices, and identities are supported or prevented by particular characterizations of PCC? Whose interests do advocating and teaching PCC serve?

Results: We describe three distinct discursive constructions of PCC. PCC as an enabler of health care citizenship promotes the vision of patients becoming responsible for their own health by following medical directives. PCC as an intervention emphasizes knowing and relating to patients as means to increase adherence to treatment and achieve numeric targets for disease biomarkers. PCC as an implementation tool makes visible a mandate to consider patient values, preferences and choices as part of a process to apply clinical practice guidelines. Each discourses represents a different mechanism to extend the reach of biomedical power. Academic physicians reproduce these discourses in their clinical and teaching roles, propagating the notion of PCC in a broader sociopolitical relationship connecting medical training to the governing of health care delivery.

Discussion and Conclusion: While models of PCC are adopted and taught with the best intentions, our analysis suggests they may affect clinical relationships in ways that ironically reinforce rather than challenge conventional, provider-centric paradigms. In addition our findings help rethink taken-for-granted truths about PCC, some of which may significantly impact what it is currently possible for a clinician, teacher and learner to think, to do and to be. Our results challenge educators to consider the implications of PCC discourses in medical education, and their broader effects beyond the immediate effects on learners. Increasing awareness of whose interests are and are not being served by discursive constructions of PCC could help address elements of the hidden curriculum that impact how trainees perceive, value and ultimately practice PCC.

Introduction: A series of major inquiries have all called upon NHS organisations to look to become ‘Learning Organisations’. The academic field of health professional education has to help meet this challenge. In our own organisation it has proven difficult to engage staff in reflection, learning and development. This project aimed to investigate the learning culture of a mental health ward in more depth, in particular trying to understand how learning takes place, the opportunities and barriers to this. The ward studied was an inner city, adult male inpatient mental health unit with 19 beds; it was staffed by 13 nurses, 11 health care assistants, a psychologist, an OT, a manager and three doctors.

Methods: The methodology of the project was qualitative, informed by ethnography and heuristic principles; it was underpinned by a constructionist epistemology understanding that there could be many ‘truths’ about what a learning culture could be for different participants in their context. Observation of staff occurred over three days. Initial analysis of collected data was performed using internal dialogue. Six interviews were then conducted with members of staff from different professional backgrounds, four men and two women, ranging in age from 24 to 58, to gain as wide a perspective as possible. Written permission was obtained from all involved before any observation or interview took place; ethical approval was overseen by the University of Bristol Ethics Committee. Analysis was supported by use of NVivo 10 software. Field notes from observation and interview transcripts were treated as source materials which were repeatedly interrogated to develop ‘themes’ and then larger ‘meta-themes’.

Results: The major theme that emerged from the data was a culture of authoritarianism and passivity. It was noted that staff of all backgrounds on a variety of issues waited for action and instruction from higher levels of management within the organisation, stifling autonomy in learning. A poor quality physical environment hampered the ward team’s learning, as did significant substance misuse problems among service users, violence on the wards and long, tiring shift patterns. This led to some staff becoming disengaged and demoralised. However, there were strengths within the team, supporting each other like a family. Learning and innovation of itself was an exit from the more challenging dynamics.

Discussion and Conclusion: One of the key outcomes of this study for the authors was that the study design was a highly valid and valuable technique for investigating a learning culture in more depth, which provided far more insight for educational leaders in the Trust than previous evaluations. The studied mental health team showed willingness to learn and innovate, but they were not always overtly aware of learning taking place. A neglected physical environment and authoritarian management were significant barriers. An over-reliance on passive, informal learning has risks for the team that underlying assumptions are not challenged. Formal space for reflection needs to be protected, supported and promoted at all levels to deliver on the aspiration of a learning organisation.
cycles of expansive learning within the activity system. Contradictions were identified which challenged the author and led to new understandings; mediating artefacts which provided new levels of clarity were highlighted.

**Results:** The first learning cycle centred on participation in a taught module discussing Vygotsky and CHAT. Embracing new understandings of familiar words such as “object” was uncomfortable and, whilst attracted to Engeström’s triangular heuristic, the concepts and language of underpinning Russian philosophy were daunting. A subsequent supervisory meeting to discuss a theoretical framework chapter draft created a tension between impatience to start working with data, and growing awareness of the depth of reading required to understand the philosophy and potential of CHAT. A third cycle evolved during review of CHAT literature in healthcare education research; database searches were challenging, and tensions became apparent between working within the CHAT paradigm and publishing findings for an audience of clinicians and scientists.

**Discussion and Conclusion:** Multiple voices were apparent: the researcher’s identities, as clinician and doctoral student, influenced reflection and dialogue with varied voices of colleagues and supervisors. “Rules” of CHAT-based doctoral research conflicted with the familiar scientific paradigm, at both an individual level and in the literature. Historicity’s significance was apparent: the influence of the researcher’s own career and experiences, the clinical profession’s expectation of research, and the historical development of CHAT itself. Mediated by a wide range of artefacts, contradictions drove cycles of expansive learning through increasing engagement with and understanding of the literature. Viewing the learning process through CHAT is a novel approach to understanding the challenges experienced by the beginning CHAT researcher, and provides insights for others making their first steps into the world of CHAT.

Take-Home Training in Laparoscopy

Ebbe Thinggaard, Copenhagen Academy for Medical Education, Region Hovedstaden, Copenhagen and Department of Surgery, Zealand University Hospital, University of Copenhagen, Denmark
Lars Konge, Copenhagen Academy for Medical Education and Simulation, Capital Region, Centre of Human Resources, University of Copenhagen, Denmark
Ismail Gögenur, Department of Surgery, Zealand University Hospital, University of Copenhagen, Denmark

Introduction: In surgery, technical skills have primarily been taught using the apprenticeship model. However, the specific skills required in laparoscopy emphasized the need for new training methods that are accessible, reduce the need for supervision and do not put the patient at risk. Simulation training at home on simple box trainers has been developed to meet this need. The overall purpose of this thesis was to explore simulation-based laparoscopic training at home. Our aims were to review the current knowledge on training off-site, to develop and explore validity for a training and assessment system, to investigate the effect of take-home training in a simulation-based laparoscopic training programme, and to investigate the use of take-home training.

Methods: The thesis consists of five papers: a review, a validation study, a study of standard setting methodology, a randomised controlled trial and a mixed-methods study. In the first paper we examined the current knowledge on off-site laparoscopic skills training using a scoping review methodology. In the second study, we developed and explored validity evidence of the TABLT test using Messick’s framework of Unitary validity. In the third study, we looked at the consequences of the choice of standard setting method. In the fourth study, we studied the effect of take-home training in a randomised controlled study and whether self-rating is reliable. In the fifth study, we investigated the use of take-home training and how self-rating provides guidance during unsupervised training.

Results: Throughout the studies included in this thesis we found the literature describes training at home as a feasible method of acquiring laparoscopic skills. We then developed and explored validity evidence for the TABLT test and established a fair pass/fail level, went on to explore the immediate consequences of the pass/fail level. We conducted a randomised controlled trial and a mixed-method study to explore the use of take-home training. Based on our studies we found that training at home facilitates distributed learning, that self-rating guides course participants during unsupervised training, and that mandatory training requirements and testing strongly influence training patterns.

Discussion and Conclusion: From the papers included in the thesis, we found that the literature describes training at home as a feasible method of acquiring laparoscopic skills. We then developed and explored validity evidence for the TABLT test and established a fair pass/fail level, went on to explore the immediate consequences of the pass/fail level. We conducted a randomised controlled trial and a mixed-method study to explore the use of take-home training. Based on our studies we found that training at home facilitates distributed learning, that self-rating guides course participants during unsupervised training, and that mandatory training requirements and testing strongly influence training patterns.
based on the epistemological assumptions in each context.

**Discussion and Conclusion:** The current arrangement of medical students’ workplace learning does not seem to support students’ active participation in practice. Nursing students’ workplace learning entailed active participation; however, with side effects due to the heavy focus on relational aspects of learning. The thesis allowed to limitations with the theoretical framework of communities of practice. Instead, workplace participatory practices are suggested to reflect the nature of workplace learning to a higher degree, not the least as student agency are addressed. In line with a shift in the understanding of clinical learning environments from a measurable institution towards acknowledging social aspects of learning, this thesis argues for an upgrading of students as a powerful stakeholder in workplace learning; so as not to view students as consumers of clinical education.


#9F3 (14)

**Effects of medical school selection on the motivation of the student population and applicant pool**

Anouk Wouters, VUmc School of Medical Sciences Research in Education, Amsterdam, Netherlands
Gerda Croiset, VUmc School of Medical Sciences, Amsterdam, Netherlands
Rashmi A. Kusurkar, VUmc School of Medical Sciences Research in Education, Amsterdam, Netherlands

**Introduction:** There is extensive research on medical school selection tools and their relation with future medical school performance. Fewer studies have examined effects of selection in terms of student motivation and engagement. This thesis aimed to generate insights into effects of selection on the motivation of the student population and the applicant pool. A national change from lottery-based to selection-based admissions allowed for investigation of the effect of the introduction of selection. Self-Determination Theory (1), which distinguishes between autonomous (from within the person) and controlled (from external reasons) types of motivation, formed the framework for this thesis.

**Methods:** Three quantitative and two qualitative studies were conducted, of which one study addressed effects of selection on the student population, two studies addressed effects of selection on the applicant pool, and two studies addressed both. Study 1 investigated the effects of selection on motivation and the effects of motivation on selection using ANCOVAs. Study 2, a multi-site study, investigated the effects of selection on the motivation, engagement and performance of the student population using regression analyses. Study 3 investigated students’ reasons for applying to a particular medical school, and their associations with motivation during the medical study using regression analyses. Study 4 investigated the suitability of statements on motivation for distinguishing between applicants. Study 5 investigated how motivation for studying medicine is formed among prospective applicants and how selection influences their motivation. An application paper provided a holistic view on selection-based versus lottery-based admissions, grounded in the findings from research.

**Results:** Study 1 indicated that selection does not yield a student population with better quality of motivation, and may have a temporary stimulating effect on student motivation. Study 2 suggested that selection does not yield a student population with better quality of motivation, engagement and performance. Study 3 reflected that a majority of students based their medical school choice on the selection procedure, which was not related with inferior motivation during the medical study. Study 4 indicated that written statements are unsuitable for use in selection because applicants tend to provide socially desirable answers. Study 5 showed that getting acquainted with the medical profession seems crucial for developing autonomous motivation, e.g. for helping people, but inequalities in access to healthcare internships can demotivate applicants.

**Discussion and Conclusion:** We found no benefits of selection in terms of quality of student motivation, engagement and performance. This raises the question whether selection, which is generally costly, should be replaced by lottery. Selection is aimed at increasing the quality of the student population, but research shows only small gains compared to lottery. Selecting students with the desirable motivation appears to be difficult. Furthermore, the diversity of the student population may be compromised, while the diversity of society increases. We advocate further research into the development of motivation throughout the medical study and the effects of selection on student diversity. This thesis brings to light that selection may not yield many benefits in terms of motivation, engagement and performance. Moreover, it may hamper student diversity.


#9F4 (19)

**Learning processes and identity construction of newly qualified doctors: a narrative study**

Lakhini McNamee, Stellenbosch University, Cape Town, South Africa

**Introduction:** Medical internship is an essential but problematic part of the healthcare system. A vast literature has interrogated internship from the perspective of undergraduate medical curricula (preparedness) and competencies that newly qualified doctors (NQDs) might be expected to demonstrate. Historically, aspects of socialisation have also been studied extensively by psychologists and sociologists. While healthcare systems depend on NQDs to provide a service, especially in the public sector, little is known about their lived experiences. The aim of this study was a better understanding of how
medical graduates negotiate their learning experiences and construct their identities during medical internship in South Africa.

**Methods:** Using interpretive methodology, this qualitative study was underpinned by social constructionist thought. Theoretical framing included psychology- and sociology-based theories, for example, the work of Vygotsky and Bourdieu, and more contemporary theories of Situated Learning and Dialogical Self Theory. A purposive sample of six medical practitioners participated in the study. Written reflections from three years post-qualification were socio-linguistically analysed for narrative positioning. The same participants were interviewed face-to-face at six years post-qualification, enabling insight into professional development trajectories. Thematic content analysis and structural analytic methods were combined to draw inferences about identity construction; a relatively neglected subject in medical education.

**Results:** Ways of relating to others and to institutions, both pre- and post-graduation, were found to be a central theme in the narrative data. Learning processes were predominantly informal, implicit, serendipitous, and were mediated in relation to others in the clinical workplace. A synthesis of several ‘models’ of clinician was elicited based on how participants reported having negotiated learning experiences as NQDs. This study also suggests that the identities of NQDs are not rigidly organised, developing an understanding of multiple ‘i-positions’ in dialogical interaction within the self. Detailed descriptions of personal dispositions and aspirations revealed the importance of these in professional trajectories, how they changed over time, and what factors had enabled or constrained NQDs becoming the kind of practitioners they aspired to be.

**Discussion and Conclusion:** As learning processes during medical internship essentially involved significant others, increased awareness regarding senior clinicians’ influence on NQDs may promote more intentional and deliberate role-modelling practice. Individual and collective ‘ways of being’ in clinical workplaces provided insight into enablers and constrainters of positive identities, and how medical habitus is learned, resisted and/or perpetuated. A heuristic device is offered in the form of ‘aspirational contours’ towards better understanding the role of aspirations in shaping clinical practice. Strengthening the possibilities for positive identity constructions during internship would be a possible means of transforming medical culture to be more responsive to NQDs’ learning needs and may also lead towards more patient-centred care. Further in-depth studies on the power differentials and identity development in various clinical contexts are recommended.

Point of View 2

From Apprenticeship to Competency-Based Medical Education: Four Epidemics, One Remedy?

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Competency-based medical education (CBME) has been adopted and criticized with equal alacrity and fervor. While medical regulatory bodies are increasingly choosing CBME as THE model ruling postgraduate medical education, many fear the consequences of abandoning the old-time apprenticeship model. This Point of View argues that changes to our postgraduate medical education system are needed, but that CBME is unlikely to address the challenges posed by rapidly evolving healthcare systems and society. To illustrate these points, I will discuss four epidemics that have successively plagued the medical education system and are now painfully coexisting: Apprenticeus Doloribus, Competenciaea Ascensio, Competenciaea Daemonium, and Apprenticeus Nostalgia.

Appenticeus Doloribus first appeared decades ago. Characterized by the slow and relentless erosion of the apprenticeship model as promoted by Flexner, it acquired virulence in the context of cumulative changes occurring in the healthcare system. Its propagation led to the emergence of Competenciaea Ascensio, an extremely contagious disease that has spread exponentially in jurisdictions where professionals are increasingly held accountable to the public and medical authorities. The Competenciaea species is based on standardized and rigorous measurements of outcomes purposefully chosen to meet population needs, but is only weakly supported by evidence. A variant of this disease, Competenciaea Daemonium, appeared almost simultaneously and aggressively attacked the core of the CBME model. More recently emerged the last grand epidemic of Apprenticeus Nostalgia, characterized by an excessively sentimental yearning for a return to the apprenticeship model of an irrecoverable past. Its proponents are longing for a clinical environment that favours role modelling, guided practice, coaching, progressive levels of autonomy, and sharing of social and cultural values.

Both the traditional apprenticeship model and CBME have their raison d’être, but none is fully equipped to address today’s educational challenges. An alternative model, Hybrida Creatura, is needed to foster meaningful learning and compelling accountability.

Explaining science and pseudoscience to medical students with applications to interaction with patients

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Anitta Mahonen

Medical science is not alone when it comes to patients’ choice of treatment. Despite meta-analyses showing the inefficacy of pseudoscientific remedies (Rubin et al. 2005; Shang et al., 2006), alternative healing methods remain popular (Rosas et al. 2006).

Since 2010, the University of Eastern Finland has provided students an optional course on pseudoscientific remedies, including the internal theories and peer-reviewed data on, e.g., homeopathy, reflexology, sexual conversion therapy, and diets. Furthermore, the students learn about unproven conditions, such as yeast overgrowth syndrome, electromagnetic hypersensitivity, and the anti-vaccination movement and strategies to deal with these issues with patients. Because of high demand, the issue of scientific data vs. pseudoscience have since 2015 been included as an obligatory course for medical and dental students by a multi-disciplinary approach. The aim is to promote the skills of critical thinking and to offer students tools to implement these skills when dealing with patients, who seek placebo remedies. The topics are as follows: • The nature of natural sciences and medical data. • Anecdotal evidence vs. evidence-based medicine. • Argumentation, fallacies, social media and commercials (Nieminen & Mustonen 2014). • Rational and non-rational thinking: confirmation bias, narratives, and dismissal of data that opposes preconceptions (Nieminen et al. 2015) in alternative healing and medicine. • Examining nonprofessional and scientific texts and commercials for fallacies thinking patterns. • Medical research and its implementation. • Data retrieval and scientific databases.

The obligatory course is followed by optional classes describing the pseudoscientific treatments in more detail. The feedback from students has been very positive and especially the skills in critical thinking are highly appreciated.

Unlocking global Primary Care education: combining E-learning, scale, FOAMED, quality, curriculum, competency, cost, collaboration

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The demand for well-trained health professionals is globally outstripping the capacity to train these health professionals. The primary care sector is most able to deliver quality care, at scale and sustainable cost. However, China alone is aiming to train 300,000 primary care physicians by 2020 (Mathers, BJGP 2014). Around the world the number of primary health care professionals needed to meet growing demand of ageing populations and growing expectation in developing countries, is estimated in the millions.

E-learning has the capacity to deliver high-quality education at scale. There is evidence that online learning is as good, if not better, than much face-to-face learning (US Dept of Education, 2010), particularly for the acquisition of explicit learning, or ‘know what’. In addition, collaborative online learning through virtual communities of practice can overcome isolation and improve knowledge sharing. These knowledge sharing communities can improve tacit knowledge or ‘know how’, at scale. This is seen in the ECHO projects (Arora et al) and in the work on GP training in Australia (Barnett et al). FOAMED has made great strides in opening up medical education, however there remain issues of quality, sustainability, curricula and assessment.

To address this challenge of supply and demand, it is proposed that these threads are combined. An ideal approach would be a series of global, accredited E-learning courses. These courses would include global online collaboration, a combination of bespoke and FOAMED elements that is curated, quality assured, localisable and curriculum mapped; assessment that is valid and combined with achievable, real-world assessments (such as 360 evaluations); and mapped to a meaningful competency framework (for example Entrustable Professional Attributes).

Finally, this approach could be combined with transferable global certification to deliver quality and scale at low cost. This approach has the potential to meet an otherwise unachievable demand.

Facilitating Context: How course design can influence the application of knowledge

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The Honey and Mumford model of the cycle of learning describes 4 key steps: having an experience; reviewing the experience; concluding from the experience; And planning the next steps. This model mirrors the apprenticeship style of learning through reflective practice that is core to professional development in medicine. Formal teaching in medical education not only informs but also serves to facilitate reflection on things learned in practice. It can provide a conceptual base for something observed in practice in the future. This purpose needs to be taken into consideration when designing educational interventions meaning medical education requires specific design theories.

Learners may be at different points in the cycle and may vary in their preferred learning style. The model describes 4 learning styles: activists, reflectors, theorists and pragmatists. We are proposing that design needs to present the relevant information in part in each of these styles and hypothesising that this can increase engagement with the materials, facilitate the learners’ enjoyment of the experience and that they will be more likely to feel that they can apply the teaching in their workplace.

This point of view is taken because when we experience something we put it in context for the purpose of recall but we also build a neural network to allow us to apply the information in different setting (Baddeley and Gooden). Creating context is important for consolidating memory. For memories to be available for cross context recall and use in problem solving, a broader web of context is required. (Anderson and Ericsson). Facilitating context creation in design can influence the effectiveness of learning. Focusing design on preferred learning styles frees up the learners’ capacity to focus on mapping and contextualising rather than deciphering.
Enforced written reflection is dead in the water

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Reflective practice in the health professions has developed significantly in recent years, not least in the United Kingdom where logged written reflective entries are now mandatory for doctors at almost every career stage, dutifully entered in full onto an e-portfolio. In 2016, for the first time, a written reflective log from a UK trainee’s e-portfolio was released and used against them in a court of law. The details of the case remain unclear but the precedent feels ghastly and has unnerved trainees nationwide. For the first time an unthinkable question has been asked – ‘does formalised reflective practice pose a threat to trainees’? The tick-box exercise that has become reflection for training or revalidation has never been popular yet this disquiet has not quelled its rapid sprawl. This kind of reflection, compulsorily recorded and with a predefined quota does little but falsely reassure training providers and revalidation officials that doctors are reflecting. In being compelled to do so, it is likely that this type of reflective practice is not achieving the goal it was designed to. Likely to be exacerbated by the recent legal case trainees will actively avoid reflecting on mistakes or serious incidents – the very thing they have a duty to reflection on and for which reflective practice is most effective. Reflections will likely become cursory, watered-down and non-controversial, completely undermining their purpose. With a preceding lack of engagement from trainers and trainees and a novel threat to the safety of those who reflect, enforced written reflection is dead in the water. And so it should be. It is high time we stopped convincing ourselves this method is fit for purpose and invest in developing a personalised face-to-face educational process for reflective practice within medical education.

The cruelty of mindfulness

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Burn-out rates among doctors are unacceptably high; working in health care has become unhealthy. In order to improve the situation, we now learn residents to set their priorities, to manage their time, to accept individual coaching and... to develop a mindful mind. My point of view is that initiatives like mindfulness have a neglected, cruel side. They often are based on an implicit working ethic that reduces complex issues to individual responsibilities, while at the same time stimulating self-exploitation. My main argument is that we commonly only identify practical, ‘superficial’ sources of burn out (workload, conflicting obligations), while neglecting cultural sources, such as the imperative that we have to create ourselves by what we do (‘authenticity’). This leads to a work ethic of self-exploitation: failing in your work means having a failed life. And if we address burn-out mainly on the individual level (by sending individual doctors to mindfulness workshops), we give them the implicit message that (a) they have to adjust themselves to a demanding environment (and not vice versa), and (b) that, at the end, they are the only one responsible for their condition, their restoration, or their permanent failure. Take-home messages: (1) the causes of burnout are not only superficial, practical and medicine-specific; they are also deep, existential and cultural. (2) From an organizational perspective, the final aim of mindfulness is not the wellbeing of the individual doctor, but the optimization of his or her production capacity. And while interventions like mindfulness might lighten the direct burden a bit, they at the same time strengthen an individualistic work-ethic leading that leads to self-exploitation, misplaced conceptions of responsibility – and to burn out.
#9G7 (3305)
Stories make us human: Why AMEE should incorporate storytelling into conference

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There are the stories of the sick themselves, the stories of their families/carers. There are also the stories of those that care for the sick. Narrative medicine holds at its core the need of both patients/families/carers and those who tend to them to be able to narrate their experience, to have their stories heard and valued. Narrative medicine can also and does impact on the way in which health care is both given and received. The telling and hearing of patient stories validates and values the patient experience and also promotes self-reflection, creativity, empathy and more in those caring for people. Studying narrative, using the tools of close reading and writing, can encourage the ability to empathise, to see another perspective, to listen attentively. As Dr Rita Charon, pioneer of narrative medicine, says “As I improved my capacity to read closely where every word counts, I was able to learn how to listen closely where every word counts.”

At last year’s AMEE, myself and colleagues ran a storytelling/StorySLAM workshop. We were delighted with the overwhelmingly positive feedback we received and the huge enthusiasm for a space where those in medicine could listen to and read stories and to go on to create their own. Supporting and honouring the narratives of doctors and encouraging them to write them and even share them, not only benefits them in terms of their encounters with patients but also can contribute to their own greater well-being and resilience. AMEE has been launched this year by a master storyteller and Peter Wardell has talked of making day-to-day interactions more meaningful and engaging. AMEE could incorporate storytelling into conference to support deeper, more meaningful patient encounters as well as supporting doctors at every level to use their own storytelling as a means of reflection, growth and strength.

#9G8 (3346)
ONE HEALTH - A Multidisciplinary Approach in Medical and Veterinary Education

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Human medicine and veterinary medicine are interconnected and synergistic by their very nature. A majority of human diseases such as ebola, malaria, AIDS, dengue fever, rabies and plague, to only name a few, originated in or are transmitted by animals. According to a comprehensive literature review, that identified 1415 human pathogens, 61% of emerging infectious diseases are zoonotic.

The “ONE HEALTH” Initiative is a multidisciplinary collaborative approach that promotes all inclusive partnerships between physicians, veterinarians and all other allied health scientists with the goal of achieving the best health for people, animals, and our environment. The European Medical Students’ Association and the International Veterinary Students’ Association have made it their mission to urge the importance of implementing “ONE HEALTH” in medical and veterinary education. We recognize that human health and animal health are so closely interrelated that they can only be artificially divided. Another example illustrating the importance of “ONE HEALTH” is antimicrobial resistance, which is a major public health threat and one of the world's most pressing problems. Diseases that were once easily treatable with antibiotics are seriously compromised by the emergence and spread of antimicrobial resistance from food animals to humans and have been estimated to cause more than 700.000 deaths yearly. The rapid detection, surveillance, control and containment of emerging infectious diseases and antimicrobial resistance are essential for the risk management of global health threats and require our collaboration.

To conclude, we energetically assert a wider appreciation of the importance of “ONE HEALTH” and advocate the implementation of the “ONE HEALTH” concept in medical and veterinary education. We would like to close with a quote by Rudolf Virchow: “Between animal and human medicine there is no dividing line – nor should there be. The object is different but the experience constitutes the basis of all medicine.”
#9G9 (1533)
External accreditation of CPD events does not necessarily improve doctors’ CPD outcomes

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In developed countries providers of continuing professional development (CPD) educational events typically seek accreditation by external accrediting bodies. There is considerable worldwide variation as far as CPD is approached and accreditation mechanisms are often not present in low-resource settings. There is scanty literature to support the benefits of event accreditation, they are purported to include improvement in educational quality and reduction in bias. We present a view that formal accreditation per se does not necessarily improve the quality of educational events, and emphasis should be placed in demonstrating improved outcomes from CPD at the level of the participant (competency-based CPD based on a learning needs analysis) and the patient (improved outcomes). Accreditation organizations are costly to maintain and there is the need of a clear demonstration of a cost-benefit advantage to participants or patients. Despite our belief that CPD events should follow the basic principles of accreditation, we contend that in resource-constrained environments, they do not necessarily need to be formally submitted to an accreditation agency in a context of self-directed CPD. Funding could thus be directed to other medical education priorities including CPD outcome studies.
More than just conversation: MMI interviews predict clinical performance in senior medical student OSCEs

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Background: Grade Point Average is a well-known predictor of academic performance and is widely used as a medical selection attribute, despite weaker correlation with clinical aptitude. Interviews are more controversial, with varying reports of their predictive validity. We investigated the role of MMI interview in predicting clinical performance in medical students.

Summary of work: Selection scores (GPA and MMI interview scores) from six cohorts of medical students (2007-2012) were correlated with performance data from all written examinations and clinical assessments (OSCE). In particular, the predictive validity of MMI interview scores versus the OSCE performance by senior students was assessed (N=409).

Summary of results: GPA demonstrated positive correlation with academic performance in Year 1 written examinations (R² 9.5%; P<0.001;N=497). This significant correlation continued, but weakened, in subsequent written examinations (R² 6-8%; P<0.001). GPA didn’t correlate with OSCEs. MMI interviews however, predicted clinical performance in OSCE exams (R² 9.2% Year 3 and 12% Year 4; P<0.0001).

Discussion: This analysis allowed us to confirm the predictive correlation of GPA with academic performance in written exams across all years of the medical program and its decrease over time. However, we also demonstrated that MMI interviews were similarly useful at predicting clinical performance, with the strongest correlation at final year.

Conclusion: Written exam results correlate with previous academic achievement (GPA), but this association weakens as the clinical component of medical education takes priority in the senior years. OSCE performance in final year may be the most accurate simulation of future clinical practice and correlates with MMI interview scores at entry.

Take-home message: Predicting clinical performance, not just written exam performance, is a clear goal in medical school admissions. A well-structured MMI interview can aid in the selection of students by identifying students with strong communication skills and, more importantly, by predicting those who will perform well in clinical assessments in the future.
**Exploration of Validity Evidence for the Professionalism Mini-Evaluation Exercise in a Residency Admissions Process**

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**Background:** The Professionalism Mini-Evaluation Exercise (P-MEX) is a 21-item direct-observation instrument where trainees are assessed on doctor-patient relationship skills, reflective skills, time-management skills, and interprofessional skills. The purpose was to gather internal structure and predictive validity evidence for the P-MEX in assessing professionalism as part of a pediatric residency admissions process.

**Summary of work:** Internal structure (factor analysis and generalizability) and relations to other variables (predictive validity of P-MEX scores from admission to evaluations during residency training) validity evidence was collected, based on Messick's unified validity framework operationalized in Downing (2003) and in the Standards (2014), at the University of Geneva (Switzerland) from 2012-2016.

**Summary of results:** 195 applicants completed 3 standardized patient (SP) based P-MEX cases. Exploratory and confirmatory factor analysis identified three factors (doctor-patient relationship skills, situational awareness, and interprofessional skills) with good model fit. Generalizability was moderate (G-coefficient=0.52). Regression analyses predicting P-MEX scores to first-year performance evaluations indicated significant standardized effect sizes (overall=0.32, p=0.016).

**Discussion:** Construct validity for use of the P-MEX to assess professionalism in admissions process is supported by the validity evidence collected. P-MEX scores predict performance in global scores, specifically in knowledge and clinical scores but not for attitude or clinical skills. Further exploration of the construct of professionalism is necessary.

**Conclusion:** It is possible to assess professionalism in the residency admissions process using the P-MEX to select Family Medicine residents. The P-MEX provides a snapshot of an applicant's level of professionalism and may predict performance in the first-year of residency.

**Take-home message:** Residency directors may incorporate an SP-based P-MEX assessment into their residency admissions process to assess doctor-patient relationship skills, situational awareness, and interprofessional skills. This assessment may predict first-year residency performance.
Factors Contributing to MMI Performance by International Medical Graduates

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Background: The Alberta International Medical Graduate (AIMG) Program assesses internationally educated physicians for suitability to pursue residency training. Program applicants participate in multiple mini-interviews (MMI) to assess the Leader, Scholar, Communicator, Professional, Collaborator and Advocate CanMEDS roles. This study examines factors correlating with IMG performance on the AIMG Program MMI.

Summary of work: Standardized first-time MMI scores from 2 annual cohorts of AIMG Program applicants (n=223) were analyzed via linear regression. Independent variables contributing to the regression model included countries of birth and medical school training (expressed as United Nations Human Development Index scores).

Summary of results: The HDI of country of medical school training is a significant factor contributing to MMI performance (p = 0.01; 95% CI 0.41 – 3.92), whilst country of birth does not contribute significantly (p = 0.64; 95% CI -1.96 – 1.22) (R2 = 0.05).

Discussion: Analysis of AIMG Program MMI scores indicates that country of medical school training is influential, in agreement with a study of similar traits elsewhere. Factors including English language proficiency, gender, and time since medical school graduation will be analyzed. These may provide a more fulsome predictive model of MMI performance.

Conclusion: Country of medical school study appears to be more influential than country of birth when examining intrinsic CanMEDS roles in IMGs.

Take-home message: The HDI of country of medical school training appears to be a factor contributing to IMG performance on a Canadian MMI. Further analysis will be conducted to determine the correlation between MMI performance and variables such as English language proficiency, recency of undergraduate medical education, and gender.
#9I1 (3031)
**Developing medical schools' teaching on sustainability in healthcare: outcomes from a country-wide collaboration**

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**Background:** Priority learning outcomes sustainability in healthcare have been developed for undergraduate medical students. During 2015-16, a collaborative project to design, implement and evaluate new teaching delivering these learning outcomes was established in eight UK medical schools. The Staff Educational Development Association provided a small research grant to support this work.

**Summary of work:** Teams of educators and students participated in a seminar to learn about sustainable healthcare education and develop a project plan. Post-seminar, teams were supported to develop, deliver and evaluate new teaching at their medical school. Teaching was evaluated by the schools; the overall project was evaluated by the project team.

**Summary of results:** Seven medical schools developed new teaching, including lectures, practical projects, ‘student selected components’ and adding a sustainability perspective within existing teaching sessions. Collaboration between schools motivated and informed participants. Challenges included time pressures. Educator and student evaluations indicated that sustainability teaching was enjoyable and effective at improving knowledge and skills.

**Discussion:** Project strengths included remote support: environmentally responsible and not limited by geography. Difficulties were predictable: time pressures, and identifying space in the curriculum to integrate new material. It was difficult to compare evaluation of teaching at different schools due to variation in both pedagogic model and university policies on evaluation.

**Conclusion:** The development of a collaboration across the UK enabled the rapid development of new teaching material in a key topic area. Future areas for exploration include quality improvement projects and simulation, as well as assessing the learning outcomes, and curriculum change.

**Take-home message:** Identifying collaborators and building teaching capacity is a key challenge but need not be limited to local settings. Being part of a collaborative project can give impetus to a topic, and highlight its importance to other medical school faculty.

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#9I2 (345)
**A Novel Approach to Faculty Development: The Teaching Essentials Program for Clinical Faculty - A Pilot Study**

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**Background:** Lack of community and career development are contributing factors to the career dissatisfaction among clinical educators within American Medical Centers (AMCs). The inter-departmental, multi-institutional Teaching Essentials Program (TECF) seeks to increase faculty satisfaction through supporting bedside teaching skills and building a sense of community among clinical educators.

**Summary of work:** Based on a Massive Open Online Course, each of 6 months began by reviewing a topic specific Coursera module (e.g. feedback, etc) followed by several weeks practice in the clinical environment. At month’s end, two primary sites connected virtually by ZOOM, developed best practices through workshops on the topic.

**Summary of results:** With an average pre-program rating of 2.3 and post of 4.5 (Likert 1-5, 5 best), graduates believe the program improved their understanding of education principles and ability to network with like-minded peers. Each provided examples of how the program changed the way they approach, entrust and provide feedback to learners.

**Discussion:** All major stake-holders associated with AMCs stand to benefit from an environment that nurtures excellence in education. Increased career satisfaction of faculty would likely improve the education/innovation and patient care provided while reducing turnover rates. Preliminary outcomes from the inaugural TECF class reflect a step in this direction.

**Conclusion:** Early findings from this faculty development initiative demonstrate the potential to improve knowledge and a sense of community related to education across clinical departments and geographically distant locations. Inexpensive, with a modest investment of participant’s time, graduates appear anxious to build upon this success.

**Take-home message:** Though early outcomes reflect potential success in the programs intended purpose, participants identified available time (n=14) and lack of recognition of the importance of faculty development in this area by institutional leaders (n=8) as the most significant obstacles to participation. Future faculty development initiatives should be mindful of these limitations.
Faculty Development (FD) for an Urban Longitudinal Integrated Clerkship (LInC): A Multi-Modal Strategy for Multi-Site Preceptors with Different Needs and Preferences

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**Background:** Faculty of Medicine, University of Toronto expanded a single-site LInC pilot to 5 academic hospital sites resulting in increase in students (7 to 24) and preceptors (100 to 360). This challenging transition required a systematic and comprehensive FD strategy which could be adapted to the site-specific and individual preceptor needs.

**Summary of work:** A multi-modal FD program was created: (1) multi-site preceptor-student orientation evenings (OE) to facilitate community-building, student-preceptor relationships and skill building; (2) E-learning (EM) module on foundations for LInC preceptors; and (3) "just-in-time" longitudinal support through electronic newsletters (EN). A survey to evaluate the utilization and usefulness of these resources was administered.

**Summary of results:** 26% (93/360) preceptors responded to the survey. OE was utilized by 75.2%, EM 57.3%, and EN 61.5%. OE was rated as very useful/useful by 92.25% compared to EM 57.3%, and EN 59.4%. Majority of LinC preceptors (59.9%) selected the face-to-face OE as the most useful and preferred FD strategy.

**Discussion:** The preceptors' written comments were explored for themes to explain the utilization/usefulness rankings of the various FD resources. OE facilitated collaboration with faculty and students to optimize students' longitudinal experience, provided good preparation for faculty on how to be an effective LinC preceptor and created a sense of community.

**Conclusion:** Faculty members are most engaged with face-to-face faculty development sessions that provide preceptor-student interactions, high quality content and a sense of community. On-line resources provide unlimited accessibility, attentiveness to varied learning styles and a sense of connection when in-person attendance is not possible or not desired.

**Take-home message:** Faculty members require multi-modal faculty development programs to meet their learning needs as new educational programs such as LinC are implemented. Face-to-face faculty development events are still an important strategy for faculty engagement during the implementation of new educational programs.

Developing an inter-professional bedside teaching programme

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**Background:** Within our hospital bedside teaching mainly occurs within professional silos, from junior doctor to medical student. These teachers often have no clinical teacher training. Patients today have complex health care needs. This programme promotes multidisciplinary teaching and learning to establish a collaborative learning culture, aligning teaching with patients' needs.

**Summary of work:** Our objectives are to increase the proportion of teachers who are trained in bedside teaching. Increase the number of inter-professional bedside teaching sessions. Facilitate inter-professional learning to encourage sharing of knowledge and skills within the multidisciplinary team. Improve teamwork and collaboration, and foster a supportive learning culture within the workplace.

**Summary of results:** A pre-implementation survey showed; 50% of clinical teachers had no teacher training, less than 25% had facilitated inter-professional teaching, 0% had inter-professional teacher training, but 95% wanted it. In response this course was developed, focusing on facilitating inter-professional bedside teaching and peer review, with micro-teaching sessions to practice the concepts.

**Discussion:** The project idea has been enthusiastically received trust wide. Challenges faced are ensuring multidisciplinary team attendance, understanding barriers to inter-professional learning and seeking the best evaluation tool. Through involving professional leads in course development and holding focus groups we hope to understand these barriers and seek ways to mitigate them.

**Conclusion:** Involvement with stakeholders is paramount for success, both in course development and attendance. Focus groups will allow us to understand the barriers for inter-professional teaching and adapt the course. The peer review programme seeks to give ongoing support to the teacher and promote the programme’s implementation.

**Take-home message:** Early involvement with stakeholders. Use of focus group discussions to engage the disciplinary groups and understand their perceptions of the barriers. Follow-up of participants in the workplace and supporting them through peer review mentor-ship schemes is crucial to the programme success. This is best facilitated through a multidisciplinary team approach.
How should training concepts be designed to meet the needs of the target group?

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Background: German government funds the development of didactical training concepts designed for medical teachers supervising students in their final year. In order to use the funding adequately training units should be developed based on existing needs and available resources. Initially, both issues were addressed in this study.

Summary of work: 503 clinical teachers of the final year at 5 medical faculties in Baden-Wuerttemberg (Germany) responded to our survey (38% return rate). Descriptive statistics were conducted. Responses of an open question asking for proposals and requests of the final year training were inductively coded to identify themes of problematic issues.

Summary of results: A minority of survey participants (115; 23%) are aware of didactical trainings for clinical teachers. If available, a majority attends training (83; 72%). Themes of problematic issues addressed content of didactical training as well as restrictions in the clinical setting regarding participation of didactical training and clinical teaching.

Discussion: There seems to be a need of didactical training for clinical teachers in the final year. In our survey we identified required content of future training as well as restrictions for future transfer to the clinical setting.

Conclusion: As a next step we’ll take stock of didactical training offers for clinical teachers. Subsequently the development of training-units should be adjusted to the required contents and restrictions of the clinical setting to enable transfer to the everyday life of clinical teachers.

Take-home message: When developing programs of didactical training the focus should not only be on the content but also on framework conditions. Training offers should be adapted to physicians’ reality. Otherwise a lot of money is spent on malfunctioning programs.

Medical Educator Identity: tailoring teacher support to individual circumstances

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Background: Experienced medical educators are often required to support, train, coach and mentor junior colleagues in the skills, attitudes and behaviours of a good medical teacher. However, some junior faculty may struggle to engage with faculty-development opportunities, appear to lack enthusiasm or seem overwhelmed, and may lose interest in teaching altogether.

Summary of work: We undertook a qualitative study with senior medical educators (n=15) to explore how colleagues adopt and retain a medical educator identity. Using transition theory as our analytical framework we identified a number of factors that are strongly linked to successful transition into the role of professional medical educator.

Summary of results: Factors affecting development of a professional identity include: an individual's background, circumstances, personal motivations, extent he/she may choose and control workload, organizational support, effective networking and information-seeking strategies. Many of these individual factors are not routinely accounted for when planning and delivering training and support programs for inexperienced educators.

Discussion: Unless individuals’ particular circumstances and motivations for becoming involved in medical education are carefully discussed, there is risk that some will struggle, lose interest, or even drop out of teaching altogether. Strategies used to develop educational practice and specific support needs for their teaching role need also to be explored.

Conclusion: An existing four-part model (Schlossberg’s Four S Framework) can be used in meetings and training events to help both mentors and mentees to identify and explore factors affecting an individual’s readiness to make the transition into the medical educator role, enabling effective support strategies to be put in place.

Take-home message: Medical educators need individualized support to accept and manage the changes that will lead them to make the transition into a fully-fledged educator identity. By structuring faculty development around an individual’s self, situation, support and strategies, those most at risk of alienation can be identified and interventions quickly developed.
Sink or swim - exploring IPE in a new setting

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Background: An interprofessional (IP) team consisting of final year students from Medicine, Occupational Therapy and Physiotherapy collaborated to improve quality of life of elderly people referred to a psychiatric outpatient clinic. IP supervisor followed their learning process focusing on:

How did the diversity of the situation effect students' IP learning?

Summary of work: Through two home visits, the students evaluated how clients could experience enhanced quality of life. The supervisor observed the patient encounters, and supervision was available before and after. Finally, students summarized their findings in solo- and IP journal notes. Student discussions were audiotaped for analysis.

Summary of results: The students showed excellent collaboration when the patient was present, but was critical to their own professional performance and initiative during reflection discussions. However, working on an IP journal note together enabled students to reach a common ground, and fidelity in professional and interprofessional capabilities.

Discussion: IP education in an outpatient setting challenge students professional comfort zones. Students seem to find it easier to work within an interprofessional team than to reflect on their experience. The diversity of the patient setting along with the exploratory nature of the project created uncertainty of expectations.

Conclusion: Elderly people with mental illness often have a diversity of health- and social needs. If the clients’ condition is in a stable phase, working with this group gives an opportunity for diverse and transformative IP learning.

Take-home message: Students working out of their comfort zone learn how to deal with uncertainty in both group and patient meetings, and to experience that they can actually swim out with shallow waters.
#9J3 (16)
Understanding a Clinical Community of Practice

Annie Noble, University of Bristol, Bristol, UK

Background: An exploratory study of clinicians experience of collaborative practice in the clinical environment, blending Wengers’ Communities of Practice theory and Stephen Billett’s workplace based learning principles. The case studies will provide an illustration of the way that different specialities and clinical areas interpret and enact collaborative practice.

Summary of work: The paper will discuss a variety of clinical areas and show how collaborative practice is experienced in each. This will provide insight for healthcare professionals to start thinking about the global picture of workplace based learning and how they can become agents to perpetuate this important concept of collaborative practice.

Summary of results: There is dependence on seniors acting as role models that drives how professionals learn together. There are various entities on how that occurs across professions. A junior doctor’s creation of identity and the legitimate peripheral participation in to a Clinical Community of Practice is strongly driven by senior nursing staff.

Discussion: The exploration of the phenomenon of nursing staff being such strong role models for junior doctors on the wards, manifested itself, no matter what speciality they were in. There was repeated reference to the magnitude of support, morale boosting and learning gained directly from the nurses for the junior doctors.

Conclusion: Predominantly, the senior nurses in each of the clinical areas or tribe are a constant source of support, learning and identity formation for the junior doctors and therefore an advocate and driver for the facilitation of Collaborative Practice in the clinical areas.

Take-home message: There should be realisation for the potential in re-conceptualising Wengers’ theory, applied to the hospital workplace, by rebadging in to a more appropriate Clinical Community of Practice, which acknowledges the complex crossover of professions, barriers and teams in each clinical speciality that facilitates new members to joining it.

#9J4 (253)
A critical assessment activity to consolidate interprofessional learning for transition to practice

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Background: A programmatic approach to interprofessional education (IPE) aims to assist health professional students to acquire collaborative practice capabilities through a planned sequence of activities including: gaining literacy of range of health professions, high-quality simulation-based learning and real patient or client care interprofessional experiences.

Summary of work: Interprofessional student service learning for phase three has proven extremely difficult to implement at scale. We developed a simple, individually-completed, assessment task that placed senior students in a critical posture in relation to an interprofessional practitioner team into which they have been placed as part of their conventional placements.

Summary of results: Content analysis of student writings and phenomenologically-oriented analysis of post-activity interview transcripts demonstrated consolidation of interprofessional learning, particularly in the affective domain, in association with completion of the activity. Examples focused on role definition, team communication, the negotiation of power imbalances, collegial respect and interprofessional learning, particularly in the affective domain of collaboration and offer suggestions for improvement.

Conclusion: By placing students in a critical-observer posture during conventional clinical placements in healthcare teams, we were able to achieve consolidation of interprofessional learning outcomes in a real healthcare setting, without the logistic challenges inherent in implementing interprofessional service learning (per the Linkoping model) for large numbers of learners.

Take-home message: An easily-implementable, individually-completed, critical assessment activity appears to consolidate learning effectively, in the context of a programmatic approach to IPE.
Interprofessional education – what does the faculty know?

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Pui San Saw, Monash University, Sunway, Malaysia

Background: Interprofessional education (IPE) is a pedagogical approach for preparing health professions students to provide patient-centered care in collaborative environments. However, the implementation of IPE has met many barriers. Therefore, faculty understanding of IPE and their experiences on the barriers and opportunities could play a role in enhancing IPE delivery.

Summary of work: This study reports qualitative data from faculty focusing on their experiences and perspectives of IPE practices implemented and the future of IPE initiatives. Twenty-two academy-practitioners from medicine, dental, pharmacy, nutrition dietetic, nursing, chiropractic, Chinese medicine and other health sciences programmes were invited to participate in the interprofessional focus group discussions.

Summary of results: Data gathered from 13 faculty members participated in three focus group discussions were analysed inductively using thematic analysis. Four key themes emerged are (i) nature of IPE, (ii) barriers to IPE implementation, (iii) perceived enablers and, (iv) roles of assessment. Challenges include disparities between faculty acceptance, curriculum content and structure.

Discussion: Successful implementation may hinge on the (i) uniform understanding of IPE, (ii) multiprofessional collaboration in curricular design, (iii) mutual respect among professionals, (iv) “top-down” approach to break down professional silos and enhance collaboration in IPE design. Information technology could be useful as the communicating strategy and solution to logistic problems.

Conclusion: IPE though is desirable, the implementation could face many uphill challenges. Institute with limited resources may focus on faculty training on skills for facilitating interprofessional learning, rewarding the desired attitude and eliciting commitment from the executive leaders. Technology could be a key in providing solution to breakdown the logistic barriers.

Take-home message: Challenges faced by different institutes may be unique but could be possibly overcome by having executive leadership, supportive environment and current information technology.
**#9K** Short Communication: Teacher Evaluation

**Location:** Room 101d

**#9K1 (1979)** Examiners do it too: complex assimilation of examiner performance feedback

*James Crossley, Sheffield University Medical School, Sheffield, UK*
*Jeremy Groves, Intercollegiate Committee for Basic Surgical Examinations, UK*
*David Croke, Intercollegiate Committee for Basic Surgical Examinations, UK*
*Peter Brenan, Intercollegiate Committee for Basic Surgical Examinations, UK*

**Background:** Many undergraduate and postgraduate programmes now provide examiners with feedback comparing their scoring with that of their peers. Studies evaluating the impact of such feedback on subsequent examiner behaviour have shown very inconsistent results. We sought to understand this variability by investigating how examiners make sense of their feedback.

**Summary of work:** We interviewed 17 experienced examiners in the context of a high-stakes postgraduate OSCE examination using a modified think-aloud protocol. We undertook the interviews at two time points: the very first receipt of feedback, and then again 2 years into the programme. Examiner utterances were coded into themes and metathemes.

**Summary of results:** Examiners appreciated feedback, but their assimilation processes were complex. Three metathemes depicted gate-keeping questions: ‘Must I pay attention to this feedback?’; ‘Can I discern a message?’, and ‘Can I attribute a cause?’. Examiners often misinterpreted feedback and tended to personalise. Those who decided to make changes, adopted cautious incorporation mechanisms.

**Discussion:** The complex and individual assimilation processes that we have observed may explain the variable impact of examiner performance feedback noted in earlier studies. Examiners’ attitudes to feedback resemble those of learners. Change is regarded as a substantial investment, so feedback must demonstrate significant credibility to be taken on board.

**Conclusion:** Programmes that wish to employ examiner feedback as a quality improvement mechanism will need to pay close attention to the ease with which feedback can be understood. Even then, examiners may well need individual support with interpretation, attribution and response planning if they are to respond rationally to feedback.

**Take-home message:** Just like learners, examiners are not passive recipients of feedback. They make critical judgements over its credibility, and they are prone to personalisation and misinterpretation. Consequently, examiner feedback requires at least as much care and attention as educational feedback to learners if it is to improve examiner performance.

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**#9K2 (1478)** Beneficial effects of a short evaluation training for students on teacher evaluations: results of a randomised trial

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*Katharina Dreiling, University Medical Centre Göttingen, Germany*
*Sarah Schiekirka, University Medical Centre Göttingen, Germany*
*Sven Anders, University Medical Centre Göttingen, Germany*
*Nicole von Steinbüchel, University Medical Centre Göttingen, Germany*

**Background:** Evaluation data need to be valid in order to help teachers improve their didactic skills. However, halo effects have been reported to confound student ratings. Overly negative evaluations might discourage teachers from making efforts to improve, especially if teachers feel that student ratings do not accurately reflect their teaching skills.

**Summary of work:** First-year students rated teacher performance in two videos (identical teaching session; two different teachers - “1” friendly, “2” rather unfriendly) on a validated questionnaire. Participants either received an intervention addressing common confounders in evaluation or discussed the importance of evaluations (control group). Following that, the two videos were rated again.

**Summary of results:** At baseline, teacher 1 received overly negative and teacher 2 unduly positive ratings. Following training, scores remained unchanged in the control group. In the intervention group, scores were more favourable for teacher 1 and less favourable for teacher 2. The effect size of the change was 1.0 for both teachers.

**Discussion:** The short training acutely reduced negative and positive halo effects. Strengths of this study include its randomised design, the relatively large sample size (n = 173), the use of a validated questionnaire and the use of standardised videos only differing with regard to the teachers’ behaviour.

**Conclusion:** If the effect observed in this pilot trial is confirmed in observational studies with long-term follow-up, evaluation trainings for students should be introduced in order to increase the validity of evaluation results. This will have positive effects on the acceptability of individual teacher evaluations.

**Take-home message:** Halo effects have been shown to confound student ratings of teacher performance in medical education. We conducted a randomised trial investigating the effects of a short evaluation training for students. Following the intervention, we found a significant and meaningful reduction of negative and positive halo effects.
Trainee feedback survey: developing a tool to gather views about the delivery of training by individual medical trainers

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**Background:** There is great variation in trainee doctors’ reported experiences of training and supervision in UK. Although all doctors are expected to provide training, no standardised evaluation of individual clinicians exists in their capacity as trainers or supervisors. A trainee feedback survey was therefore developed to gather feedback on individual trainers.

**Summary of work:** An online trainee feedback survey was developed following a literature review, and refined using cognitive interviews with trainees (n=10). This was piloted online with trainees (n=87) from three specialties in the Oxford Deanery: General Surgery; Histopathology; Haematology. Specialty level analysis were conducted and individual reports for eligible trainers (n=6) produced.

**Summary of results:** Exploring tool validity demonstrated the survey was fit-for-purpose and allowed for refining the tool for specific educational roles. Trainees (n=35, 40%) highlighted positive aspects of individual trainers, including “ensuring safe and effective patient care through training”. As well as areas for improvement, such as “supporting and monitoring educational progress”.

**Discussion:** The Trainee Feedback survey served as an important tool to highlight areas for improvement and support in the teaching environment. It gathered meaningful yet anonymous feedback. The aggregated results gave specialties an overview of the situation and benchmarking against others. Lastly, the individual trainers’ reports provides results that are actionable.

**Conclusion:** Although there has been increased recognition of the importance of teaching by individual doctors, there is still a need to standardise the quality and provide formal support for developing doctors as teachers. Gathering feedback from trainee doctors using a validated tool, contributes to trainers’ development and areas for reflection.

**Take-home message:** It is every doctor’s responsibility to teach future generations and it is vital that support and opportunities for development are provided to prepare every doctor for this role. Using a validated tool and presenting results in a usable format is important to provide feedback that is trusted and inspires reflection.

Understanding the response process of residents evaluating clinical teachers – influences of instrument and national culture

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**Background:** Instruments to evaluate clinical teachers should have a variety of validity evidence. A review of the literature showed that content and internal structure evidence is well represented among published evaluation instruments of clinical teaching. However, we still have little insight in the actual response process residents go through while evaluating.

**Summary of work:** This study aims to explore the response processes of residents filling out a newly developed teaching evaluation instrument. Using Grounded Theory methodology we conducted in-depth semi-structured individual interviews until the point of thematic saturation was achieved. 30 interviews in total were performed.

**Summary of results:** Residents strongly tried to rationalize the evaluation: They set standards, sought evidence and used the evaluation instrument to help guide their final rating. Additionally three influencing factors emerged; motivation to evaluate, the residents’ aim to maintain the hierarchical relationship and their empathetic understanding of the clinical teacher.

**Discussion:** Hofstede’s cultural investigation has shown that Japanese culture is a high-power distance society (Hofstede 2001). Our findings suggest that the sense of a hierarchical relationship is related to this cultural dimension. Therefor we feel that cultural aspects should be considered in the response process of resident evaluating clinical teachers.

**Conclusion:** Understanding the response process in evaluation is essential in determining the validity of evaluation instruments. Evaluating clinical teachers may involve culturally dependent activity. As such the typical evaluation instrument using observations to provide a score may be challenging, especially in high power distance society.

**Take-home message:** It is important to consider the response process as a source of validity of the evaluation of clinical teachers. Medical educators should be aware of cultural aspects in evaluating clinical teachers.
#9K5 (1911)
"Peer Observation of Teaching" in Medical Sciences Education: A Systematic Review

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Background: Peer Observation of Teaching has been considered as one of the methods of evaluating faculty members. Yet, there is not a comprehensive study regarding its usefulness in the Medical Sciences Education environment. The purpose of the present study was the systematic review of the whole studies published in this field.

Summary of work: ERIC, PubMed, Scopus, springer, science direct, emerald were searched comprehensively to retrieve the relevant articles. Initially, the summary of 501 articles were reviewed by the research team by using CASP, MERSQI and McMaster University checklists.

Summary of results: Only twelve studies remained for analysis. Post-test was used to assess outcomes of peer observation of teaching. Seven studies reviewed the reaction of participants in process of POT. In 10 articles, the observer has presented constructive and positive feedback and faculty members found it most valuable stage of the process.

Discussion: However, the studies were limited to post-test in terms of methodology. Moreover, they largely review the outcomes based on the level one and two of Kirk Patrick. Validity and reliability of employed questionnaires in most of studies were not measured and elaborated.

Conclusion: Peer Observation of Teaching is an appropriate method for evaluating professors especially in case of formative evaluation.

Take-home message: The results of this systematic review would be utilized by faculty-member evaluation planners to make suitable decisions in this regard.
Short Communication: CPD 2 - CPD and Life Long Learning
Location: Room 102

Associations of work motivation and lifelong learning motivation of medical specialists: a structural equation model

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Background: Changing patient care and societal demands increases necessity for lifelong development of medical specialists. Autonomous motivation (originating from within an individual) is associated with better learning, performance, patientcare and wellbeing of a specialist. The aim of this study is to investigate the relationship between work motivation and lifelong learning motivation.

Summary of work: An online survey, measuring work motivation (autonomous work motivation and controlled work motivation (originating from external factors)), lifelong learning motivation, autonomy, competence and relatedness, was sent to specialists in four hospitals in Netherlands. Structural Equation Modelling analysis was conducted and corrected for age, gender, hospital and experience.

Summary of results: One hundred and ninety-three specialists participated. Autonomy was positively associated (p=0.000) with autonomous work motivation which in turn influenced lifelong learning motivation positively (p=0.000). Competence was negatively associated (p=0.000) with controlled work motivation as was age (p=0.001). Working in an academic hospital influenced lifelong learning motivation positively (p=0.007).

Discussion: Self-determination theory states that fulfillment of autonomy, competence and relatedness is necessary for autonomous motivation. For specialists autonomy appears to be very important for autonomous work motivation and hence lifelong learning motivation. Unfortunately rules and regulations are becoming increasingly dominant in healthcare and are likely to decrease autonomy among specialists.

Conclusion: Autonomous motivation for work influences motivation for lifelong learning positively in medical specialists. For having autonomous work motivation, medical specialists need to feel autonomy in their work. Working in an academic hospital seems to stimulate motivation for lifelong learning.

Take-home message: In the world of rules, regulations, checklists and quality assurance indicators, medical specialists are likely to lose their sense of autonomy, which could lead to a decrease in their autonomous motivation for work and lifelong learning. Measures need to be taken to reinstate this sense of autonomy.

Establishing a New Academic CME Entity at the University of Alberta: Envisioning A New Lifelong Learning System by Realizing Synergy & Creating Collaborations To Enhance Physician Learning

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Background: There was a recognized need and compelling arguments for an academic continuing professional development (CPD) unit to provide opportunities and support for practicing healthcare practitioners to fulfill their lifelong learning needs and to promote a culture of improvement, accountability and assessment.

Summary of work: Lifelong Learning (L3) was established October 2015, at the University of Alberta, mandated to undertake Lifelong Learning for healthcare professionals, geared towards changing and optimizing healthcare quality and patient outcomes.

Summary of results: Creating a new scientific foundation for CPD, integrating research methods from all disciplines, generating research directions to understand linkages between CPD and population health, transforming knowledge to improve patient care, promoting development of measurement instruments to evaluate CPD effectiveness, encouraging development of health information technology and fostering inter-professional collaboration.

Discussion: With inclusion now of Physician Learning Program (PLP) under the portfolio of Lifelong Learning, opportunities exist to further develop, collect, analyze and disseminate performance metrics to enhance and align physicians’ learning for quality.

Conclusion: It is time to think of learning as a continuum. Physicians must consider themselves as “lifelong learners of medicine”. Medical education establishments must provide meaningful, relevant opportunities for adult learning that are contextual, in real time, are measurable and improve patient outcomes as well as value and cost-effectiveness of CPD.

Take-home message: CPD entities must endeavour to provide individualized learning opportunities for all healthcare professionals, geared towards changing and optimizing health care quality and patient outcomes. L3 is leading the development of evidence-based educational interventions that use innovative techniques and new enabling technology in order to encourage ethically sound application of knowledge.
#9L3 (273)
How does the students' self-directedness in learning evolve through the years of undergraduate medical education?

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Background: Life-long learning is a necessity in medicine. Medical schools are also working towards preparing students for self-directed learning (SDL). In order to ease the transition from structured medical school education towards less structured clinical educational environments.

Summary of work: Students were given a validated self-rating scale for self-directed learning (SRSSDL) questionnaire. A standardized SRSSDL translation was performed. The preliminary data analysis included undergraduate medical students, from beginner to clinical levels (years one through six). The Likert scale based questionnaire covered four areas: awareness, learning strategies, learning activities and evaluation.

Summary of results: Internal scale consistency (Cronbach's alpha) was 0.802. An analysis shows SDL does not differ significantly based on gender (p=0.701). There were no significant differences between beginning (y 1-2; n=30) and finishing (y 5-6; n=21) students (p=0.923). Further analysis on SDL areas will be performed with more participants.

Discussion: Data trends show minimal notable change in SDL through years. Transition to clinical courses causes lower SDL scores. In later years students successfully adapt to change and become more self-directed. SDL score insignificance between tested groups could due to beginner overestimation of SDL competencies. Beginners tend to overestimate their skills.

Conclusion: Initial data show student SDL awareness is independent of gender, has insignificant differences in total scores across the medical students. Careful consideration must be given towards the understanding of SDL levels students have across the undergraduate medical curricula.

Take-home message: Further data analysis on SDL on questionnaire areas must be done. An overestimation of SDL is most likely the cause of insignificant difference between beginner and finishing medical students.

#9L4 (1603)
The place of evaluative judgement in verbal feedback sessions: an observational study across the health professions

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Background: Evaluative judgement, or the ability to judge the quality of work, is a key skill for health practitioners as lifelong learners. A cornerstone of work-based training is verbal feedback. We investigated the ways in which learners were encouraged to engage in evaluative judgement in feedback sessions.

Summary of work: A case-study approach was used whereby 10 videos were chosen from a set of 36 videos of authentic verbal feedback sessions in clinical practice. Case studies were selected for diversity on the basis of discipline, experience and gender of health professionals. Two researchers independently interrogated the videos using thematic analysis.

Summary of results: Themes identified: 1. Educators’ invitations for learner self-analysis; 2. Learner responses to these requests and 3. Dialogue regarding characteristics of ‘quality work’. Learners rarely expressed a legitimate self-evaluation. Educators focused on describing their evaluation and features of a good performance not interactive dialogue to enhance learners’ understanding of quality work.

Discussion: Educators rarely facilitated development of evaluative judgement by explicitly asking learners to compare their performance to a standard then exploring, validating or challenging their comments.

Conclusion: Orientating clinical educators to the importance of evaluative judgment and practical ways to enable learners to develop this skill may assist in creating more productive feedback practices.

Take-home message: Evaluative judgement is a valuable skill for life-long learning. Our observational data suggest that learners and educators across the health professions do not see it as a key focus. Explicit descriptions of desirable behaviours and professional development workshops that offer opportunities to practice them may improve outcomes.
#9L5 (2262)  
**Perceived Learning Activities in Developing Lifelong Learning Skills for Dental Students in an Outcome-Based Educational Programme**

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Vishna Devi Nadarajah, International Medical University, Kuala Lumpur, Malaysia  
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Srinivasan Ramamurthy, International Medical University, Kuala Lumpur, Malaysia

**Background:** Lifelong learning is defined as attributes involving self-initiated activities and information-seeking skills with sustained motivation to learn and ability to recognize one’s learning needs. It is important that dental practitioners are armed with the attributes to equip them with most current knowledge and skills to provide high standard of care.

**Summary of work:** Adapted version of the Jefferson Scale for Physician Lifelong Learning (JeffSPLL) was used to assess the effectiveness of learning activities and lifelong learning attitudes of First to Final year dental students at the International Medical University (IMU), Malaysia. The outcome-based dental programme places strong emphasis on student centred learning activities.

**Summary of results:** All students perceived PBL to be effective in promoting lifelong learning skills; clinical sessions and research are perceived by senior students to inculcate lifelong learning skills. Increasing orientation towards lifelong learning was observed with academic progression, final year students obtained significantly higher scores than year 1 and 2 students.

**Discussion:** Reasons for the increase include dental students at IMU are required to treat patients under supervision in their clinical years (year 3-5) making learning outcomes related to patient care delivery a priority. Conducting and submitting research report is pre-requisite for progression; students become responsible for delivery of their learning outcomes.

**Conclusion:** Students’ lifelong learning skills develop progressively in an outcome-based curriculum. This can be influenced significantly by requiring the students to develop responsibility in delivering patient care, conducting a research project under supervision; enabling students to appraise literature and practice evidence based patient care, hence producing work ready graduates.

**Take-home message:** Alignment of learning outcomes and self-directed teaching and learning activities play an important role in inculcating lifelong learning attitudes. Curriculum that place emphasis on early clinical exposure and research orientated encourage students to develop inquisitive mind and enhance lifelong learning skills.
#9M  Short Communication: Curriculum Mapping/Electives
Location: Room 103a

#9M1 (3228)
South African lecturers’ perspectives on the usability and value of web-based curriculum mapping - results of the international LOOOP project

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Gerda Botha, Sefako Makgatho Health Sciences University (SMU), South Africa
Olaf Ahlers, Charité - Universitätsmedizin Berlin, Germany

Background: Web-based curriculum mapping ensures the alignment of lectures/modules/courses with intended outcomes/competencies/EPAs and assessment. High acceptance of the method is a precondition for successful mapping processes. Sefako Makgatho Health Sciences University (SMU) is the first South African university to embark on the mapping of its curricula online.

Summary of work: Twelve SMU degree programmes are currently mapped by faculty members using the international ‘Learning Opportunities, Objectives and Outcomes Platform’ (LOOOP). 175 faculty members filled in a 4-point Likert scale questionnaire regarding two aspects: value of curriculum mapping and usability of LOOOP.

Summary of results: Effects of curriculum mapping were positively evaluated: e.g. visualisation of learning spirals (87% agreement); identification of inconsistencies (90% agreement); alignment of educational objectives, outcomes, and assessment (97% agreement). LOOOP was evaluated as usable for creating (89%) and organising (97%) the curriculum as well as for navigation through the curriculum (95%).

Discussion: Curriculum mapping has been recommended in AMEE guide no.21 more than 15 years ago. However, comprehensive curriculum mapping is still a great challenge and acceptance by faculty members is a precondition for effective mapping processes. Thus, aim of the international, non-profit LOOOP research project is to establish effective mapping tools.

Conclusion: Mapping processes at South African SMU as well as usability of the used current LOOOP version are highly accepted by faculty members.

Take-home message: Curriculum mapping is highly accepted by faculty members and the benefits of mapping are are valued, if a usable (online) mapping system is available.

#9M2 (3276)
Using Eye Tracking to explore faculty use and quality improvement of a visualised curriculum

Claire Ann Canning, Lee Kong Chian School of Medicine, Singapore
Kathryn Cockett
Nabil Zary

Background: Curriculum mapping visualisation tools enables educators to make connections across the curriculum, and maintain alignment of intended curriculum outcomes. Eye Tracking, extensively used in psychology, is gaining momentum in medical education. Eye Tracking is a novel way to explore faculty use, enhance functionality and ultimately curriculum improvement.

Summary of work: Curriculum mapping research traditionally applies qualitative and quantitative methods; questionnaires, focus group discussions, etc. We used Eye Tracking, as a novel approach to explore faculty’s perception of the curriculum, focusing on continued quality improvement. The data collected has enabled us to better understand how faculty navigates the curriculum mapping resource.

Summary of results: Faculty were purposefully engaged in using the curriculum map, making connections and as a result felt empowered by the ability to interrogate their curriculum. By investigating the faculty navigational process we were able improve the visualisation tool and address curriculum alignment and quality assurance metrics across the MBBS programme.

Discussion: Eye Tracking is a novel method to investigate faculty use of a curriculum mapping tool. Faculty are often isolated in their specialty, but in navigating a curriculum mapping resource, they appreciate how their teaching is integrated into the curriculum as a whole, and are empowered as a consequence.

Conclusion: In developing a curriculum mapping resource, it is imperative that continued quality improvement be addressed. The use of Eye Tracking is a novel data collection method, that allows us to monitor how faculty navigate the curriculum, improve functionality of the resource and ultimately enhance faculty development and student learning.

Take-home message: Eye Tracking is a novel approach to investigate faculty perception of curriculum mapping in a quality improvement exercise. Applying this methodology, we embraced a new technology whereby we can impart our knowledge to further enhance faculty development. Endless research possibilities in medical education can be exploited using Eye Tracking methodology.
**The Curriculome: A new tool for medical school curricular integration**

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**Background:** Curricular revision and integration is ongoing at many US medical schools. In discipline-based instruction there is often overlap in topics from different disciplines. The overlap may be considered redundant or more positively an opportunity for interaction and integration. Such overlap may be illustrated by a network graph, i.e. the Curriculome.

**Summary of work:** We examined the lecture schedules for seven medical school courses in the basic sciences, specifically Anatomy, Pathology, Microbiology, Molecular and Cellular Biology, Pharmacology, Physiology and Introduction to Clinical Medicine in order to identify common lecture topics. We then built a connectome linking all the possible connections among all seven disciplines.

**Summary of results:** The two dimensional network we constructed was basically a ball and stick model, with circles (disciplines) connected by lines in Word. Hovering the cursor over a given connecting line produced a display of topics common to the connected circles. For example neurodegenerative disease was common to all seven disciplines.

**Discussion:** The Curriculome can be employed as the "front end" for input of terms into software such as Ilios or Osmosis. Once a common term from the Curriculome is entered into such software all instances of the term can be found in all lectures constituting the medical school curriculum.

**Conclusion:** Since the Curriculome is complex in two dimensions we are extending the model to three dimensions using colored foam balls for the disciplines and wooden skewers as connecting paths between disciplines. The detection of common topics by this procedure can be used to replace lecture redundancy with interactive learner-based exercises.

**Take-home message:** As medical curricula transition from didactic lecture-based to learner-based methods of instruction such as case-based small group discussions and problem-based learning it will be critical to identify the most important concepts from lecture and incorporate them into new methods of instruction. The Curriculome facilitates that process by identifying curricular overlap.

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**Concept-mapping as a tool for shifting to an outcome-based curriculum at the San Beda College of Medicine**

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Noel Atienza, San Beda College of Medicine, Manila, Philippines

**Background:** Concept mapping is a useful tool in planning and implementing a shift to an outcome-based education (OBE) curriculum for the Doctor of Medicine program. Faculty working collaboratively using concept maps can effectively define the required program outcomes as well as outcomes specifically designed for the San Beda College of Medicine.

**Summary of work:** An initial macro map containing six major competencies of the current traditional and subject-based curriculum was used as a starting point. Faculty workshops were undertaken to elucidate the links and key outcomes that will define the envisioned physician graduate. A committee on medical education subsequently synthesized the different concept maps.

**Summary of results:** A final macro map was created to represent the school’s vision of a balanced mix of aptitudes and competencies that must be possessed by its physician graduates by the year 2020. The concept map demonstrates how the revised curriculum will include the government mandated program outcomes with a Benedictine character.

**Discussion:** The hierarchical arrangement of the concepts placed the professional, ethical, and Benedictine standards possessed by the graduate at the top. This map may serve as a guide for further curricular reorganization and the design of teaching and learning activities to attain the desired outcomes of the medical graduate.

**Conclusion:** Concept mapping is an effective tool for implementing curricular revisions to achieve an outcome-based curriculum for a medical school. Instructional designs, terminal outcomes, and teaching-learning activities can be revised so that the desired outcomes may be achieved through the four-year medical curriculum.

**Take-home message:** A medical school can achieve an outcome-based curriculum through concept-mapping workshops with the participation of the faculty, administration, and students. A curricular macro map can serve as a guide in directing curricular updates aligned to the school’s vision and mission in order to achieve its educational objectives.
Making Sense of Experience: The Challenge of Dissonance. A thematic analysis of learning on elective terms

Karen Garlan, Sydney Medical School, Sydney, Australia
Graham Hendry

Background: Elective terms in developing countries are extremely popular with medical students. However, the phenomenon of learning in new and challenging environments can be unpredictable and confronting. In most medical schools, students write reflective reports of their elective experiences that they submit as evidence of their learning.

Summary of work: A thematic analysis (TA) of 36 written reflective reports from students who had taken electives in developing countries was performed. Analysis was influenced by the question, “How do students make sense of their learning in developing countries?” Students’ experience of learning was interpreted through three recognized domains: affective, behavioural, cognitive.

Summary of results: Students described significant acute experiences in the affective, behavioural and cognitive domains when reflecting on their experiences. Themes identified included Conflict (emotional and cognitive), Confusion (moral and ethical), Communication (language and culture), and Patient Care, which were subsumed under the concepts of cognitive dissonance and barriers to student learning.

Discussion: Cognitive dissonance occurs when existing knowledge is challenged. Students’ experiences challenged their existing knowledge, themselves as medical students, and highlighted them as outsiders in the host cultures. Absence of feedback and support compounded cognitive dissonance. Students need far more guidance and support in selecting, preparing and engaging in international electives.

Conclusion: TA suggests that students’ ability to make sense of their elective terms is impacted significantly by strong emotional, challenging clinical and complex social and cultural issues that accompany these terms. These challenges are often invisible to students before departure and their effects are repeatedly underestimated upon return to formal studies.

Take-home message: In view of the growing popularity of international electives we owe it to our students to provide them with more educational and professional support to lessen the impact of cognitive dissonance and to make the challenges that accompany an elective in a developing country far more visible and transparent.
Background: Medical school graduates seeking to practice medicine or pursue postgraduate medical education first seek professional licensure and registration within the country they intend to practice. It is important to identify the many medical regulatory bodies globally, to inform the pursuit and support of medical licensure both domestically and internationally.

Summary of work: This study describes the national and subnational licensing and regulatory agencies responsible for ensuring physician competence within their respective countries and the reported role of medical schools in the licensing/registration process. The scope of authority and potential conflict of interest in roles and responsibilities of these institutions will be considered.

Summary of results: Surveys were sent to 257 medical schools and 117 (45.5%) responded. All reported the existence of one or more medical regulatory authorities: 94% at the national level, and 12% at the subnational level. 38% of those responding had some role in the licensure and registration process.

Discussion: All schools reported a medical regulatory authority in their country. Most authorities were a national-level, government authorized, medical- or health-specific authority. Medical-specific authorities can focus solely on the regulations of medical professionals, while authorities with both regulatory and representative responsibilities may encounter conflicts of interest.

Conclusion: A minority of the medical schools responded they had any role in the licensure process, with most reporting an informational or advisory function. As expected, the influence of a medical school does not extend beyond this scope, leaving physician licensing/registration the government’s authority and responsibility.

Take-home message: The agencies responsible for registration and licensure of physicians in their country of practice varied by regulatory scope and government level. Most medical schools either did not have a role in regulation or participated only by providing graduate information to the regulatory authority during the licensing and registration process.

Take-home message: Attention should be given to matters concerning leadership, community engagement, student learning and the learning environment to achieve the intended learning outcomes of decentralised training. It is important to develop a shared vision on decentralised training for educational institutions, health systems and the community.
#9N3 (3217)
The Learning Hospital: a case study

Megan Phelps, Sydney Medical School, Sydney, Australia

**Background:** Evidence-based and patient-centred design are increasingly used in planning and construction of new and repurposed health facilities. Architects, planners and project managers appear not to be considering health professional learners as part of the process. The Children’s Hospital at Westmead, Sydney, Australia, opened in October 1995, on a greenfield site.

**Summary of work:** A case study of The Children’s Hospital at Westmead (CHW) was conducted. Documentation of the CHW planning process and more recent major changes were examined for information about how health professional learning was considered. Semi-structured interviews conducted with planning contributors regarding their recollections of the planning process were analysed thematically.

**Summary of results:** Analysis revealed brief mention, and little emphasis on, education and learning in original and recent planning documentation. Interview themes revealed consideration of the importance of education but little consideration of the learner in clinical and informal spaces. Spaces planned for education were in some cases used for other purposes.

**Discussion:** Initial emphasis on education in planning was subsumed by demands related to clinical care and construction. No post-occupancy evaluation was conducted to inform re-purposing and learners were not considered as a ‘user group’.

**Conclusion:** This case study revealed a lack of emphasis and concern for health professional education in original planning and re-purposing of a health facility. Opportunities exist for learner-centred design alongside concerns related to building design and clinical care. Development of tools to assist this process.

**Take-home message:** Learners, including health professional students are important ‘users’ of health facilities and clinical settings. Opportunities exist to review and improve consideration of learning and education when planning and re-purposing health facilities. Development of learner-centred design and post-occupancy evaluation tools may be required.

#9N4 (2728)
Quantification of educational workload in a university hospital and medical school

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Muna Sadoon, SQU, Muscat, Oman
Fahad Al Zedjali, SQU, Muscat, Oman
Arunodaya Gujjar, SQU, Muscat, Oman
Dawood Al Riyami, SQUH, Muscat, Oman

**Background:** Quantification of educational workload helps both the faculty to describe their own work profile, and the dean to allocate responsibilities in an equitable manner.

**Summary of work:** Educational activities were defined as the sum of teaching in a credit-based system, clinical teaching, research supervision, assessment, and course or clinical rotation coordination in a calendar year. Educational activities in the MD (6 years), BMS (4 years), postgraduate basic sciences (MSc and PhD) and postgraduate clinical programmes were estimated.

**Summary of results:** There were 40 basic-science faculty and 323 clinical faculty. After correcting for administrative workload, there were 182 FTEs. The total educational activity was 45,167 faculty hours. For each semester, the educational workload load was 11.3 hours/week for the basic sciences faculty, and 3.88 hours for the clinical faculty.

**Discussion:** The estimates were based either on timetabled teaching, or calculated based on, interviews and discussion. The faculty was defined according to university regulations, and the estimates were made separately for faculty in basic and clinical sciences, and then counted together as Full-Time Equivalents (FTE). The results were expressed per semester.

**Conclusion:** In conclusion, educational activity was quantified, and a new benchmark was established.

**Take-home message:** Educational workload was defined as a sum of teaching, assessment and coordination activities. All programs in college of medicine and health sciences were included, The educational activity of the entire year was calculated and expressed for the full time equivalents. The results serve to establish a benchmark for university hospitals.
#9O Short Communication: Assessment - Written Exams and the Progress Test

Location: Room 201

#9O1 (1310)

Students' mentoring based on a structured selection using combined summative course and formative Progress Test results – a longitudinal view of students' performance

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Sonja Finsterer, RWTH Aachen University, Aachen, Germany
Melanie Simon, RWTH Aachen University, Aachen, Germany

Background: Since 2003, the Aachen curriculum applies more than 50 summative and formative exams. In 2011 there was developed the “HIP (How I Perform)-Tool” to visualize summative and formative performance for a better self-evaluation. The retrospective view to the data gives a better understanding of performance during a whole study cycle.

Summary of work: Lists of students are generated by using summative course results, comparisons of summative and formative data and the combination of both. For three age groups there were generated lists of the 20 best and 20 with low scores. These have been compared to detect students with constant needs of assistance.

Summary of results: Students with deficiencies in their summative performance are constant throughout their studies, Progress Test deficiencies are varying. The combined results vary also.

Discussion: This longitudinal perspective shows that there can be students detected that have bigger difficulties than others and that a mentoring could be very useful. How can that be done? Automated with the HIP-Tool or with mentors? How can this information be applied to improve students’ outcome?

Conclusion: The HIP-Tool can provide information on students that need a mentoring to increase their pace of study and to increase their longitudinal performance. This information can be used in existing mentoring methods and helps to create new ones.

Take-home message: Longitudinal data help understanding students’ performance and helps to improve students’ advisory service.

#9O2 (2395)

Does allowing digital information seeking during a Progress test improve results?

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Nina Hutri-Kähönen, University of Tampere, Tampere, Finland
Katri Kaukinen, University of Tampere, Tampere, Finland
Esa Leinonen, University of Tampere, Tampere, Finland
Kati Hakkarainen, University of Tampere, Tampere, Finland

Background: Single Best Answer (SBA) Progress test of 175 items (scored +1 correct -1/2 incorrect) is used as formative assessment in undergraduate medical curriculum of Tampere Faculty of Medicine and Life Sciences. We studied how allowing digital information seeking during the test influenced test results.

Summary of work: Students were informed beforehand of the possibility to seek information with mobile devices. Each study year was divided randomly into groups allowing mobile devices (M+, 333 students) and not allowing mobile devices (M-, 317 students). Anonymous feedback was given by 253 (76%) students in the M+ groups.

Summary of results: Mean scores from first to sixth year were: M- groups 4,0-12,6-18,0-27,3-37,2-48,2% (% of theoretical maximal score) and M+ groups 9,6-15,9-16,8-32,2-35,6-49,2%, respectively. Allowing information seeking resulted in slightly higher mean scores in all but years three and five. Advantage gained by information seeking was smaller in clinical than basic science items.

Discussion: Students seemed to seek information cautiously. The benefit of information seeking varied and was marginal in clinical items. The results must be interpreted with caution since not all students chose to seek information. Students reported varied use of mobile devices in their feedback. Many respondents found information seeking too time-consuming.

Conclusion: SBA Progress test requires a broad knowledge base and problem solving capabilities. Allowing information seeking in the test did not consistently improve the results. Further studies are called for.

Take-home message: Information seeking during a SBA test does not necessarily improve the results.
#9O3 (1641)
Evaluating Progress Test as part of Curriculum Evaluation in Syarif Hidayatullah Jakarta Medical School, Indonesia

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Fika Ekayanti, Syarif Hidayatullah Jakarta State Islamic University, Jakarta, Indonesia
Nurmila Sari, Syarif Hidayatullah Jakarta State Islamic University, Jakarta, Indonesia
Sophie Dwiyanti, Syarif Hidayatullah Jakarta State Islamic University, Jakarta, Indonesia
Achmad Zaki, Syarif Hidayatullah Jakarta State Islamic University, Jakarta, Indonesia
Laifa Annisa Hendarmin, Syarif Hidayatullah Jakarta State Islamic University, Jakarta, Indonesia

**Background:** Since 2009, we have been conducting progress test every year as formative assessment. In 2012, we addressed curriculum reform. But we haven’t done both progress test and curriculum evaluation. This study aims to evaluate progress test and assessing whether there is a correlation between progress test and final score module.

**Summary of work:** This study used 2 years cohort progress test of 2015 and 2016. We involved 571 students in 2015 and 562 students in 2016. In total, we used 120 system-based items. We used final score of old and new curriculum neuropsychiatry module. Statistical analysis was addressed using ANOVA and Pearson correlation.

**Summary of results:** Progress test score between each grades and from 2015 to 2016 were increasing significantly (p<0.001). Mean of final score of new neuropsychiatry module was 69.36 ± 3.78 and the old one was 70.92 ± 3.99. Pearson correlation showed weak correlation between progress test and final score in 2015 (ρ=0.191, p=0.011).

**Discussion:** Despite progress test score increased significantly, but final score of new neuropsychiatry module was lower than the old one. From previous study, it related with students' retrieval and motivation issues. Thus, it explained why the correlation between those assessments was weak.

**Conclusion:** Having weak correlation between final score of neuropsychiatry module and progress test score in 2015, progress test and final score module seem reliable to be indicators of curriculum evaluation.

**Take-home message:** Further study, we need to explore whether progress test score correlate with national exit examination score.

#9O4 (1394)
Promoting Diversity: Design and Evaluation of a New Situational Judgement Test for Medical and Dental School Admissions in Australia

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Fiona Patterson, Work Psychology Group & University of Cambridge, Cambridge, UK
Emma Rowett, Work Psychology Group, Derby, UK
Stuart Martin-Jay, Work Psychology Group, Derby, UK

**Background:** Evidence shows that expertly designed SJTs are reliable, valid, fair, positively perceived, and show fewer subgroup differences than other methods in high-stakes medical selection in the UK/Europe (Patterson et al., 2016). SJTs have potential as a method of widening access to and diversity within medical education.

**Summary of work:** This pilot study investigates and models the impact of SJTs for selection into medical and dental education in Australia on applicant diversity. The design, piloting and psychometric analysis of an SJT are described as well as analyses on socio-demographic variables including school type, country of birth and parental occupation.

**Summary of results:** The psychometric evaluation of the SJT will be presented demonstrating a high discriminatory power and strong internal reliability (>0.8). Positive applicant survey responses provide evidence of high acceptability. No significant differences (p>0.05) were found for most demographic variables and data modelling provides strong support for the positive impact on diversity.

**Discussion:** The practical implications of universities developing a high quality SJT assessments will be discussed. The potential impact of using an SJT on enhancing the diversity of applicants offered an interview for medical and dental programs will be considered as well as the impact on the efficiency of the selection process.

**Conclusion:** This Australian medical and dental program SJT pilot provides international evidence for the validity of using SJTs for widening diversity and improving selection processes. These findings will be linked to the UK research evidence for SJTs in widening access in selection for medical and other health programs.

**Take-home message:** SJTs are a valid and acceptable assessment option to be included in the selection tool kit of medical and dental schools internationally. This high stakes work furthers our understanding of the circumstances under which SJTs can optimally enhance applicant diversity in health education.

Ref: Medical Education, 50, 36-60.
#9O5 (652)
Differences in scoring patterns of Situational Judgement Test Scores (SJT) between students of several health professions

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Loretta Garvey
Danielle Najm
Margaret Hay

Background: The SJT is widely used for selection in the medical profession, but less utilised in other health professions. This study describes the development and implementation of SJTs across five health disciplines: Nursing, Dietetics, Paramedics, Radiation Therapy, and Medicine. Comparative available results to date are presented.

Summary of work: Practitioners across five health disciplines developed SJT scenarios with associated rating statements across four domains (Empathy, Integrity, Collaboration, and Resilience). A second group of discipline representatives undertook scoring concordance. The final 24 items (including 17 generic items) were administered to Nursing (n=309), Dietetics (n=77), and Radiation Therapy (n=12) students.

Summary of results: There were distinct domain differences found between the health disciplines, however SJT total score medians varied little between health professions. Significant differences were found for Empathy, Collaboration, and Integrity, with a Bonferroni correction of alpha = 0.017. Boxplots revealed low scoring outliers across disciplines.

Discussion: This is the first study to describe a pattern of SJT scores across a diverse group of health disciplines. Results indicate little difference across disciplines in overall score, however differences in the three test domains of Empathy, Collaboration, and Integrity were evident.

Conclusion: Our findings indicate the value of domain scores for selection decisions, and the importance of including a range of test domains. The almost exclusively low scoring outliers indicate that SJT can differentiate low scoring applicants and can be used to screen out unsuitable applicants across disciplines.

Take-home message: This study confirms that development, and use with students, of generic SJT items across health disciplines is possible and practical. Inclusions of a range of test domains are important for selection decisions as domain scores vary across disciplines. The SJT distribution shape indicates its potential to screen out unsuitable applicants.

#9O6 (2151)
A collaborative team-based two-stage examination in biomedical sciences: design and evaluation

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Background: The individual written examination is the most commonplace method of assessment in undergraduate higher education. However, individual examinations are unable to align with learning outcomes relating to collaboration and teamwork. Two-stage examinations couple individual and team-based examinations to allow for collaboration and immediate feedback.

Summary of work: Here, we designed, implemented and evaluated a two-stage examination in an advanced biomedical sciences course. Students completed the examination individually in the first two hours, then repeated a particularly challenging question in teams of three in the third hour. An individual questionnaire was used to evaluate the intervention.

Summary of results: Comparison of results of individual and team stages of examinations showed that the team stage benefited both higher and lower performing students in the class. Evaluation showed students valued the feedback and teamwork aspects of the second stage, but the two-stage examination did not assuage student stress around the examination.

Discussion: Weightings of assessment are a critical factor in effectiveness of two-stage examinations. Here we used 85% individual and 15% group weighting to provide an appropriate balance of fairness and validity. The majority of students considered the two-stage examination fair and wished to see two-stage examinations in other courses.

Conclusion: Appropriately designed two-stage examinations aid student teamwork, feedback and student learning. Two-stage examinations can be designed for a variety of written examination formats.

Take-home message: Two-stage examinations have value as easily implemented alternative written assessments that align with learning outcomes related to collaboration and feedback.
Residents in Rehabilitation Medicine: when is supervision given?

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Marga Tepper, UMCG, Groningen, Netherlands

Background: Residents in Rehabilitation Medicine (RM) receive a 4-year training programme with in- and outpatient treatment in (University) Hospitals and Rehabilitation Centres. Hospital training includes consultations on wards with various diagnoses. Individual supervision needs of RM residents during ward consultation are investigated.

Summary of work: The total number of ward consultations in 2015-2016 was determined in two University Hospitals. The RM residents and medical clerkship students were observed. Consultations, year of training of both residents and students were registered as well as the reason for supervision given on demand by staff members.

Summary of results: 7014 consultations were performed (3597 patients). Top 6 diagnoses: stroke, brain disorder, organ failure, multi-trauma, foot/lower limb amputation and spinal cord lesions. Overall 16% of consultations were supervised on demand. Of the medical students 68% received supervision. Of the residents the third- and fourth-year residents asked most frequently for supervision.

Discussion: Residents, students and staff discuss all consultations during every day patient briefings. Most supervision is demanded by residents for complex cases such as amputations, trauma and spinal cord lesions. Other reasons for supervision are: more teaching time, complex social structure of cases and demanding ward doctors.

Conclusion: Residents in RM and medical students are supervised during hospital ward consultations. Senior staff individually supervised 16% of all consultations. Complex diagnoses, learning goals and complicated social cases were most seen during supervision on demand.

Take-home message: Individual ward consultations supervision given by staff to residents in RM is a powerful training instrument. Hospital records do not give detailed information about the supervision process. Given supervision needs to be listed separately for a better understanding of the training needs of residents during their hospital training.

A mixed method investigation of residents’ communication and interaction with family members who have undergone a consent decision regarding organ and tissue donation in the ICU

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Pierre Cardinal, The Ottawa Hospital, Ottawa, Canada
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Aimee Sarti, The Ottawa Hospital, Ottawa, Canada

Background: Intensivists play an essential role in organ and tissue donor rates due to their close relationship with families. Little is known about the knowledge of critical care residents regarding interaction with family members who consent or decline donation. This study sought to explore the quality of these resident interactions.

Summary of work: Integrative mixed-method design, including qualitative (interviews) and quantitative (database and surveys) data, collected between December 2015 and July 2016. Interviews with 27 family members, and interviews and surveys with 16 residents in their final year of training were conducted and transcribed verbatim and entered into NVIVO qualitative software.

Summary of results: Surveys with residents revealed gaps in their knowledge of how to communicate with family members regarding donation. Qualitative data from families revealed perceived gaps in residents’ communication, empathy and situational awareness. Families also identified gaps in how resident education occurred in their presence.

Discussion: Interviews with substitute decision makers uncovered gaps in communication skills. Results from this study inform the development of targeted donation-related educational interventions for critical care residents, particularly with respect to their interactions with grieving families within the intensive care unit.

Conclusion: We have uncovered areas of current success and areas for improvement regarding current donation communication practices. We can now strategically target education to enhance residents’ interactions with family members to improve the families’ experience during these difficult moments and encourage a culture shift promoting organ and tissue donation in Ontario.

Take-home message: Residents play a pivotal role in the organ donation process. The perspective of SDMs provided an essential lens through which communication skills of residents during the donation process were explored. This data is powerful in shaping how the next generation of doctors will be trained to care for donor families.
#9P3 (2820)
Specialty Trainees in Primary Care (STIP)

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John Spicer, HEE, London, UK
Marilyn Plant, Richmond CEPN, London, UK
Thomas Simpson, Kings College London, London, UK
Sian Kitchen, HEE, London, UK

**Background:** UK policy drivers and papers have clearly indicated the importance of integrated care and interdisciplinary learning. The health demographic is changing; patients are older with more complex medical conditions. Learners should have the knowledge and skills to deal with such complexity and work across different sectors, particularly in primary care.

**Summary of work:** Health Education England in collaboration with the Richmond Community Education Provider Network have developed an innovative learning experience for specialist Rheumatology trainees. The Specialty Trainees in Primary Care (STIP) programme is designed to allocate Rheumatology trainees into primary care to enhance both their generalist and specialist skills in the community.

**Summary of results:** Preliminary results have indicated that this is an opportunity for interdisciplinary and multi-professional leaning in the community. This will improve the interface/working relationship between primary and secondary care, the attainment of community curricular objectives for specialty rheumatology trainees and the enhancing of clinical placements in the primary care setting.

**Discussion:** We suggest that the STIP model has the potential to be extended into other specialty training programmes, we are currently planning to extend this into both Renal, Respiratory and Diabetes disciplines. We will present qualitative material describing this innovative learning opportunity in the community.

**Conclusion:** The STIP learning model has the potential to improve the hospital trainees understanding of the complexity of primary care medicine, interdisciplinary/multiprofessional learning and promote a collaborative patient centred approach to caring for our patients in the community.

**Take-home message:** As clinicians and educators we must provide the highest quality of care to patients. We must therefore find innovative ways to train our future workforce to meet the needs of our population. STIP offers an alternative way to exposing hospital trainees to the complexity and context of primary care medicine.

#9P4 (1939)
Education of mentors in postgraduate specialty training in Croatia

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Jadranka Morovic Vergles, University of Zagreb School of Medicine, Zagreb, Croatia
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**Background:** The shortage of medical doctors in Croatia urged medical schools to educate larger number of students, resulting already with the first generation of higher number of graduates - future specialty trainees. Inadequate number of mentors and higher demands of competency-based specialty training require the organisation of a mentor education programme.

**Summary of work:** We analysed the proposed national scheme for the new trainees openings in Croatian health institutions in next years. The present situation with unfavourable ratio of mentors vs. trainees was also evaluated. The desirable number of mentors was estimated and the need for their education was defined.

**Summary of results:** The team of University of Zagreb School of Medicine defined the mentors' education plan: description of courses and on-line mentor education content, workshops to educate educators. All other medical schools in Croatia were invited and accepted to participate, phases of the three years programme and multi-centric national organisation were outlined.

**Discussion:** The need for educating an increasing number of new specialists and education of mentors in competency-based medical postgraduate education were motivating topics for the project. The evaluation of the present learning and teaching environment as well as the experience of other countries were discussed during the conceptualization of the programme.

**Conclusion:** Mentors play an essential role in competency-based postgraduate specialty training. It is expected that the national agenda of mentors’ education for the planned future tutoring within the training programme of new specialists in Croatia will significantly increase the quality of education and the quality of health-care service.

**Take-home message:** In the context of shortage of medical doctors, both trainers and trainees, a national approach to increasing their numbers and high quality organisation of competency-based training have a strategic importance.
Background: GP registrars find out what they do and don’t know during their consultations with patients. Some knowledge gaps must be filled immediately, whereas others can be noted as learning goals for subsequent study. The nature of these learning goals has implications for individual registrars and for training programs.

Summary of work: Registrars Clinical Encounters in Training (ReCEnT) is a longitudinal study of GP registrars in Australia. During each training term GP registrars record information for sixty consecutive consultations. Data includes whether registrars sought extra information during the consultation and from what sources, and whether the consultation generated any personal learning goals.

Summary of results: 1124 GP registrars provided data for 154,746 consultations, including 222,307 problems/diagnoses. Registrars identified learning goals for 16.6% of consultations, in 22.1% of problems/diagnoses. The most learning goals were generated for skin, musculoskeletal and respiratory problems. The highest ratio of questions to consultation arose for male genital, neurological and eye problems.

Discussion: GP registrars’ learning goals reflected common general practice presentations plus topics that may be inherently difficult or have limited prior exposure during medical training. Other associations were chronic conditions, longer consultations, young patient age and if registrars had trained overseas, were older, and were earlier in their training.

Conclusion: This research reaffirms that the apprenticeship training model shows registrars what they need to learn. Registrars may benefit from guidance in answering their questions, and from personal study and educational workshops on common general practice problems before commencing practice.

Take-home message: Different patient presentations and registrar demographics were associated with generating learning goals. Research on the clinical experience of doctors in training can benefit individual doctors, but also guide training programs regarding priority topics for specific groups of learners.
#9Q (3042)
Student well-being and study perception; A study among Dutch students of the master Veterinary Medicine
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**Background:** Research among Dutch (medical) interns shows that 18% meet criteria for burnout. International research shows lowered mental well-being in veterinary students. The aim of this study is to determine prevalence of burnout and work engagement among Dutch veterinary students and to obtain insight in study-related factors associated with student well-being.

**Summary of work:** Focus groups were conducted to identify factors which positively or negatively affected well-being with the aim to construct a questionnaire, which was subsequently sent to 649 students of the master Veterinary Medicine. Mean levels of burnout and work engagement were computed as well as correlations with study demands and resources.

**Summary of results:** 343 students completed the questionnaire (response rate = 53%). Of these, 55% was highly engaged and 24% meet criteria for burnout. Burnout-rates raised significantly with progress of the study. Task ambiguity and study load were among the strongest demands. Learning opportunities and peer support were perceived as the strongest resources.

**Discussion:** Although we can not demonstrate causal relations, strong correlations between outcomes and demands and resources suggest that interventions aimed at increasing resources and lowering demands may improve students’ well-being. Suggestions are made to increase teacher feedback and support, to search for opportunities for lowering study load and explicit student expectations.

**Conclusion:** Although students’ well-being is shared responsibility of students and faculty, there are opportunities for faculty to increase students’ awareness of the importance of mental well-being, to increase study resources and facilitate opportunities for students taking charge for their personal well-being. Customization of interventions to local context is necessary and possible.

**Take-home message:** Attention for students’ mental well-being is necessary and is a shared responsibility of students, teachers and faculty. Improvements could be achieved due to increasing study resources and / or lowering specific study demands.

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#9Q2 (374)
Medical Student Wellness Initiatives
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**Background:** With the intensive demands faced by medical students, the medical education community must have current and relevant information to assist in making informed choices about how to develop and implement the most effective wellness programs. The use of health education theory and models when developing wellness programs can enhance efficacy.

**Summary of work:** Throughout their education, medical students often struggle with balance in dimensions of wellness, which contributes to mental health issues. To enhance academic performance, students and those within the medical education community should be taught how to recognize wellness imbalances, along with strategies that can be used to increase wellness equilibrium.

**Summary of results:** Practical examples of wellness initiatives, both inside and outside the classroom, designed to help medical students cope with being separated from families and friends, and the wide-range of personal challenges faced while attending medical training will be provided. The value of incorporating health education theory and models will be explained.

**Discussion:** Medical students facing mental health challenges is well documented in relevant literature. Studies show medical students have higher rates of imbalances in wellness than their non-medical school peers. Medical students can experience extreme stress, anxiety, and depression which can affect medical school performance and their effectiveness as practicing physicians.

**Conclusion:** To enhance academic performance, students and those within the medical education community should be taught how to recognize wellness imbalances, along with strategies that can be used to increase wellness equilibrium. Wellness programs should be proactive and based on established health education theory and models.

**Take-home message:** Participants will: (a) examine the importance of balance in dimensions of wellness for medical students, (b) explore wellness initiatives that can be incorporated inside and outside the classroom, and (c) evaluate how to incorporate health education theory and models in the planning, implementation, and evaluation of programs.
#9Q3 (3110)
The Role of the Medical Students' Association at Alfaisal University in the Mental Wellbeing of its Members

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Rakan Alsaad, Alfaisal University, Riyadh, Saudi Arabia
Zeina Kayali, Alfaisal University, Riyadh, Saudi Arabia
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Background: The Medical Students' Association (MSA) at Alfaisal University in Saudi Arabia, is a student-run organization that has shown to help students gain leadership, organizational, time-management, and communication skills, amongst many others. In this study, we explore the effect on mental well-being attributed to active MSA involvement by students.

Summary of work: The MSA leadership were interviewed about their experiences within the MSA and the benefits that they are gaining through it. Specifically, we targeted mental well-being in this study as to see whether the MSA is not only giving valuable life lessons, but also aiding students academically and psychologically.

Summary of results: Students report an increase in their GPA (77%), better social standing (81%) and connections (88%). 71% report that despite the stress of managing both MSA and academics, the endeavor is well worth it. 89% are satisfied with their roles and attribute a positive mental well-being associated with the MSA.

Discussion: Alfaisal University, which is a student-centered university, gives its students ample opportunity to be heavily involved in the MSA. The trust given to students play a role in their regulation of self-belief. The improved connections with peers and faculty help students gain acceptance and an improved value of self-worth.

Conclusion: The MSA plays a big role in student leadership initiatives. While helping build and polish a variety of positive attributes among students, it is also helping students believe in their capabilities and express themselves freely and with confidence. The MSA is proving to be an effective means of positive well-being.

Take-home message: Involvement with the MSA can be an effective means of engaging students through leadership education. Other universities can use the MSA as an example of not only a successful approach to student personality building, but also a means to promote better mental well-being of students.

#9Q4 (2106)
Do resilience and quality of life decrease during medical school?

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Fernanda B Mayer, University of Sao Paulo, Sao Paulo, Brazil
Milton A Martins, University of Sao Paulo, Sao Paulo, Brazil

Background: Resilience is a capacity to face and overcome adversities, with personal transformation and growth. In medical education, it is critical to understand the determinants of a positive, developmental reaction in the face of stressful, emotionally demanding situations.

Summary of work: Longitudinal study with 186 students from 22 Brazilian medical schools. We did two measurements (2011-2015) when they were in 1st, 2nd or 3rd years and in 4th, 5th or 6th years of undergraduation. We used Resilience Scale (RS-14), Dundee Ready Educational Environment Measure (DREEM) and Quality of Life Questionnaire (VERAS-Q).

Summary of results: The students with lower initial scores of resilience did not change it significantly (69.7, 69.0, p=0.49) but resilience scores decreased in the group with high initial scores (87.1, 82.4, p<0.001). Both groups showed statistically significant decreases in DREEM (124.627.1 to 112.627.2) and VERAS-Q global scores (138.623.4 to 130.723.6) (p<0.001).

Discussion: Surprisingly the lower resilience group did not improve its resilience scores while the higher resilience group showed a significant decrease, thus suggesting that medical program does not seem to contribute to improve medical students’ resilience.

Conclusion: Resilience scores decreased in the group of medical students with higher scores in the first half of medical school and did not change in students with lower scores. In both groups quality of life and perception of educational environment decreased during medical school.

Take-home message: How to improve students’ resilience is a new and important agenda for Medical Education.
#9Q5 (2408)
What are the motivational profiles of Lebanese students in medical school?

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Joanna Tohme, Saint Joseph University, Beirut - Lebanon
Anthony Kechichian, Saint Joseph University, Beirut - Lebanon
Aline Hajj, Saint Joseph University, Beirut - Lebanon
Souheil Hallit, Saint Joseph University, Beirut - Lebanon
Elaine Ayoub, Saint Joseph University, Beirut - Lebanon

Background: A student’s choice for medicine can originate from internally generated (intrinsic motivation) and/or externally generated motives (controlled motivation). The objectives of this study were to define students’ motivational profiles in the first five years of a medical program, and to define strategies enhancing intrinsic motivation based on the self-determination theory.

Summary of work: A questionnaire inspired from the Academic Motivation Scale was distributed to 431 medical students of Saint Joseph University of Beirut, who were in the first five years of their medical program. We evaluated the impact of academic years, sex, and causes behind their motives on their motivational profile.

Summary of results: Two-hundred thirty students answered the survey. 74% chose medical curriculum for humanitarian aspects. Students in first and third year appeared to be more intrinsically motivated, whereas amotivation was predominant among fourth and fifth year. Second-year students had extrinsic motivation with introjected regulation. Moreover, girls were more intrinsically motivated than boys.

Discussion: Clerkships in our faculty start in sixth year and students have few opportunities to work with patients in the first five years. This explains the differences of their motivational profiles along years of formation. More contact with patients would give diversity to the heavy load of courses, increasing intrinsic motivation.

Conclusion: Medical school challenges the intrinsic motivation of students throughout the years. Students’ motivational profiles differ among the first five years of the medical curriculum. It is important to enhance intrinsic motivation throughout the medical program, particularly in fourth and fifth years as students are about to start their clerkships.

Take-home message: Identifying factors that undermine autonomous motivation and defining a strategy that enhances it, could considerably improve the quality of medical learning, the outcome and the self-satisfaction of future doctors. Therefore, medical programs should encourage early contact with real patients, with a cognitive apprenticeship, aiming for a deep and meaningful learning.

#9Q6 (2451)
Metacognition as a predictor of performance in medical school

Kirsten Dijkhuizen, Leiden University Medical Centre, Leiden, Netherlands
Arnout Jan de Beaufort, Leiden University Medical Centre, Leiden, Netherlands
Marcel Veenman, Institute for Metacognitive Research, Hillegom, Netherlands

Background: Metacognition is the ability to control and direct one’s thinking and behaviour. It is a stronger predictor of learning outcomes than intelligence and important for professional functioning. Metacognition can be reliably assessed using a computer-task. We hypothesize that metacognition in novice medical students correlates positively with performance in medical school.

Summary of work: In this quasi-experimental study students participated voluntarily in a computer-task measuring metacognition. Metacognition-scores were derived from the logfile. We compared these scores to secondary-school grades, admissions-test grades and first-year medical school grade-point average (GPA).

Metacognition was used as predictor of performance in medical school, controlled for secondary-school and admissions-test grades.

Summary of results: 83 students participated; 67,3% of them completed their first year nominally. Metacognition scores were skewedly distributed and poorly correlated to secondary-school final grades, admission-test grades or first year GPA; r2=0,16, r2=0,05 and r2=0,06 resp. GPA did however correlate with secondary-school grades (r2=0,59, p<0,001) and admissions-test grades (r2=0,41, p<0,001).

Discussion: Contrary to our hypothesis, metacognition correlated poorly with study performance. An explanation might be that first-year medical-school courses, like secondary-school courses, predominantly invoke school-based studying skills. A strong correlation between secondary-school grades and GPA favours this explanation. We assume metacognitive skills become more distinct in successive study years.

Conclusion: Metacognition correlated poorly with study performance in the first year of medical school. We will perform longitudinal follow-up of our students during their medical school career to test the assumption that metacognitive skills become more distinct when it comes to clinical reasoning in successive years.

Take-home message: • Metacognition is a stronger predictor for learning outcomes than intelligence and important for professional functioning. • Metacognition-scores in first-year medical students correlate poorly with secondary-school-, admissions-test or medical school grades. • Future research is needed to find out if metacognition is more substantially correlated to clinically-oriented learning outcomes.
**#9R Workshop: Using Linkedin for your professional development (2989)**

*Location: Room 210*

_Salmaan Sana, Amsterdam, Netherlands_

**Background:** For many years working within different sectors, both in and outside of healthcare, methodologies have been created to best utilise the power of social media platforms such as Linkedin. As there is a boost of connecting and sharing one's knowledge and expertise, this medium can proliferate one's professional career in many unimaginable ways.

**Who Should Attend:** This session is designed for all people interested in becoming more active on Linkedin and willing to start by looking at their personal profile very critically. Medical students can benefit from already taking steps for their future professional careers. And those that are further up the professional ladder may be surprised by how they can leverage and capitalise on their already developed career.

**Structure of Workshop:** The workshop starts with a general introduction and deep dives into how one presents themselves online. Each person is given a moment to reflect upon how they would like to perceived that is in agreement with who they are both as a person and professional.

We will start with your profile, then check your settings and eventually show ways of sharing your expertise with your network to grow your reach and online exposure.

**Intended Outcomes:** Each participant will be asked to get working on their profiles within the session. They will learn on the spot about what is needed to professionalise one's account and how to use the power of sharing to grow in one's reach. It is about bringing together the best practices of years of workshops, personal coaching and consultancy on developing one's persona on Linkedin and how to best utilise it within your intended career path.

**Level:** Intermediate

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**#9S Workshop: AMEE MedEdPublish: Getting your work published and developing your reviewing skills**

*Location: Room 203a*

_Richard Hays, MedEdPublish Editor, Australia_
_Trevor Gibbs, MedEdPublish Associate Editor, UK_
_Subha Ramani, MedEdPublish Associate Editor, USA_
_Kerrie McKay, MedEdPublish Administrator, UK_

**Background:** MedEdPublish is AMEE’s exciting new open-access, post-publication, peer-reviewed online journal which can be viewed at [www.mededpublish.org](http://www.mededpublish.org). Papers on medical and health professions education are published after a light-touch review to ensure they meet appropriate standards. All papers receive a DOI. After publication papers are reviewed and given a star rating both by the MedEdPublish panel of reviewers and the education community. Papers receiving a high star rating received ‘Recommended’ status.

**Who Should Attend:** Health professions educators, researchers and students who wish to get their work published rapidly and inexpensively, and to receive feedback from their peers and the AMEE MedEdPublish Reviewer Panel; also those who would like to enhance their skills in reviewing papers and giving feedback.

**Structure of Workshop:** After a brief introduction to the philosophy of the journal, participants will hear in more detail how they can become involved both in submitting and reviewing, and about the quarterly themes on topical issues in health professions education that are one of the features of MedEdPublish. In the second part of the workshop participants will divide into groups, one concentrating in more depth on how to submit, and what makes a good paper. The second group will concentrate on reviewing for MedEdPublish, with a selection of published papers chosen on which participants can write a review and post it online if they wish.

**Intended Outcomes:** Participants will become familiar with AMEE MedEdPublish, its philosophy, and how it works. They will gain an appreciation of how MedEdPublish might help them in their career development in terms of providing a vehicle for publication, and helping them develop their reviewing skills.

**Level:** All
#9T Workshop: "Toxic" Learning Environments - An Approach to Diagnosis and Treatment (1885)
Location: Room 203b

Armand Aalamian, McGill University Postgraduate Medical Education, Montreal, Canada
Linda Snell, Centre for Medical Education, McGill University, Montreal, Canada

Background: A healthy learning environment is important for educators and learners. However, challenges frequently arise, and some environments become non-conducive to effective learning, even "toxic" as a result. We will show how to design a multi-pronged "treatment plan" for programs in difficulty, including the multiple complementary methods as well as resources required for effective intervention.
A case study will be presented to highlight our successful approach to a number of challenges.

Who Should Attend: Deans of Medicine; Associate Deans of Postgraduate Medical Training Programs; Program Directors; Program Administrators; Residents; Medical Students.

Structure of Workshop: We provide a highly interactive session where we define "healthy" and "toxic" learning environments and engage participants in sharing their own examples. We then portray barriers to effective working conditions and through group discussion, generate a "treatment plan" for programs whose learning environments are suboptimal. We present a case from our university and invite learners to contribute their suggestions and questions as we outline our successful approach.

Intended Outcomes: Participants will be able to define features of "toxic" programs; They will be able to identify barriers to "healthy" learning environments in their own settings; They will be able to reflect on our approach and construct a "treatment plan"; They will be able to effect positive changes within their own "toxic" environments.
Level: All

#9V Workshop: Managing & Supporting the Educator in Trouble (2734)
Location: Room 205

Elizabeth Spencer, NACT, UK

Background: This workshop will explore the reasons why those involved in teaching and assessing medical students and trainees find themselves in trouble. It is often the most diligent and courageous educator who gets challenged by their learners and reported to senior faculty.

Who Should Attend: This is relevant for all educational leaders, supervisors, educators and those involved in faculty development. The context will be postgraduate but the principles would be relevant to those involved in undergraduate education.

Structure of Workshop: The new NACT UK guidelines “Supporting the Educator 2016” will be shared and applied in small groups to some real scenarios, which have arisen from UK practice. It is hoped that these guidelines will be introduced into faculty development programmes.

Intended Outcomes: Consider ways to provide support to the educators both in the hospital & centrally in the University / Deanery with consistency and collaboration, particularly when there have been concerns raised about the educator's performance.
Level: All
#9X Workshop: To be or not to be - trainee choice vs. societal need. An AMEE Postgraduate Committee workshop (1822)
Location: Room 215

Tim Swanwick, Health Education England, London, UK
Jason Frank, Royal College of Physicians and Surgeons of Canada, Ottawa, Canada
Rille Pihlak, Medical Education Officer, European Junior Doctors Permanent Working Group and Estonian Junior Doctors Association, Tartu, Estonia
Matthew Stull, University of Michigan Medical School, Ann Arbor, Michigan, USA
Simon Gregory, Health Education England, UK

Background: WHO projects a demand for 40M additional health professionals by 2030, but will these be in the right place, with the right skills? The distribution of doctors is already uneven, favouring large conurbations in high-income countries, with imbalanced training outputs causing shortages in generalist and community-based specialities. Attempts have been made to influence specialty choice and training location, but if we are to truly meet society’s needs, just how far are we prepared to go?

Who Should Attend: Doctors in postgraduate training, training programme directors, deans, managers of postgraduate medical training programmes, patients and the public.

Structure of Workshop: Short opening presentations will establish two sets of arguments: the case for the control of speciality choice and the ‘posting’ of doctors in training into hard to recruit areas, and an opposing learner-centred view. Workshop participants will debate these issues at tables and present their conclusions. A consensus building exercise will follow to address the question: how far is PGME prepared to go to meet the workforce needs of society, and what are the implications?

Intended Outcomes: By the end of the workshop, participants will be able to: describe current medical workforce trends, challenges, issues and their influence on postgraduate training; recognise societal and educational responsibilities in postgraduate training; articulate arguments around both sides of the debate.

Level: Intermediate

#9Y Workshop: Clinical reasoning difficulties during supervision and targeted support and remediation strategies (315)
Location: Room 216

Marie-Claude Audéat
Mathieu Nendaz

Background: Clinical teachers play both a clinical role, ensuring that patients receive adequate care, and an educational one. In their educational role, they must make the most of each clinical problem as a learning opportunity by assessing learners’ performance, identifying their strengths and weaknesses, and providing constructive feedback. Many studies indicate that delayed or poor identification and remediation of clinical reasoning difficulties can lead to clinician underperformance and can ultimately compromise patient care.

Who Should Attend: Clinical teachers interested in supervising clinical reasoning difficulties or resource persons involved in the management of failing learners.

Structure of Workshop: We will relate the current data on clinical reasoning concepts with pedagogical strategies that promote clinical reasoning in supervision. We will then work on how to develop a pedagogical diagnosis and highlight the main clinical reasoning difficulties with their focused remediation strategies.

We will work in small groups on clinical supervision situations, plenary discussions and interactive presentations. Links with the two AMEE Guides recently published by the authors on this topic will be made.

Intended Outcomes: Clinical supervisors quickly sense that something is amiss in their learner’s clinical reasoning. This workshop will allow participants to build on their intuition in order to more explicitly delineate the nature of the clinical reasoning problem, and address it purposefully.

Level: Intermediate
#9AA Workshop: Technology Enhanced Learning in Medical Education...for Dummies! (2684)

Location: Room 218

Jim Price, Brighton & Sussex Medical School, Brighton, UK
Tim Vincent, Brighton & Sussex Medical School, Brighton, UK
CJ Taylor, Brighton & Sussex Medical School, Brighton, UK
Claire Smith, Brighton & Sussex Medical School, Brighton, UK

Background: We know that in the spread of innovation such as this, there are "early adopters", "the mainstream pragmatists" and then those who just think there are more important things in life than Twitter, Instagram and Nearpod!

If you are still trying to understand how Technology Enhanced Learning (TEL) might fit in with your medical or clinical education role, come right back to basics with this workshop.

Who Should Attend: No techies! This is designed to be an introductory workshop, especially if you are still grappling with TEL and its place in your educational world. No questions too silly & no experience required - although perhaps a desire to dip your toe into the TEL waters might be desirable!

We do know that "e-learning engagement!" is not necessarily generational, so educators of all ages and experiences are very welcome.

Structure of Workshop: Introductions and planning; 'TEL me the basics!'; Useful models and case studies; Short break (for more important poetry perhaps!); Hands-on practice with 3 to 4 examples of TEL tools you might wish to try (supported by Learning Technologists); Discussion and next steps.

Intended Outcomes: Basics of TEL & state of play in Med Ed in 2017; Models and tools and how they can help YOU in your current role; Helpful tips and shortcuts; Supported hands-on practice with selected TEL tools; An appreciation that you are not alone!

Level: Introductory

#9BB Workshop: Training Simulated Patients for Interprofessional Education Encounters (2067)

Location: Room 306

Denise Souder, Keck School of Medicine University of Southern California, Los Angeles, USA
Win May, Keck School of Medicine University of Southern California, Los Angeles, USA
Nancy Heine, Loma Linda University School of Medicine, Loma Linda, USA
Anne Walsh, Physicians Assistants Keck School of Medicine University of Southern California, Los Angeles, USA

Background: The Macy Foundation has recommended to "Reform the education and lifelong career development of health professionals to incorporate interprofessional learning and team-based care." The goal of interprofessional education (IPE) is to bring various health professions students together in educational environments to promote collaborative practice and ultimately, better patient outcomes. Simulated patients (SPs) are being used extensively in IPE. This workshop enables faculty to train SPs to use an IPE Communication scale to rate their learners.

Who Should Attend: Faculty from different health care disciplines who plan to introduce simulated patients as a modality to teach interprofessional education. This activity would help assist health professions students to: become aware of the unique roles and responsibilities of team members from other professions; value the contributions of other team members; communicate effectively with other team members; receive and respond to feedback from other team members.

Structure of Workshop: 1. Introductions and expectations. 2. Objectives of the workshop. 3. Presentation of case scenario. 4. Discussion of checklist. 5. Training of the SP. 6. Actual practice with SP using fishbowl technique: (a) Pre-encounter huddle of team members; (b) Encounter with the SP; (c) Post encounter huddle; (d) Presentation of care plan. 7. Debriefing. 8. Discussion. 9. Evaluation.

Intended Outcomes: Participants will be able to discuss and practice training a simulated patient from a case scenario. They will train the SP on using a checklist to observe and rate communication and collaboration skills, through a group of participants playing the role of different members of a health care team. Participants will consider the feasibility of using the provided materials in their home setting.

Level: All
Perceptions of reality in interprofessional trauma-team simulation

Alexander von Wendt, University of Helsinki, Helsinki, Finland
Eeva Pyörälä, University of Helsinki, Helsinki, Finland
Leila Niemi-Murola, University of Helsinki & Helsinki University Hospital, Helsinki, Finland

Background: There is a wealth of simulation studies on learning knowledge and technical skills in a single profession. This phenomenographical study focuses on workplace-based, high-fidelity simulations of interprofessional trauma-teams; and aims to explore the team members’ perceptions of reality, as well as how different professions, and working-life experiences influence that perception.

Summary of Work: Our research data consist of semi-structured interviews of ten healthcare professionals at Töölö Hospital in Helsinki. Participants were selected using purposive sampling aiming at a variation between professions, and their working-life experiences. Data were transcribed and analysed using phenomenographic research methodology which explores differences between participants’ perception of a phenomenon.

Summary of Results: Three categories of description were identified. (1) Pretended realism: acting a role hindered full participation; (2) Target-oriented realism: learning outcomes influenced the perceived reality; (3) Immersive realism: the feeling of simulation, and real working-life is indistinguishable. The number of simulations attended affected perceptions more than professional background or working-life experience.

Discussion: This study recognised divergent perceptions of realism in simulations. Pretended realism appears at earlier stages in simulation experience, whereas target-oriented realism is typical in experienced simulation participants. Immersive realism was relatively rare in the data. We contemplate the origin of realism in simulation, whether it derives from simulators or participants.

Conclusion: This phenomenographic study shows that the sense of reality in simulations expands beyond different healthcare professions. This adds to our knowledge on what role the perception of realism plays in participants’ learning. The sense of reality might be as important for participation in simulation as the technological aspect.

Take-home Message: The sense of realism in simulation seems to develop with participation experience. The level of fidelity should be appropriate for the lesson being learnt. The technical aspect of simulation might evoke unwanted responses from the participants that might hinder learning, such as the focus being directed toward the wrong details.
Airway tea-trolley teaching: multi-disciplinary training delivered to your anaesthetic room

Lasitha Abeyesundara, Royal Free London NHS Trust, London, UK  
Danny Soltanifar, Royal Free London NHS Trust, London, UK  
Ciara Donohue, Royal Free London NHS Trust, London, UK

Background: Keeping up-to-date with airway skills is an essential aspect of continuing professional development and departmental governance. Maintaining familiarity and confidence with Difficult Airway Society algorithms and management of rare but catastrophic airway problems, requires frequent training. Consultants and nurses tend to have inferior access to simulation/skills training than do trainees.  

Summary of Work: An educational program was devised to address the gap in airway skills-and-drills training. Workshops incorporating low-fidelity simulation of three difficult airway scenarios (emergency front-of-neck access, awake fibreoptic intubation & use of airway exchange catheters) were delivered on a tea-trolley, which could be wheeled directly to candidates in each anaesthetic room.  

Summary of Results: Over 60 individual workshops were delivered to 42 candidates (20 consultants, 17 trainees, 5 nurses) during a 3-month period. An electronic survey was conducted to candidates in each anaesthetic room. Over five simulation sessions, we audio-recorded the debriefing sessions participated by 50 RNs and ENs. We analysed the data iteratively using qualitative content analysis, based on the Nurse Anaesthetists’ Non-Technical Skills (N-ANTS) (Lyk-Jensen et al., 2014) that comprise four categories (i.e. ‘situation awareness’, ‘task management’, ‘team working’, ‘decision making’).  

Conclusion: Over five simulation sessions, we audio-recorded the debriefing sessions participated by 50 RNs and ENs. We analysed the data iteratively using qualitative content analysis, based on the Nurse Anaesthetists’ Non-Technical Skills (N-ANTS) (Lyk-Jensen et al., 2014) that comprise four categories (i.e. ‘situation awareness’, ‘task management’, ‘team working’, ‘decision making’). We developed a new NTS behavioural marker system comprising six categories—three new categories emerged (i.e. ‘situation management’, ‘leadership’, ‘self-management’), three similar to the N-ANTS. ‘Task management’, a category in N-ANTS was removed. Each category comprised two to four observable behaviours, also known as elements. We identified a total of 17 elements.  

Discussion: Elements of ‘task management’, such as prioritising, were subsumed under ‘situation management’. Compared to anaesthesiology, nurses in crisis management teams need to be more proactive and responsive, especially when patients collapse. Moreover, in extremely tense environments, nurses need to stay calm and focused; senior nurses are expected to demonstrate leadership.  

Conclusion: We developed a behavioural marker system fostering the use of a common terminology for NTS in nursing crisis management teams. Six categories were identified—three new categories, three similar to the N-ANTS. Further validation work on the behavioural marker system will be conducted in the next phase of study.  

Take-home Message: We developed a new NTS behavioural marker system which is useful for teaching and learning in nursing crisis management teams. Nurse educators may use it as a tool to develop simulation programs and scenarios for their teaching on NTS.
Simulation and Training of Skills for Nurses and Physicians in Pediatric Oncology

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Birte Sänger, Pediatric Hematology and Oncology, Medical University Hospital, Hannover, Germany
Urs Mücke, Pediatric Hematology and Oncology, Medical University Hospital, Hannover, Germany
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Background: 1,800 children are diagnosed with cancer every year in Germany. Treating these children requires different skills. Besides technical aspects soft skills like communication are required. Today, no training concept exists in Germany to improve these professional skills in pediatric oncology. We developed a novel, multidisciplinary and modular training-program called ‘SICKO’.

Summary of Work: Following a needs analysis, we designed a modular workshop concept starting with basic knowledge and skills for oncology (= workshop 1), including lumbar line management and chemotherapy. The subsequent workshops focus on complication management and communication skills (e.g., paravasation, tumor-lysis syndrome, convulsion, hemorrhagic cystitis).

Summary of Results: 32 nurses and 46 physicians participated yet. 100 % of the participants recommend the workshop content and concept. Evaluation indicates significant improvement of knowledge and enhanced skills for managing complications. Participants feel significantly more confident about their communication skills in the challenging context of pediatric oncology.

Discussion: Young physicians and nurses report unpreparedness for working with cancer patients. We therefore introduced a training concept for healthcare personal (HSP) in pediatric oncology. Participants are trained in hands-on skills, are video-taped in simulated emergency situation and receive a feedback-analyse afterwards. Multidisciplinarity is a cornerstone of the concept.

Conclusion: We designed a workshop for oncological HSP combining practical skills with theoretical background. Communication in various scenarios plays a major role. A unique model for the training of HSP was developed for the workshop. Participants valuate the quality of the workshops extremely positively indicating a demand for those programs.

Take-home Message: This novel workshop offers the opportunity for HSP to train and simulate their daily challenges. Communication is a core skill and trained in different scenarios. Participants feel more confident about daily work after their participation in the workshop. The results indicate simulation and training can be implemented for pediatric oncology.

Educational Method using Team Resource Management and High-Fidelity Medical Simulation: Decrease rate of Accidental Tube Removal Incidents

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Background: Radiology department is an examination unit where accidental tube removal incidents, such as endotracheal tube, Foley catheter, nasogastric tube...etc, can occur at anytime while performing an examination, and on some occasions can result in life-threatening condition. Therefore, it is an important issue that must be avoided at all possible causes.

Summary of Work: Since 2016/03/01, the instructors and PGY(Post Graduate education) members of our department uses Team Resource Management (TRM) and High-Fidelity Medical Simulation resources to improve knowledge of the correct way to transfer patients between examination tables to decrease rate of accidental tube removal incidents.

Summary of Results: After TRM education, the knowledge of the correct way to transfer patients between examination tables of the members was >90%. As of 2017/01/31, accidental tube removal incidents rate of our department was 0%, indicating good outcome of the team work.

Discussion: Accidental tube removal incidents is an important issue because it can result in life-threatening condition or even death, and should be avoided if possible. Acknowledgment of this problem and using effective teaching methods like TRM and High-Fidelity Medical Simulation can improve the communication between members and efficiently decrease Incidence.

Conclusion: TRM and High-Fidelity Medical Simulation are accessory methods for medical education. These educational methods can improve member’s knowledge and decrease unnecessary errors occurring during the daily works, and thus decrease the medical liability and costs due to these errors.

Take-home Message: It is important for all members of the medical profession to become familiar with TRM and High-Fidelity Medical Simulation educational methods. Application of these teaching methods on daily clinical work can increase diversity in medical education and improve patient safety.
Morning Rounds: A Simulation Experience for Second Year Medical Students to Promote Clinical Reasoning

Grzegorz Plochocki, American University of the Caribbean, Cupecoy, Netherlands Antilles
Teri Boese, AUC, Cupecoy, Netherlands Antilles

Background: Second year medical students, working in small groups, participate in two sequential simulation experiences involving diagnosis and treatment of patients. The primary objective is forming a differential diagnosis for acute presentations of two common symptoms: dyspnea or chest pain. Secondarily, teamwork, communication, and resuscitation skills are assessed.

Summary of Work: Sequentially students encounter three simulated patients in the hospital presenting with the same symptom. On each patient, they take a focused history, perform a physical exam, and review diagnostic tests. Students huddle to obtain a shared mental model, then begin a treatment plan. Post simulation debriefing enhances reflection and metacognition.

Summary of Results: Faculty report improved clinical reasoning, teamwork, and communication, from the student’s first to the second Morning Rounds simulation. Students find this activity highly satisfying and report their desire for this format more often. They also report that this simulation helps them to become aware of their knowledge and performance gaps.

Discussion: This simulation activity is designed for the deliberate practice of forming differential diagnosis by comparing and contrasting findings in patients that present with the same symptom. This format also promotes acquisition of clinical reasoning skills to gather and synthesize information in order to recognize patterns in the presenting patient.

Conclusion: The two Morning Rounds experiences improve students’ clinical reasoning skills, teamwork, and communication skills in a simulated clinical setting in which they can safely practice skills and receive feedback and guidance related to their performance.

Take-home Message: The sequential presentation of patients with the same symptom is an effective strategy to enhance acquisition of critical thinking skills in second year medical students.

Analysis of teaching methods in medical humanities and social sciences curriculum of a medical college

Wha Sun Kang, The Catholic University of Korea, College of Medicine, Seoul, South Korea
Soo Jung Kim
Pyeong Man Kim

Background: Proper teaching method is a critical factor and an effective tool to induce students’ interests and participation in humanities classes, since medical students are science oriented and focused on inductive thinking. This study introduces various teaching methods we use in order for students to develop critical and creative thinking.

Summary of Work: OMNIBUS, medical humanities and social science curriculum in the Catholic University of Korea, is a longitudinal program with 12 segments during 4 years of medical education. Each segment lasts for one week, and is intercalated in the medical curriculum. Teaching methods with different characteristics are used in OMNIBUS curriculum.

Summary of Results: OMNIBUS curriculum was categorized by 6 groups: lecture (61%), activities including PBL, role play (Hospital Ethics Committee), mock IRB, sorry work and RCA, and issue forum (17%), social service (11%), debates, (7%) and patient encounter (4%). Patient encounter is arranged by clinical professor who facilitates question and answer between students and patients.

Discussion: Lecture is a good and common teaching method for humanity and social science courses, but has limitation in attracting students’ attention. OMNIBUS collocated lecture subjects in accordance with the basic and the clinical medicine curriculum and gave students the opportunity to enlarge medical subjects in cultural, social, and historical contexts.

Conclusion: OMNIBUS curriculum used various teaching methods in order to attract science-oriented students’ attention. Lecture subjects were chose in order to present humanistic side of medicine, and various activities were arranged to induce students’ participation and impose their responsibilities. Patients encounter was an opportunity to bring up empathy toward patients’ suffering.

Take-home Message: 1. Arrange humanities program in accordance with basic and clinical medicine curriculum, and chose relevant subjects to what students are learning at that time.
2. Provide various tasks and agenda to induce students’ participation.
3. Patients encounter and social services are valuable experiences to breed students' empathy and compassion.
The Process of Korean Junior Doctors’ Specialty Choice. Qualitative Study Guided by the Grounded Theory

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Background: Specialty choice compliant with aptitude and ability is a critical decision for a doctor’s self-realization. Previous studies used quantitative methods or survey but specialty choice is a complex phenomenon reflecting psychological aspects. A qualitative study is needed for the understanding of subjective experience and exploring its internal meanings.

Summary of Work: Fifteen participants were recruited by purposeful sampling from internship trainees at Chungnam National University Hospital, Korea in 2016. All participants determined their specialties. Data were collected through audio-recorded, semi-structured, in-depth exploratory interviews by a nonfaculty facilitator. The qualitative analysis was guided by the principles of Strauss and Corbin’s grounded theory.

Summary of Results: A total of 115 concepts, 43 sub-categories, and 22 categories were identified through the open coding process. Junior doctors chose their specialties based on personality, future prospects, departmental atmosphere, residents’ life-quality or role model. A part of them changed the specialty choice based on the experience of their internship training.

Discussion: Through the axial coding, the phenomenon was ‘confronting doctor as a job in reality’. The conditions were ‘choosing without regret’ (causal), ‘seeing my inconceivable personality (context)’ and ‘seeing the situation objectively (intervening)’. The strategy and consequence were ‘going closer to the patients’ and ‘finding the difference of thoughts and reality’.

Conclusion: The factors for specialty choice were personality, aptitude, curiosity, future prospects, mentor/role model and especially senior residents’ quality of life. Additionally departmental atmosphere during training was identified as an important factor. And the various experiences during internship training were cited as important for specialty choice as well.

Take-home Message: Participation in internship training is an important period in which junior doctors solidify their specialty choice. Various supports and programs that provide the understanding for the specialties will also help their decision-making.
#9DD Posters: Diversity

Location: Hall 6

#9DD01 (2606)
'Refugees and Asylum Seekers' - Developing a 'student selected component' for third and fourth year medical students.

Catherine Trimble, Department of Medical Education, AWP NHS Trust, Bristol, UK

Background: The development of an external student selected component (eSSC) for third and fourth year medical students that seeks to facilitate their understanding of the current issues concerning the global community in the context of the refugee crisis. This includes enabling students to discover how they might help through clinical practice.

Summary of Work: 1. Development of workshops led by professionals from a variety of backgrounds. 1. Students will be exposed to the work of organisations working in this field, such as Bristol Refugee Rights, Trauma Foundation South West, Medical Justice and others. 2. Students complete a reflective essay and participate in group discussions.

Summary of Results: The programme has been designed to run for a minimum of 4 students in July 2017. Significant interest has been generated around this topical proposal for an eSSC from a number of individuals, organisations and students. Full results will be gathered following programme completion through student interviews and questionnaires.

Discussion: Students will develop reflective and critical thinking skills concerning the issues and topics covered. This will enable them to gain a broader understanding and consider how they can actively help both populations and individual refugees they may encounter in their everyday clinical practice.

Conclusion: There was a need for an eSSC of this nature given the interest generated from students. The development of this eSSC will play a vital role in helping students' broaden their understanding of issues related to refugees and asylum seekers, and discover how they can advocate for these populations.

Take-home Message: The current global refugee crisis is an issue of concern to many, including students and those working in the medical profession. This eSSC aimed at third and fourth year medical students is relevant to any seeking to develop a programme of a similar nature for undergraduate medical students.

#9DD02 (2590)
Should we remain a mono-cultural society? Diversity Issue in the Opinions of Polish Medical Students

Pawel Przylecki, Medical University in Lodz (Centre for Medical Education), Lodz, Poland

Background: Due to the mono-cultural character of Polish society until recently medical studies curricula didn't include diversity issues. However, for a few years more and more foreigners have been coming to Poland. The aim of this research was to find out about the attitudes of medical students towards gaining intercultural competences.

Summary of Work: Medical students (N=423) were given an anonymous questionnaire to complete, involved questions regarding: students' self-assessment of their own cultural competencies, students' needs in education on diversity issues, students' opinions about the world refugee crisis and the acceptable forms of help and students' attitude towards different groups of foreigners in Poland.

Summary of Results: Students claim that: • they don't have the knowledge on how to communicate with diverse patients; • foreigners should adjust to our culture and doctors don't have to take into consideration the needs of culturally diverse patients; • they don't know how to counteract the discrimination against religion or origin.

Discussion: The research done shows that Polish students are not prepared to treat patients from other cultures and Muslim countries in particular. At the same time, their knowledge about, e.g. refugees, students derive from the national media, which usually present a negative image of this group of people.

Conclusion: The research made it evident that in Poland teaching medical students about contact with culturally diverse students is poor. At the same time, students' opinions also differ when it comes to the issue of raising or discussing the questions of intercultural communication in medical studies.

Take-home Message: It is necessary to introduce into medical studies courses on contact with patients from minority groups. Most students don't have the knowledge how to communicate with culturally diverse patients.
Incorporating cultural competence into the medical ethics curriculum: tracking the baby steps of a Catholic medical college in the Philippines

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Fernandino Jose A. Fontanilla, San Beda College of Medicine, Manila, Philippines

Background: In a culturally diverse nation such as the Philippines, physicians encounter a wide array of challenges and opportunities in delivering culturally competent care. Medical education should address this by putting emphasis on understanding and respecting culture and its role in molding individual and societal concepts about health.

Summary of Work: At San Beda College of Medicine (SBCM)-Manila, we designed a cultural competence module and incorporated it into our medical ethics curriculum. Our goal is to equip learners with the knowledge, skills, and attitudes that will enable them to work effectively with patients and their families and with other healthcare workers.

Summary of Results: Five domains provided a framework for the modular design: cultural competence; key aspects of cultural competence; understanding the impact of stereotyping on medical decision-making; health disparities and factors influencing health; and cross-cultural clinical skills. Specific knowledge, skills, and attitudes need to be taught and evaluated in every domain.

Discussion: To ensure effective pedagogical practices, we constructively aligned our intended learning outcomes, teaching and learning activities, and assessment tasks. In the future, we intend to develop a curriculum assessment tool that will identify and monitor cultural competence educational experiences throughout the medical school curriculum.

Conclusion: To optimize healthcare delivery, Filipino physicians must be equipped with the necessary training to provide culturally competent care to patients coming from a wide range of backgrounds. At SBCM, a Catholic and Benedictine medical college in Manila, we incorporated a cultural competence module into our existing outcome-based medical ethics curriculum.

Take-home Message: It is important to note, however, that cultural competence is a process rather than a mere terminal outcome or skill, and should be developed in stages by building upon previous knowledge and experience. Cultural competence in healthcare delivery requires a long-term commitment and is achieved over time.

A study on Cross-cultural Care embedded courses in the pre-clinical stage of medical Curriculum

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Chung-Sheng Lai, College of Medicine, Kaohsiung Medical University and Hospital, Kaohsiung, Taiwan

Background: Taiwanese medical students were found to have inadequate preparedness for caring diverse patients especially who are new immigrants, use alternative medicine and distrust health care system. Medical educators need to address the issues of different health beliefs and cross-cultural communication skills, and integrate trainings into different stages of medical education.

Summary of Work: Cross-cultural Care Competence development was strategically integrated into Medical English (pre-medical) and Pediatrics block PBL (pre-clinical). A Task-based learning activity: Folk Medicine and a PBL scenario about a new immigrant mother co-designed by clinical/humanities faculty were respectively included. Students’ pre-/post responses to learning issues and observed performance were analyzed.

Summary of Results: Initially, over half of the students showed ambiguous attitude towards and disinterest in different health beliefs/cultural issues such as women and Qi and folk medicine etc. Students’ TBL/PBL discussions and post-activity reflections demonstrated: rising awareness; exploratory bio-psycho-social aspects of folk medicine; growing understanding of disparity; efforts to improve communication.

Discussion: Students had limited understanding of folk health beliefs and how cultures might have impact on the healthcare quality. Given the opportunity such as TBL/PBL to explore how different aspects of cultures and health, both pre-medical/clinical students demonstrated increasing awareness of diversity and knowledge acquired for reaching better communication and solution.

Conclusion: Embedded cultural issues and explicit teaching at the pre-clinical stage could help students self-examine cultural biases, and develop competence acquired for holistic health care. Explicit inclusion of a CCC training framework in the medical curriculum is necessary to prepare students for caring patients of diverse groups and promote health equity.

Take-home Message: In the era of globalization, medical education needs to address diversity in the curriculum in order to prepare students for the myriad of situations in real clinical settings. A Spiral CCC framework with goals set for each stage can facilitate developing teaching strategy such as embedding diversity issue into PBL/TBL.
An Evaluation of Taiwanese Medical Students’ Awareness and Preparedness for Caring for LGBT Populations

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Background: As a historically disadvantaged population, LGBT has been increasingly studied in the West as a crucial component to cultural diversity in medical education but not yet in the Eastern context. This study investigated Taiwanese medical students’ perception of and preparedness to care LGBT patients throughout different stages of medical education.

Summary of Work: The study has conducted generic questionnaires with 1279 students from two Taiwanese medical schools. Initial findings revealed that most students rated their preparedness for caring for LGBT higher than the rest of cultural groups, the study interviewed 88 students (focus group/in-depth) recruited for each year of training for qualitative analysis.

Summary of Results: Qualitative analysis revealed that students credited various sources for their perceived strength, i.e. courses or participation in social activities. However, an underlying consensus showed that the ideal medical interaction is centered on treating them “with no discrimination” without further exploration of other issues such as LGBT’s attitudes towards physical exam.

Discussion: Students’ self-reported preparedness for LGBT was related to the social climate and curriculum. However, the focus on the attempted normalization of LGBT belies the significant health disparities that LGBT individuals face. There was an ignorance of societal and psychological factors that LGBT patients might face in a conservative society.

Conclusion: Medical students exhibited positive attitude towards LGBT patients and rated themselves highly in terms of preparedness but showed only superficial understanding. Health disparities were not addressed and social or psychological factors were not explored. The current curriculum regarding LGBT population is mostly only located in optional general education courses.

Take-home Message: There is a need to designate and integrate LGBT issues into the spiral medical curriculum for different stages to ensure consistency among the student body in order to promote holistic health care. Extracurricular activities that are oriented towards LGBT promotion substantially improve understanding and awareness and should be encouraged.

Cross-Cultural Medical Care Training and Education: A Survey of Pediatric Hematology/Oncology Fellows-in-training and Fellowship Program Directors

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Background: With increasing diversity in patient and physician populations, cultural competency and sensitivity training covering different aspects of pediatric hematology/oncology (PDHO) care can help improve healthcare delivery and reduce disparities and is considered a required component of fellowship training. However, there is no clearly defined curriculum meant specifically for PDHO-fellows-in-training (PDHO-F).

Summary of Work: A national online survey of 356 PDHO-F and 67 PDHO-program directors (PDHO-PD) was conducted to assess the educational experience, perceptions about identifying barriers including one’s own biases and trainee comfort in delivering culturally sensitive care in various PDHO relevant clinical situations. Five-point Likert scale was used for collecting most responses.

Summary of Results: 111 (31.2%) PDHO-F and 27 (40.3%) PDHO-PD responded. 30.6% of PDHO-F ‘strongly agreed/agreed’ they received comprehensive cross-cultural communication (CCC) training. Top two teaching methods were faculty role-modeling and informal teaching. 33.3% of PDHO-PD reported program facilitates faculty skill development/role-modeling. Percentage of fellows reporting being ‘somewhat/very comfortable’ differed based on clinical situation.

Discussion: 10.8% of PDHO-F reported that most of their CCC training was in fellowship. In most clinical situations, there was a modest direct correlation between trainee’s level of agreement that they received comprehensive CCC training and their comfort level. Comfort level was also significantly different based on post-graduate year with some clinical situations.

Conclusion: Pediatric hematologists/oncologists face complex situations such as breaking bad news, treatment/clinical trials discussions, and end-of-life/hospice care. Our survey shows majority of CCC training is in medical school or residency. Since comprehensive CCC training correlates with increased levels of comfort, fellowship training programs should have CCC curriculums which use experiential learning models.

Take-home Message: As a learning continuum, fellowship educational curriculum should include comprehensive CCC training to lay the foundation for promoting cultural awareness, self-reflection, and better patient-physician partnerships which can eventually adapt to and surmount the challenges unique to the physician’s chosen field of practice.
#9DD07 (1205)
When East Meets West: A comparison of Students’ preparedness for Cross-cultural Care between a US medical school and Taiwan medical schools

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Jer-chia Tsai, College of Medicine, Kaohsiung Medical University and Hospital, Kaohsiung City, Taiwan
Shao-ching Wu, Kaohsiung City, Taiwan
Yen-ko Lin, College of Medicine, Kaohsiung Medical University and Hospital, Kaohsiung City, Taiwan
Jeng-Hsien Yen, College of Medicine, Kaohsiung Medical University and KMU Hospital, Kaohsiung, Taiwan

Background: Future doctors should be culturally competent in caring for patients of diverse backgrounds, including gender, socio-economic, cultural and ethnic. Currently, Cross-cultural Competence has been more promoted in the context of western medical education. With growing awareness of diversity, Taiwan medical education needs to address this issue in the curriculum.

Summary of Work: The study conducted a survey adapted from the questionnaire designed by the Harvard Medical School CCC committee with students form two medical schools in Taiwan. 759 pre-clinical and clinical (3th~7th years) students’ responses were collected and compared to 1369 students of equivalent years (1~4 years,) of postgraduate HMS medical program.

Summary of Results: Students’ from both sides reported inadequately prepared/skilled in dealing with patients who use complimentary medicine, have different religion or beliefs odds with Western medicine and distrust health care system. Significant difference was found in preparedness for Minority and Transgender (HMS73.2%v.sTaiwan51.1%, 25.7%v.s.59.0%). Both also agreed upon inadequate training (61.2%v.s.88.0%) and discipline or gender are not related with it, but older people seems to have a higher risk of being ostracized. Outcomes of care for diverse groups were correlated to the CCC skills. Even complimentary medicine is common, Taiwanese students, receiving western medical education, also struggled with people with different health beliefs. How they define ‘perceived preparedness’ in taking care such as Transgender also needs further research.

Conclusion: The study displayed results of how medical students perceived their CCC competence and training environment in two countries. The emerged results showed that in western medical education climate, students had similar CCC obstacles. The results can serve as reference and baseline for future research in local and global medical education.

Take-home Message: In the era of globalization, how to cultivate Cross-cultural competent health professionals who can understand the complexities and cultural association of the diverse patient populations, and therefore provide quality care and eliminate health disparity will be an issue that medical educators around the world need to address.

#9DD08 (873)
Ostracism in undergraduate training of health students: Associated factors.

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Cristhian Perez
Nancy Bastias
Giulietta Vaccarezza
Javiera Ortega
Olga Matus

Background: Ostracism is other kind of aggression that exists in undergraduate health training process. Gender and discipline are not related with it, but older people seems to have a higher risk of being ostracized. Outcomes show the importance of identifying other characteristics associated to social violence in health schools.

Summary of Work: The objective of this study was to describe ostracism perception in health students and its relationship with sociodemographic and academic characteristics. A non experimental study was performed. It was sponsored by grant FONDECYT 1161541. Ostracism Experience Scale and a demographic questionnaire were answered by 301 health students, prior informed consent.

Summary of Results: According to their report, students had being ignored by classmates in a 11.40% and they were excluded of social activities in a 42.70%. No differences in ostracism were found related to gender or discipline studied, but older students felt more ignored than younger ones.

Discussion: Students reported a low perception of ostracism, but they felt more excluded than ignored. Excluding could be less aggressive and more allowed by group than ignoring. The one variable associated to ostracism was age, and it could be related to different development psychological task of older students.

Conclusion: Ostracism is other kind of aggression that exists in undergraduate health training process. Gender and discipline are not related with it, but older people seems to have a higher risk of being ostracized. Outcomes show the importance of identifying other characteristics associated to social violence in health schools.

Take-home Message: Ostracism is other face of academic violence, and it must be researched for being stopped.
#9DD09 (2086)
Enhancing cultural sensitivity in a classroom setting by the use of drama game

Gin-Hong Lee
Yu Chu Huang, Fu Jen Catholic University, New Taipei City, Taiwan

Background: Promoting cultural sensitivity is an important goal for ethics education. To stimulate students' cultural sensitivity is a challenge in the classroom setting. Drama games were introduced to support the development of interpersonal ethical sensitivity in FJU Department of Nursing. This is the preliminary report of the intervention outcomes.

Summary of Work: Two drama game instructors were invited to facilitate a three-week course for a cross-cultural program; 15 nursing students across all grades took part in the group. The interactive drama games contained elements such as finding commonalities, pictures and associative words, objective listening, imitating character movements, nobility and slaves, etc.

Summary of Results: Students enjoyed course greatly with expressions 'reflective, vividly and lively', etc. In terms of cultural sensitivity, reported experience in different roles, more awareness of others' body language, changing of the stereotypes of ethnic groups and more empathy and respecting the other cultures.

Discussion: According to tutors observation notes and students' learning feedback, the key elements of success in achieving learning objectives were: (1) Fun and easy to operate; (2) Immediate sharing of reflection soon after the activities; (3) strong linkage of the learning objectives; (4) practical application.

Conclusion: The use of drama games could stimulate nursing student cultural sensitivity through an effective environment.

Take-home Message: In this global environment, it is never too late to use a new strategy for enhancing students’ cultural sensitivity, especially, 'empathy', 'understanding', and 'respect' always are the key elements for care professionals.

#9DD10 (2504)

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Yolande Voskes, VU University Medical Center, Amsterdam, Netherlands
Petra Verdonk, VU University Medical Center, Amsterdam, Netherlands
Guy Widdershoven, VU University Medical Center, Amsterdam, Netherlands

Background: At VU University Medical Center (VUmc), student competences are taught in longitudinal pathways as part of the program ‘Professional Development’. Three pathways (Ethics and Law, Interculturalization and Diversity, and Patient Safety) are jointly assessed in a newly developed Objective Structured Clinical Examination (OSCE) in Bachelor year 1 and year 3.

Summary of Work: We implemented the OSCE for all bachelor year 1 students in 2016 and year 3 in 2017. The OSCE was evaluated with a responsive design, focusing on the experiences and perspectives of stakeholders (students, examiners, teachers). Written evaluation forms were used, together with interviews and focus groups.

Summary of Results: Preliminary findings from the pilot and the year 1 OSCE 2016 showed that most students value the method of testing as more practice oriented, while some felt unprepared. Examiners reported being able to assess the level of performance of the student on three criteria: argumentation, information gathering, and reflexivity.

Discussion: The OSCE provides means to assess students’ integrated knowledge, skills and attitude in an authentic setting. This corresponds with the central aim of the Professional Development program. However, the congruence between examiners’ assessments requires further attention.

Conclusion: The OSCE seems useful for the assessment of competences in Ethics and Law, Interculturalization and Diversity, and Patient Safety. It complements knowledge assessment in regular courses, results in students taking these subjects more seriously and supports students in reaching the learning objectives.

Take-home Message: The OSCE can be used to assess students’ competences in non-technical topics and is unique in Netherlands. Furthermore, this type of assessment contributes to the development of these competences by the students.
Intercultural competences of Western instructors and Nepalese mountain rescue team trainees

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Agnieszka Elzbieta Stawinoga, Management and Committees, EURAC, Bolzano, Italy
Monika Brodmann Maeder, Department of Emergency Medicine, Inselspital University Hospital, Berne, Switzerland & Institute of Mountain Emergency Medicine, EURAC, Bolzano, Italy

Background: In a globally connected world, exchange between different cultures has become normal. Multicultural settings can influence teaching and learning or even negatively influence learning outcome. This study focuses on the interaction between Western instructors and Nepalese mountain rescue teams and their attitude before and after an instructor course in Nepal.

Summary of Work: Data collection was based on self-assessments of all participants with questions on personal characteristics, communication styles, intercultural abilities and awareness of cultural differences. Western Instructors (WI) completed a pre/post self-assessment of their intercultural competence. Nepalese participants (NP) completed one questionnaire. A fraction of them were later interviewed.

Summary of Results: In conflict situations, WI prefer exchanges that are dispassionate. NP prefer to reveal people's true emotions. When negating someone's comment, NP try to convey the information indirectly, WI prefer the direct way. WI's knowledge on intercultural aspects did not change but there was a significant difference in attitude.

Discussion: The study showed differences in the way WI and NP deal with conflict situations. WI want to convey a message unemotionally, while NP want to develop a relation before they express criticism. During the 10-days course, WI - despite a short exposure - changed their attitude towards the host culture.

Conclusion: We could show that WI and NP in a mountain rescuer instructor course deal differently with conflict situations. This can significantly influence learning: Providing meaningful feedback for each learner in such a context is sensitive, and instructors' and trainees' awareness must be raised preemptively towards differences in learning culture.

Take-home Message: For future work in intercultural settings, teachers should be sensitized to differences in communication styles, also in regard to demographic subgroups. They should be prepared to create a constructive learning environment, which respects cultural diversity and therefore optimises learning.

Don't ask; don't tell – heteronormative medical education and the experience of LGBT patients.

Benjamin Taylor-Davies, King's College London, London, UK

Background: It is 50 years since the decriminalization of homosexuality in the UK. However, in 2015, Stonewall highlighted an ongoing heteronormative discourse in healthcare – LGBT patients and staff still face discrimination. Collaborative development of educational resources aims to enhance student's understanding of sexual diversity and, ultimately, ensure good medical practice.

Summary of Work: An evaluation of publications illustrates prevailing heteronormative discourse in healthcare education - yet tomorrow's doctors must provide good medical care, regardless of sexual identity. Therefore, through the perception of LGBT patients and medical students we created online materials to enhance the student's awareness of true patient diversity and support their wellbeing.

Summary of Results: We developed an online teaching resource focusing on a range of discriminating behaviors in clinical scenarios. This aims to increase students' awareness of issues and barriers faced by LGBT patients and healthcare professionals and support them in challenging their own existing ideas regarding the sexuality of patients and colleagues.

Discussion: When acknowledged in medical education, the needs of LGBT patients are often pathologised, with associations drawn between sexual practices, lifestyle choices and disease risk. The clinical environment reflects this, underlining the need for a stronger understanding of patient diversity to ensure the creation of an inclusive and supportive healthcare environment.

Conclusion: Due to healthcare's heteronormative discourse, LGBT people face barriers in accessing services. Tomorrow's doctors must understand these barriers in order to challenge inequality and promote inclusivity. Medical education must therefore explore both the clinical needs of LGBT people but also challenge students existing ideas about, and normative assumptions of, (hetero)sexuality.

Take-home Message: Discriminatory attitudes continue to exist in healthcare, with current medical education strategies providing students with inadequate understanding of issues faced by the LGBT community. The use of online resources based on clinical scenarios highlights these issues and challenges students' existing assumptions - effectively promoting diversity in medical education.
#9DD13 (1519)
'Addressing the Gap in Medical Ethics Education Turkish Medical Faculties': Teaching Anti-Discrimination for LGBTI Patients

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Elif Vatanoğlu-Lutz

Background: The contemporary understanding of the 21st century is that human rights can be protected and promoted only if fundamental freedoms, as well as the ability of individuals to choose sexual preferences, and their right to participate or not to participate in the cultural life of given communities are guaranteed.

Summary of Work: The medical curriculum of 44 medical faculties in Turkey according to the awareness about LGBTI and giving them the healthcare services in the ethical way will be questioned in the limits of this poster presentation.

Summary of Results: There were no data found related with the healthcare services of LGBTI in any curriculum of the medical faculties analysed.

Discussion: Nowadays, in modern societies, there is a big emphasise on the importance of the value of life, human dignity, diversity and antidiscrimination. These concepts can be defined as "a new world order". Any educational design (material), especially medical education, cannot be viewed/designed without taking these concepts into consideration.

Conclusion: As doctors we see the harms of discrimination; the results of physical attacks and the effects of anxiety linked to social stigma. When such discrimination is so clearly unfair, and when fallacious medical arguments are made in attempts to legitimise it, then doctors have an ethical duty to speak out.

Take-home Message: Physicians should be sensitive to the medical and psychosocial needs of all of their patients, especially their vulnerable patients. Patients with nonheterosexual gender identification are among these patients. All medical faculties, including Turkey, should include lectures to fight against discrimination.

#9DD14 (1058)
Are gender and ethnicity determinants of student success in medicine?

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Nimesh Patel, Barts and The London, London, UK

Background: Evidence suggests that certain genders and ethnic groups perform worse in examinations. This project aims to investigate whether gender or ethnicity affects the way in which medical students perform in exams.

Summary of Work: We will be looking at both gender and ethnicity separately within the Barts medical student population since 2011 to 2016 to determine if either are factors in how well a medical student performs.

Summary of Results: Preliminary data suggests that the results show that female medical students perform better than male medical students. The results also indicate that ethnic minorities underperform in comparison to their White European counterparts.

Discussion: These results fall in line with previous research from other fields of study suggesting that this is a widespread issue throughout education, not just medical education. There could be multiple reasons for this observed effect such as socio-economic background, language barriers or culture.

Conclusion: There is a discrepancy in performance between both genders and ethnic groups. However, further evidence is required to explain these differences in more detail.

Take-home Message: Understanding these differences should help to direct the necessary support required to ensure that underperforming groups of students succeed at medical school.
A cross-cultural comparison between medical students’ self-regulated learning challenges and influencing sociocultural factors.

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**Esther Helmich, CEDAR (Center for Educational Development and Research in Health Professions), University Medical Center Groningen, Groningen, Netherlands**

**Johanna Schonrock-Adema, CEDAR (Center for Educational Development and Research in Health Professions), University Medical Center Groningen, Groningen, Netherlands**

**Xiangyun Du, College of Education, Qatar University, Doha, Qatar**

**Debbie Jaarsma, CEDAR (Center for Educational Development and Research in Health Professions), University Medical Center Groningen, Groningen, Netherlands**

**Background:** Medical programmes embrace curriculums that improve self-regulated learning (SRL) and thereby the development of life-long learning doctors. Therefore, understanding which SRL components challenge socioculturally diverse students is critical. This study aims to elucidate whether medical students' SRL challenges differ between sociocultural groups and if any sociocultural factors influence students' studying.

**Summary of Work:** First and second year medical students at Qatar University (QU)(n=84) and Groningen University (RUG)(n=57) completed the Self-Regulation of Learning Self-Report Scale (SRL-SRS). Students answered additional sociocultural questions. Participants were purposefully sampled for one-on-one interviews (QU n=17; RUG=conducting) based on gender, sociocultural responses, and SRL-SRS scores. Analysis follows grounded theory methodology.

**Summary of Results:** QU students scored significantly higher on the self-monitoring and evaluation components of the SRL-SRS than their RUG peers (p<.05) after accounting for gender and year. In interviews, QU students indicated that cross-cultural norms and religion play a role in study habits and inter-gender communication. RUG interviews are being conducted.

**Discussion:** Self-monitoring and evaluation refer to the monitoring, managing, and assessment of an individual’s behaviour. QU students are aware of sociocultural and religious expectations in all aspects of life. Complying to these norms requires high self-regulation, which may explain their increased ability to apply this to their learning.

**Conclusion:** Sociocultural norms and religion play an important role in the daily and academic lives of students from certain backgrounds. In a continuously globalizing world, universities should understand that students from various sociocultural backgrounds face different challenges in their SRL and transition to medical school.

**Take-home Message:** Acknowledging cross-cultural differences in SRL allows universities across the world to better anticipate and develop appropriate approaches to guarantee maximum success for both students and universities in producing life-long learning doctors.

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**Daniel Leucuta, Iuliu Hatieganu University of Medicine and Pharmacy Cluj-Napoca, Romania**

**Background:** In the context of globalisation, students from different cultures study together at the same University. The educational material is usually made by a local team of experts based by the local culture and habits. Because of that, sometimes foreign students find themselves having difficulty with some exercises.

**Summary of Work:** The same clinical data were provided to groups of volunteer 2nd year medical students from different countries, to create clinical scenarios aimed at reaching the same learning objectives. The scenarios were then presented as exercises to another group of students of mixed nationality who evaluated their quality.

**Summary of Results:** Although the starting point – clinical data – and the learning objectives were the same, each clinical scenario was different from the others. The students who came from the same country as the authors evaluated that scenario better than the other scenarios, considering it better for reaching the learning goals.

**Discussion:** Although they didn’t know the country of origin of their scenarios, the students preferred the clinical scenarios that reflected the background of their country more. On the other hand, the enthusiasm of the authors and the good quality of the clinical scenarios that they produced should be noted.

**Conclusion:** The specifics of the individual culture seem to influence the way in which students created clinical scenarios. They prefer the ones which are more similar to the possible scenarios from their country of origin. The students can thus be used to adapt clinical scenarios for specific cultures.

**Take-home Message:** The quality of learning of foreign students can be improved by involving them in the creation of clinical scenarios. The process of the creation of the scenario seems to help the foreign students to integrate into the group, and allowing others to learn about their home culture.
#9DD17 (3375)
LGBT in Medical Education at VUmc SMS

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Background: People identifying as Lesbian, Gay, Bisexual or Transgender (LGBT) face specific health issues, such as higher prevalence of HIV/STD, suicide and substance use. Physicians feel insufficiently trained to provide adequate LGBT healthcare, but policies to promote LGBT health in Dutch medical education are lacking.

Summary of Work: We screened the curriculum of a required undergraduate course ‘Sex, Sexuality and Relationships’ for LGBT-related content and interviewed students. Findings were compared to Obedin-Maliver’s (2011) 16 core LGBT-related topics. Using semi-structured interviews, we also explored experiences of stakeholders in medical education (N=18) with LGBT issues in their education.

Summary of Results: Most topics were addressed, but mental health, coming out, Intimate Partner Violence (IPV) and body image were absent. Materials mainly focused on G and T health, excluding L and B health. Students associated LGBT identity with HIV/STD. Most materials presented LGBT issues in stereotypes and hetero- and cisgender normative ways.

Discussion: Results show that the relationships between sexual and gender diversity and health outcomes were not accurately addressed despite the course’s focus on gender and sexuality issues. To provide students with the competencies to adequately diagnose and treat LGBT patients, LGBT identities should be presented in more complex, comprehensive ways.

Conclusion: Education concerning LGBT health issues in undergraduate medical education at VUmc SMS seems insufficient. Several LGBT health topics in particular L and B health were insufficiently addressed. Furthermore, means in which they were addressed, produce and reproduce (hetero)normative thought.

Take-home Message: More consideration is needed in particular for LGBT mental and social health issues in medical education, as well as L and B health issues. In providing education, stakeholders should be aware of normative messages in the curriculum, and plead against hetero- and cisgender normativity.

#9DD18 (2595)
The Blessings that Cultural Diversity could Bring – A Prospective Case-Control Study from Taiwan International Scholarship Program

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Background: The I-Shou university launched a scholarship program, designed for international medical students (IMSs) to care the underserved populations in friendly countries of Taiwan. We aim to understand the effects of diversity and an integrated cultural-training module, which could shed light on designing future global health medical education programs.

Summary of Work: We designed a pre-requisite training of cross-cultural care during the orientation and strengthen it with small group discussion in Family Medicine rotation. Literature was reviewed and the 25-item CAST-questionnaire was performed after the learning module. The descriptive statistics and independent t tests were conducted using SAS 9.2 software.

Summary of Results: 45/60 (75%) IMSs and 69/90 (77%) Chinese medical students (CMSs) as controls responded. The IMSs had overall higher CAST scores compared to that of CMSs (Mean±S.D.:95.4±10.5v.s.81.4±6.7,p<0.001.) Besides, 7/11 questions regarding cultural awareness and sensitivity and 11/14 questions regarding skill and behavioral interaction were both significantly higher in the IMSs group.

Discussion: Through the integration of cultural-sensitivity module into the curriculum, the IMSs reported gaining a better understanding of the needs and being confident to interact and performing clinical skills for culturally different population. Future effort should be made on exploring if the effects remained in the OSCE and clinical performance settings.

Conclusion: International students in Taiwan I-Shou University School of Medicine who completed the cultural-training learn better concepts, and more open-minded to the importance of diversity, and build cross-cultural skills than the Chinese medical students did. Developing cultural competency is a burning need while gaining exposure to health care disparities.

Take-home Message: Understand the effect of early mixture of IMSs from diverse background with creative cultural-training module helps to shape future international medical education program. It is not only crucial to ensure a better learning outcome for cultivating international medical professionals but to achieve better cultural-sensitive global healthcare.
Interpersonal violence among undergraduate students: implications to students adjustment

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Background: In general, studies on university violence address violence against women and violence against freshmen. Few studies address all categories of violence that occurs among undergraduate students. Whereas interpersonal violence - IPV can influence students’ adjustment, it is important to explore this issue in order to adopt preventive and protective measures.

Summary of Work: Students perception (health courses, public university) about interpersonal violence were accessed through a descriptive and exploratory approach. Subjects were addressed through semi-structured questionnaire with some essay question (Google Docs technology), thematically analyzed in its content. It’s a cut from a larger study that investigates IPV among university students since 2014.

Summary of Results: Among 136 students from 07 undergraduate programs 63% identify the presence of IPV (seven categories including gender based violence, racism, violence due to personal characteristics and social class) and 86% consider that victims have their academic performance affected (three categories including mental suffering, emotional distress, lack of motivation, social isolation).

Discussion: Violence categories found in the daily life at University draw attention to the presence of intolerance and prejudice related to sexual orientation, gender, ethnicity, and violate human rights of groups and individuals. IPV may affect self-esteem and sense of self-efficacy, causing mental suffering, apartness, lack of motivation, affecting cognitive functions.

Conclusion: Students recognize the presence of IPV in undergraduate everyday life; and the most common violence is identified between students, among peers. They also recognize that such events affect academic achievement and the teaching-learning process.

Take-home Message: It is essential that managers and professors pay attention to their responsibility to educate citizens committed to social reality, being attentive to intolerance and prejudice among future health professionals. In addition, it is necessary to be attentive to health and well-being of students, that may be affected by interpersonal violence.
Can patients educate their doctors by assessing their communication skills?

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Background: The doctor-patient communication is a pillar of patient satisfaction and is a key aspect of patient care. Good Medical Practice states 'one must listen to patients and respond honestly to their questions’(1). However, doctors do not routinely receive formal feedback on their communication skills and therefore may overestimate these.

Summary of Work: We aimed to evaluate the communication skills of doctors and to compare these in medicine versus surgery.

We gave questionnaires on doctors' communication to twenty patients under the medical and surgical teams respectively. The exclusion criteria were those with a language barrier and those who were too unwell.

Summary of Results: Overall, 15% of patients rated their doctors' communication as 'very poor' in surgery compared to 0% in medicine. 15% of surgical patients rated these as 'very good' compared to 29% in medicine. 90% and 70% under the surgical and medical teams respectively, were for a formal communication feedback for doctors.

Discussion: Medical doctors' communication rated higher than that of surgical doctors. One reason for this could be due to the extended periods of time surgeons spend off the ward in theatre. However, there is still room for improvement for doctors in both medicine and surgery.

Conclusion: Patient feedback can help to educate doctors on their communication skills by identifying areas of potential improvement. This could reduce patient complaints and improve the doctor-patient relationship.

Take-home Message: Patients in both medicine and surgery are open to completing feedback forms on doctors' communication. This is a scheme that can be implemented at all hospitals. Future work would include stratifying feedback by grade of doctor. 1. General Medical Council. Communication, partnership and teamwork. Good Medical Practice. 2013. pp.13.

4E Model framework for communication

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Background: Young physicians who are adept at conversing during civil encounters, are frequently mal-equipped when handling those at the End-Of-Life (EOL). These discussions frequently involve value-laden and emotionally-ridden issues, including defining appropriate goals, treatment futility and best interests. Effective communication strategies are critical in ensuring patient-centric discussions and shared decision-making.

Summary of Work: Key communication elements were identified through review of validated communication models. A novel 4E framework was formulated to teach EOL conversations. It outlines a systematic method at exploring a patient’s rational and emotional appreciation of his illnesses, as well as incorporates mitigation strategies in line with professional and ethical guidelines.

Summary of Results: The 4E framework comprises four skillsets: Empathise; Engage; Empower and Establish, which are represented by interconnected quadrants that together forms a circular process of continual conversation between physicians, patients and their carers. Each quadrant is equipped with a mnemonic summarised on visual aids that encapsulates core strategies to be learnt.

Discussion: The framework received strongly positive feedback from senior faculty members and fulfils two core patient-centric objectives: “feel known and understood,” and “know and understand”. The former requires soft skills encompassed under Empathise and Engage. The latter requires skills that informs clear decision-making and are outlined in Empower and Establish.

Conclusion: The 4E framework is useful in teaching clinical communication at EOL. Its structured-approach and mnemonics presented as visual aids, makes it easily applicable during learning. A pilot study is on-going to objectively measure pre-and-post intervention outcomes and to validate it against existing clinical communication tools.

Take-home Message: Good EOL communication requires core communication skills that can be learnt and practiced in a systematic manner. The 4E framework provides a structured-approach to establishing strong partnerships with patients through validating emotions, exploring and establishing common ground, as well as guiding patients through complex, value-laden decisions at the EOL.
#9EE03 (3060)
We care, we care! Our failures in teaching communication skills at the GME level

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Background: Medicine recognizes the need for trainees with high-quality communication skills, but has not yet succeeded at cultivating these skills in the demanding and fast-paced GME environment. Several challenges have been identified: the hierarchical environment, need for reciprocal communication, and a lack of cues identifying the learning frame and encouraging participation.

Summary of Work: Observations of Internal Medicine rounds at a large urban hospital were conducted focusing on the development of residents' communication skills, particularly instances of teaching, modeling behaviors, and feedback. Additionally, interviews were conducted with these teams (25 physicians) which focused on the development, teaching, and perceived importance of communication skills.

Summary of Results: Residents identified communication skills as critical, but felt their skills were innate, not acquired in medical school or residency. Residents failed to identify when modeling was used for teaching. Residents stated they would not contact their superiors for assistance with communication, identifying their co-residents as their only resource.

Discussion: These results suggest that current communication training is not impactful, but that residents are aware of the importance of these skills. Residents are infrequently cued into the learning frame, leaving them unaware of teaching or modeling. The hierarchical structure of rounds has few opportunities for reciprocal communication unless specifically encouraged.

Conclusion: Residents need to practice communication skills with skilled practitioners. Rounds provide an excellent time for this, but residents must be cued to the educational moment. Additionally, residents are hesitant to contact a superior about a communication concern; developing channels to mitigate this hesitancy would improve resident skills and patient care.

Take-home Message: *Residents report that current communication curriculum is not impactful, and do not attribute their communication skills to these curricula.
*Residents identify communication skills as critical component of patient care.
*Residents fail to identify when attending physicians are modeling communication skills.
*Residents hesitate to ask for help with communication problems.

#9EE04 (1490)
Clearer speech enhances learning and memory for medical residents in a simulated ICU handoff

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Background: Recent mandated shortened work hours for medical residents has increased the frequency of patient handoffs. During patient handoff, poor communication significantly contributes to harmful incidents. In adverse listening conditions, conversationally spoken speech is less intelligible compared to ‘clear speech’ technique. Individuals learn and remember less when listening to non-clear speech.

Summary of Work: The objectives of this study were to determine if clear speech technique improves communication/learning during patient handoffs in adverse listening conditions. To quantify the improvement in understanding and learning efficiency, knowledge retention, and performance in a critical event due to clear speech compared to conversational speech in a simulated ICU.

Summary of Results: Clear speech heard before conversational speech improved mean recall (p = -0.05). Order interaction influenced the performance on the listening condition (p = 0.04). When clear speech is heard first, the mean recall performance is 14.5 items vs when conversational is heard first mean recall is 11.00 items.

Discussion: Further data is currently being collected and analyzed to determine how the participants' individual variability in their cognitive-linguistic functioning may influence comprehension-recall and integration of knowledge during this simulated hand-off. These results and potential implications for simulation learning will be discussed.

Conclusion: Compared to conversational speech, clear speech likely enhances speech-processing during patient handoff in adverse listening conditions. Clear speech improved memory and recall tested during simulated patient handoff by medical residents. Further, hearing clear speech trains the listener to better hear and understand subsequent conversational speech style in adverse listening conditions.

Take-home Message: The significant findings indicate that when clear speech is used in a handoff situation there is greater experience-dependent learning of the speaker, promoting more rapid comprehension and better recall of the message.
#9EE05 (230)
Teaching communication skills in order to make inevitable death discussable

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**Background:** Too often terminally ill patients are ‘over-treated’ because the nearby inevitable death is not discussed. A reason is that doctors are trained to provide curative treatments rather than handle the heavy emotions of patients facing the end of their life. Also patients are reluctant to start this subject.

**Summary of Work:** We have developed an effective communication module for physicians to optimally provide palliative care. During this 4 hour training physicians: a) become aware of their own emotions that hinder effective communication. b) are provided with relevant theory and skills. c) practice these skills with the help of a professional actor.

**Summary of Results:** During the last 4 years we have offered this module to hospitals in Netherlands. Participants (oncologists, gynecologists and intensive-care physicians) generally appreciated this module. It provides practical communication tools to initiate a consultation about inevitable death.

**Discussion:** Despite general appreciation from participants, there is also resistance. Why is this? Is the module given in the right phase of the education? Which health care professional is the most appropriate to initiate discussion with the patient (general practitioner, treating medical specialist, nurse).

**Conclusion:** Our communication tool helps doctors to initiate a discussion with patients on inevitable death. We have implemented this tool in the basic education program of medical doctors in the context of shared decision making.

**Take-home Message:** A timely discussion about the inevitable death of terminally ill patients is imperative to avoid misunderstanding about the care that is wanted and ensures that appropriate measures are taken. This requires communication skills that can be taught.

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#9EE06 (938)
Enhancement of Healthcare Providers’ Competence of End-of-Life Communication through Multi-Disciplinary Simulation

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**Background:** The past education and training of hospital staff provide inadequate communication skills required to care well for the dying patients. Successful communication is associated with improved quality of life regarding end-of-life care, however, health professionals are in lack of competence in talking about “death affairs”.

**Summary of Work:** Since 2015, Taipei City Hospital (TCH) has developed a serial simulation education on teaching hospice and palliative care. We set up 7 simulation immersive courses, including giving bad news, signing DNR, terminal dyspnea, pain control, family conference, advanced directives, and terminal withdrawal, providing the roleplay practice with standardized patients (SP).

**Summary of Results:** A total of 364 trainees, including 93 physicians, and 269 non-physicians, from 7 hospitals of TCH have been enrolled. Each trainee has filled out a before-and-after questionnaire including Perceived Competence Scale (PCS) of end of life communication, with rating from 1 (Not very competent) to 5 (Very competent).

**Discussion:** After these simulation courses, the mean score of PCS increased significantly from 3.20±0.67 to 3.77±0.61 (p<0.001). The greatest improvements were the ability to “elicit a patients fears for death”, “manage pain”, and “respond to patients about non-indicated treatments”. Non-physicians professionals experienced greater improvement after simulation courses than physicians.

**Conclusion:** Simulation education through multi-disciplinary team practice with SP significantly improve the competence of communication in end of life care. The enhancement of perceived competence on end of life communication needs further clinical practices and experiences to be mature.

**Take-home Message:** Simulation education is recommended to improve palliative care communications competence of hospital health professionals.
#9EE07 (550)
Let's Talk: Evaluation of a Public Speaking Skills Curriculum for Pediatric Residents

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**Background:** Great public speakers aren't born...they're made. The skills for effective public speaking can be learned. Interpersonal and Communication skills are core competencies. Few residents receive specific training. The Mayo Clinic pediatric residency incorporates a public speaking curriculum for all residents. Nothing is currently published about this type of training.

**Summary of Work:** Our residents give a formal presentation yearly. These sessions are videotaped and are evaluated for specific presentations skills. Feedback sessions are completed. Goals are set for improvement. Trainees from 2004-2010 were analyzed to determine statistically significant change from year to year. A survey of graduates was also performed.

**Summary of Results:** Evaluation forms were analyzed for 44 residents (125 presentations). When compared to the first year of training the final (third year) residents demonstrated statistically significant improvement in 9 of 10 identified skills. The graduate survey indicated strong endorsement of the curriculum for increasing effectiveness with public speaking.

**Discussion:** This is the first study that utilized standardized evaluations, videotaped presentations, and structured feedback sessions to develop the public speaking (presentation) skills in pediatric residents. This type of training can provide an advantage to trainees when they present at scholarly meetings and interview for employment.

**Conclusion:** A longitudinal public speaking skills curriculum for pediatric residents leads to increased resident confidence, improved observed performance, and application of skills post residency. This type of curriculum could be used in other specialties as the application isn't specific to pediatric trainees alone.

**Take-home Message:** Public speaking skills can be taught and learned. The addition of a curriculum to existing training programs increases confidence and likely will lead to improved performance during the training years and beyond.

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#9EE08 (474)
Communication Skills Training for Residents with Minimal Faculty Involvement: A Novel Approach

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**Background:** Doctors’ communication skills training are most effective when elements of practice, observation, and feedback are incorporated. We aimed to develop an effective training module for incoming residents incorporating these elements, emphasizing on group-based peer learning with minimal faculty involvement, and measuring residents’ pre-post module self-rated competence levels.

**Summary of Work:** In groups of four to five, residents interviewed simulated patients, became peer observers or provided feedback. After practicing the clinical scenario, residents reflected on their videoed performance and received consolidated group feedback. A validated feedback form with communication competencies based on an in-house qualitative analysis of patient complaints was utilised.

**Summary of Results:** Data was collected pre, post and four months post-intervention. There was an average 9.6% improvement across all self-rated communication competency levels. 97.1% agreed the course was adequate preparation for their day-to-day role as an incoming resident. Practicing with the simulated patient and receiving consolidated feedback were identified as most useful.

**Discussion:** The module design encompassed multiple education pedagogies including experimental, reflective, social and adult learning theories. We integrated relevant research findings and capitalized on multi-source feedback in a psychologically safe environment. Comprehensive feedback was provided to the residents longitudinally (two months post intervention) to refresh and sustain their communication skills.

**Conclusion:** We demonstrated successful and sustained learning of communication skills that did not require significant faculty involvement. Future research opportunities include examining the relationship between consolidated group feedback and faculty feedback. This will help us understand the impact of faculty presence on communication skills training.

**Take-home Message:** Our training methodology which incorporated equal opportunities for individual peer-observed practice, self-reflection and consolidated group feedback demonstrated that it is possible to train residents in communication skills with minimal faculty involvement. Residents valued experiential learning and timely feedback; hence it is important to include these elements in communication skills training.
#9EE09 (2304)
Do hospital-based workshops improve skills and interest in interpersonal communication?

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**Background:** Poor quality of interpersonal communication skills (ICS) in doctors impairs doctor-patient relationship and team-work capacities. To highlight the importance of ICS in clinical work, series of workshops for physicians were organized directly in hospitals. An experienced physician and educator used interactive meeting formula to develop skills through reflective practice.

**Summary of Work:** Two goals were set: assessing the level of interest in hospital-run CME training in ICS, and testing the new workshop formula. It included substantial amount of visuals, humour and the content pertained to real-life situations. It aimed at stimulating emotions, personal engagement and feedback. Participants completed a questionnaire afterwards.

**Summary of Results:** Evaluation included analysis of interest in the topic itself, workshop formula and perceived utility of acquired information/skills. We checked whether participants would recommend such workshops to colleagues - response was encouragingly positive. We expect working-place meetings will incite participants to attend regular teaching sessions on communication in Medical Chamber premises.

**Discussion:** Although not all participants allocated the expected importance to ICS, their attendance to hospital-based CME workshops is encouraging. New teaching methods, including peer-to-peer discussions and experience sharing did incite interest in communication as a discipline with its own instruments. In follow-up CME workshops role-play simulation could be introduced.

**Conclusion:** Survey outcomes indicate a need in communication skills CME activities for hospital medical staff. Interactive workshops using visuals, humour and pertaining to real-life situations stimulate interest and active participation. Additionally, hospital-based CME activities are directly available to those physicians who would not attend this kind of activity otherwise.

**Take-home Message:** Hospital-based interpersonal communication skills workshops proposed to physicians can stimulate further development of their professionalism.

#9EE10 (3355)
Breaking Bad News training program based on video reviews and SPIKES strategy: What do Perinatology residents think about it?

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M Silvia V Setubal, UNICAMP, Campinas, Brazil
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**Background:** Brazilian Perinatology residents usually face the task to break bad news without or insufficient formal training. We developed a pioneer training program to develop communication skills to delivery bad news based on video reviews of residents’ own simulated encounters communicating a perinatal loss to a “mother” and SPIKES strategy.

**Summary of Work:** A group of 58 residents volunteered to participate. Twenty-eight assigned to training answered an 8 item Likert scale questionnaire and an open question evaluating the training session. Responses were compiled and analyzed using thematic analysis to apprehend residents’ meanings, feelings and experiences.

**Summary of Results:** The majority participants evaluated training highly as an educational activity to help increase knowledge, ability and understanding about breaking bad news in Perinatology. Three big categories emerged from the open question: SPIKES training effects; bad news communication in medical training; and physicians’ feelings and doctor-patient relationships.

**Discussion:** Residents took SPIKES training with video reviews as helpful to systematize bad news communication, to amplify their perceptions of patients’ emotional needs and to improve their skills in dealing with difficult situations. They highlighted the lack of opportunities for training and suggested its insertion in their residency programs’ curricula.

**Conclusion:** The training session in breaking bad news was highly evaluated by Perinatology residents. They suggested implementing communication skills training during their residency programs.

**Take-home Message:** Brazilian Perinatology residents lack training in breaking bad news and are willing to have sessions using simulation and video reviews based on SPIKES strategy included in their residency program curriculum.
Interspeciality communication teaching

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Background: Newly qualified doctors are frequently required to communicate with senior doctors and other specialities. Responding to a questionnaire, 58% of Foundation Year 1 doctors did not think that medical school prepared them adequately to communicate with senior doctors. We proposed a dedicated teaching session on the topic.

Summary of Work: A tailored simulation teaching session was designed and delivered by a group of junior doctors. Two pilot sessions were held with small groups of final year medical students. Pre-course and post-course questionnaires were used to evaluate the sessions.

Summary of Results: All of the students found the teaching session somewhat useful (1= not useful at all and 5 very useful): 27% 4/5 and 73% 5/5. Following the simulation stations all the students reported an improvement in their “preparedness” for communicating outside their team.

Discussion: Failing to communicate effectively when seeking advice or requesting investigations could have a detrimental effect on patient care, therefore there is a definite justification for offering targeted training in this aspect of communication.

Conclusion: Tomorrow’s doctors feel that they require training in effective communication. All of the students indicated that their preparedness for interspecialty communication had improved following the simulation pilot session.

Take-home Message: The session was designed to be reproducible, and so this learning experience could be easily delivered at any University to groups of medical students or junior doctors. The feedback that we received indicates that training of this sort should be offered widely to prepare our future doctors.

Why Communication Skills for Doctors Who Work with Sexual Assaulted Victims’ Mental Health Should Be Composed in Tourist Area Medical School’s Curriculum?

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Background: Nowadays, sexual assaulted incidence rate has increased in a tourist cities. Meanwhile, the curriculum of medical schools don’t contain communication skills needed for victims’ mental support. It has been an issue whether this topic should be composed in the curriculum of medical school in tourist area or not.

Summary of Work: Deep interviews were performed in six doctors who work in Patong hospital, a hospital in famous tourist area of Thailand. Sequentially, questions about these topics were asked; first aid management, inter-professional cooperation management, confidence and problems on working. The interviews were recorded and analysed with qualitative SCAT method.

Summary of Results: There are one to two cases of sexual assaulted women monthly. Doctors were trained to take medical history and do physical including sexual examination. All doctors reported that they were not confident and didn’t know how to mentally support those victims and finally did not follow up cases again.

Discussion: Sexual assaulted victims got standard physical management but were not mentally support. The reason of not doing supporting part is because they don't know how to do it. They didn't get a chance to do it in schools. Experiences in medical school are not enough to practice on these cases.

Conclusion: Physical management was performed well but mental management was poorly accomplished because the lack of knowledge and experiences of physicians. Medical schools can help with this by composing the issue in their curriculum. Medical students should learn communication skills in sexual assaulted victims mental support.

Take-home Message: How to communicate for mental health supported in sexual Assaulted Victims should be added to a curriculum of a medical school in tourist area. Give medical students an opportunity to practice for more experience and confidence in these skills. Subsequently, doctors can manage well both physical and mental issues.
#9EE13 (1921)
Communication Skills in Child Sexual Abuse: Current, Controversial and Challenging

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Rachel Amos, Basildon University Hospital, London, UK
Annette Langseth, Whittington Hospital, London, UK
Gayle Hann, North Middlesex Hospital, London, UK
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Background: Child sexual abuse is a significant and tricky problem affecting 5% of children in the UK. Disclosing sexual abuse is particularly challenging and can have a major impact on both victims and healthcare professionals. Despite this, training available to professionals to support young people to reveal sexual abuse is nominal.

Summary of Work: We developed a course supporting professionals to create a safe space for young people to disclose sexual abuse. Fully immersive simulation with two role-players per scenario created realistic and challenging conditions. Candidates defined their own learning objectives and evaluated the extent to which they were met.

Summary of Results: All candidates expressed concerns about inadequate training in child sexual abuse and a lack of confidence in managing these issues even at consultant level. Following the course all delegates had increased confidence in managing child sexual abuse. They valued the opportunity to practice challenging communication scenarios and detailed constructive feedback.

Discussion: The course addressed challenging issues rarely covered elsewhere, including the role of culture, religion and disability in sexual abuse. The opportunity to practice high level communication skills in a safe space was important to improving confidence. Candidates benefitted from both verbal and written feedback from specialists, peers and actors.

Conclusion: The course fills a training gap in safeguarding children and young people. Full immersion in simulated scenarios with two role-players was an effective method of learning, improving confidence in managing child sexual abuse in all delegates. Peer support was important to help professionals deal with this very emotive topic.

Take-home Message: Child sexual abuse is a major issue in the UK. All healthcare professionals who come into contact with children should feel confident in managing it. This course helps professionals to support young people to disclose sexual abuse and deal with the challenges and controversies that surround it.
#9FF Posters: Communication Skills - Community and Rural Education

Location: Hall 6

#9FF01 (3038) Developing Conscientization To Be Professional Among 4th Year Medical Students In Community Medicine Subjects

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Background: Community medicine subjects facilitate conscientization of medical students to work in remote area by raising critical awareness of their social reality through reflections and actions during fieldwork in communities. This action research aims to develop an action learning course through health promotion projects to solve health problems in real community.

Summary of Work: Staff from community hospitals were prepared to provide supervision for 4th year medical students. The course design utilised problem-based and research-based learning. Students followed steps of identifying problems and determinants, setting objectives and strategies and designing actions and evaluations. The projects and photo inspiration were presented in the final presentation.

Summary of Results: Medical students learned to complete the project, to live in the community and to work with the team under supervision of the community hospital staff. Their final presentation indicated the development of analytical, systems and synthesis thinking skills using multimedia reflecting their professional consciousness and societal expectation of medical doctors.

Discussion: The course indicates course design and group design applied together with project-based learning and the key process to achieve the projects. Conscientization is developed by transformative learning process using the real experiences in the community and self-reflection with sharing among their team. Left and right brain training are also seen.

Conclusion: Working with the real settings in the community using action learning and critical reflection can facilitate creativity and responsibility to encounter the health problems in society among medical students. These circumstances enable them to understand the knowledge subjects in-depth sufficient enough to form conscientization of medical professional.

Take-home Message: Working in the real situation of medical students as team members of hospital staff in communities fosters professional growth with responsibilities. Creativity and innovation can be developed in the health promotion project indicate, on balance, training of the left brain and the right brain function during the course.

#9FF02 (2902) Profile of students enrolled in a Family and Community Medicine Preceptorship Post-Graduate Course on Brazil

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Background: The last decades' changes on Brazilian Public Health Policies increases efforts to optimize the primary health care. In response to this demand the Universidade Federal de Ciências da Saúde de Porto Alegre and Family Medicine Brazilian Society promoted a Family and Community Medicine Preceptorship Post-Graduate Course, in distance learning modality.

Summary of Work: The course aims to training new residents in Family Medicine as future preceptors. This work describes the profile of students enrolled in its first class. Data of an online survey responded by students (972) at the course registration was descriptively analyzed. Half of students are graduated on public universities.

Summary of Results: The majority of students are women (65.6%), with 30 years old or less (66.4%), single (70.9%), “no children” (83.1%). Time from graduation was five or less years to 84.8% of students. Already participate on distance learning activities (62.3%) and have access to internet on work (87.3%) or home (96.7%).

Discussion: There are students from all Brazil’ regions: South (17.1%), Southeast (50.2%), Midwest (6.9%), North (10.3%), Northeast (15.5%). These results reflect a group that can adapt well to the distance learning modality even more considering that they’re part of a generation that grew up and did its medical training using internet.

Conclusion: The profile of this first class is homogenous (young, single and recently graduated) throughout Brazil and reflects future preceptors who will be responsible for expanding the training of family physicians to supply the need for Brazilian healthcare workforce.

Take-home Message: In order to carry out the large-scale training of family doctors in Brazil, in the near future it’s necessary to expand and qualify preceptors throughout the country, starting in an innovative way with the current residents of family medicine.
#9FF03 (1449)

**Medical Student’ Learning Outcome Among Extra Curricular Activities Through Transdisciplinary and University Community Engagement**

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**Background:** Learning outcome among medical students of Suranaree University of Technology, Thailand is performed by intra- and extra-curriculum. Here we described the outcome based extra curricular activities (ECA) through Transdisciplinary (TD) and University Community Engagement (UCE) of medical students who were participated.

**Summary of Work:** ECA was performed. UCE is comprised partnership, scholarship, mutual benefit, social impact. TD is established by teachers, medical, dental, nursing, public health, engineer, computer students, local government officers, villagers to solve health problem in community particularly liver fluke disease. ECA was conducted among Buayai district, Nakhonratchasima, Thailand during January 2017.

**Summary of Results:** Quantitative and qualitative data were collected by questionnaires, group and individual feedback, consequently. 40 participants were included. Participants (89%) had a high level of satisfaction regarding ECA particularly in the steps of sharing ideas, decision making, and planning step. They could be improved their knowledge, attitude, communication skill, and esteem.

**Discussion:** ECA produced positive outcomes and achievement for students. They have a good chance to work multidiscipline. Students had close relative with teacher to learn good role model and would like to do project in future. ECA toward UCE and TD is highly potential mutual benefit among university, students, teachers and communities.

**Conclusion:** ECA toward UCE and TD is highly potential mutual benefit among university, students, teachers, and communities. In conclusion, ECA is an integrative activities that improvement of knowledge, attitude, skill and esteem for students. Therefore, this ECA should added in curriculum more than waste a time with classroom lecture based.

**Take-home Message:** ECA produced positive outcomes and achievement for students. Students have good chance to work multidiscipline and community people. In addition, students had close relative with teacher. They would like to do and participate project in future. Moreover, ECA toward UCE and TD is highly potential mutual benefit among university, students, teachers and communities.

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#9FF04 (2403)

**Interdisciplinary seminar : work together**

**Arthur Piraux, University of Angers, Angers, France**

Estelle Colin

Nicolas Lerolle

Cécile Rouillard

Sylvie Solarzano

Frédéric Lagarce

**Background:** Interdisciplinary teaching of health students is necessary to achieve interdisciplinary cooperation of health professionals in the community. Implementing learning activities for different stream of students may be difficult as students may be enrolled in different institutions and have different learning schedules.

**Summary of Work:** The university of Angers has implemented an interdisciplinary seminar for students in medicine, pharmacy, midwifery, physiotherapy, occupation therapy and nursing. Distant cooperative learning in group of 10 students for different backgrounds was completed by a full day seminar in which all students (600) participated and presented their work.

**Summary of Results:** Groups handled in a 10 pages’ paper, an oral and a poster presentation on a specific question selected among 6 possible topics: representation of health professions, Education and prevention, Mental health and disability, Palliative care and pain, healthcare organization, bio-psycho-social approach of fragile patients.

**Discussion:** Students were supervised by health educators and professionals. Distant cooperation was achieved via an e-learning platform (Moodle). Interdisciplinarity provided the students with better insight of the competencies of other health professionals. The topics were chosen so as to illustrate the relevance of interprofessional cooperation for the quality of patient care.

**Conclusion:** Distant learning provides opportunities for students learning in different environments to cooperate. This can help and bridge the gap between students enrolled in different health curricula, and could also be used to develop transnational programs. Interdisciplinary approach of healthcare should be included in the curriculum of all health students.

**Take-home Message:** Distant learning allowed 600 students studying different fields in different places to cooperate and tackle together issues in which interdisciplinarity is a key component of quality of care.
#9FF05 (1611)
Rural General Practice registrars and family life: developing a different model of long term rural and remote medical service provision

Jane Harte, University of Southern Queensland, Toowoomba, Australia
Scott Kitchener

Background: The aim of regionalised professional medical training is to attract doctors to commit to a career in areas of Australia outside the large cities. This study focused on the overall experience of first year general practice trainees entering a training program whilst working in rural and remote locations in Australia.

Summary of Work: The two year interview-based study concentrated on the professional, educational, social and family implications of transitioning into a new rural, remote or regional area whilst joining a training program and meeting requisite educational expectations. The aim was to find out how the overall experience was for registrars and their families.

Summary of Results: Both registrars and their families in the study adapted well to the transition. Two findings were evident; many of the married registrars were utilising their time in the training program to start or grow their families, and that a long term commitment to rural medical practice could not be guaranteed.

Discussion: Research shows that family issues, specifically as they relate to spouse or partner careers, education for children and social or recreational opportunities, play an important role in making a decision to live and work in rural areas. We found that for junior trainees, these issues were not as important.

Conclusion: We found instead that at the level of rural doctor trainee, issues such as spouse or partner careers and other issues were not as important as they might be later in career in rural or remote areas, despite whether there were any long term intentions to remain in rural practice.

Take-home Message: We no longer should assume that all younger medical trainees will have long term rural careers. Instead, encouraging young families to spend time in these areas early in their careers can enable service provision for an albeit limited amount of time by each trainee consecutively.

#9FF06 (69)
Community based learning enhancing rural doctor retention

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Background: In order to manage the shortage of doctor that are related to distribution, supply and leakage, many methods should be used such as selective recruitment, increase production and regulation. Moreover, community oriented medical education (COME) is claimed to encourage students to understand community deeply but it’s uncertain to promote retention.

Summary of Work: Cohort study was conducted. All of 2,098 in 10,018 doctors (21%), who were recruited by Collaborative Project to Increase Production of Rural Doctor (CPIRD) and graduated during 2001-2010, were followed up. Community based learning (CBL) was analyzed to determine the association with rural retention after 3-year commitment in government service.

Summary of Results: There were 5,774 doctors (57.6%) retaining after 3-year commitment. CPIRD was higher particularly in rural hospitals than normal tract (60.3%vs58.4%,p<0.001) and had more hours in community attachment than resignation group (3.0%vs2.9%,p=0.04). Male, geographic regions and graduate entry were significantly associated with rural retention (OR 1.81, 2.03, 5.11 respectively).

Discussion: Not only, hometown quota recruitment can alleviate unbalanced distribution but also appropriate CBL increases rural retention. CBL and extracurricular activities in community inspire sense of belonging, relationship and deeply understanding community.

Conclusion: CBL enhances rural retention. Male, geographic regions and graduate entry selection have an influence on decision making.

Take-home Message: Multiple factors are related to rural doctor retention including community based learning. Appropriate attachment in community learning experiences is essential.
**#9FF07 (1601)**

"CPIRD DNA": The Professional Identity in Community Tract Medical Student

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**Background:** In Thailand, Collaborative Project for Increasing Rural Doctor (CPIRD), was set for solving shortage of rural doctor. The medical students are recruited from rural area, study clinical years in local hospital, and obligatory work in homeland. This study aims to assess “CPIRD DNA”: the community-professional identity of medical students.

**Summary of Work:** The medical students, academic year 2016 were enrolled. The CPIRD DNA inventory was developed and addressed community-professional identity in the five domains: Community-bond, Passion to learn, Integrity to profession, Responsibility, and Dignity to work in rural area. The five-points Likert scale was used and compare the mean scores.

**Summary of Results:** The 1630 medical students, 464 first year, 464 fourth year, 412 fifth year, and 290 final year respond. The mean scores of each domain were 3.92 in community-bond, 3.93 in passion to learn, 4.22 in integrity, 4.39 in responsibility, and 4.20 in dignity.

**Discussion:** Even though, this study provided a current attitude to professional but they showed that medical students, rural background, had engaged to community, motivate to be a good doctor, and intention to work in their place. However, the data demonstrate some gaps for developing their professional identity especially in community-bond.

**Conclusion:** The medical students from rural, study in local hospital, by local medical teacher, show complies with the CPIRD doctor’s outcome, be engaged in community and professional identity to work in rural area.

**Take-home Message:** Defining medical student professional identity helps medical administrator, teacher, and educator to develop relevant program.

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**#9FF08 (518)**

Acquisition of Knowledge and Attitude among Medical Cadets after a Rural Community Survey, parts of Community Medicine

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**Background:** Main part of Community Medicine is fieldwork which helps in many aspects such as to understand theory, develop skills and integrate knowledge. Our fieldwork including community research, health intervention and home visit were performed in a rural community, Central Thailand. To understand the benefits of fieldwork, cadets' reports were evaluated.

**Summary of Work:** To explore students’ perception of home visit, the data were collected by using open-ended questions about what they have learned. We selected common aspects to perform exploratory factor analysis (EFA) by using principle component analysis with Eigenvalues cut off > 1.00 and Factor loading > 0.4 as a selection criteria.

**Summary of Results:** Five components were extracted including health problems, socioeconomic and educational issues, communication skills, problems in fieldwork and rural lifestyle, with Eigenvalues of 2.096, 1.600, 1.475, 1.274 and 1.122 respectively. Qualitative analysis indicates that students could develop communication and interpretation skills. They were aware of rural life styles and health problems in rural community.

**Discussion:** Fieldwork experience helps them to understand some problems such as universal coverage regime of health care system, health inequity and accessibility to health care services. Importance of health education and promotion was also emphasized. Their reflection indicates the importance of holistic approach to solve health problems in the rural community.

**Conclusion:** Fieldwork is essential for Community Medicine which is based on learning through firsthand experience. Medical cadets’ reflection provides an opportunity to explore the meaning and significance of fieldwork. Both knowledge and attitude can be evaluated.

**Take-home Message:** Confirmatory factor analysis should be performed to support this hypothesis for improvement in authentic assessment in community fieldwork. Moreover, to clarify the differences between students’ point of view, further study need to be conducted among pre-clinical students and other medical schools as well.
Perceptions of first-year medical students gained from early experience with patients in rural communities.

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Background: Current thinking on the medical system in Thailand is that the current approach lacks essential elements such as patient involvement and patient-physician interrelationships, and fails to develop professionalism in the students. These are the core of medical practice, and without them the professional development of the students is retarded.

Summary of Work: This qualitative study based on the documentary analysis of 122 first-year medical students’ attitudes, feelings and inspirations acquired from early exposure to patients in the rural communities with chronic disease. The students’ reflective documentation on their experience of being exposed to patients in their homes were the primary research instruments.

Summary of Results: By this approach communication skills were enhanced and gaining insight into, developing a positive attitude, and significant empathy for the suffering and effects on the families of the patients, and impact of accessing medical and health services not readily available in their locations on both the patient and their family.

Discussion: “Make yourself at home” was an attitude demonstrated by the patients and their families, and was a key to building the students’ confidence in mutual communication, changing the students’ perceptions of their role in community medicine, and the students’ initial feelings of tension and anxiety were quickly allayed.

Conclusion: Providing medical students with this approach has a very positive effect on their attitude and world view. The very positive outcomes from our study gives us high confidence that this approach should be a usual part of the medical training and education program in schools of medicine.

Take-home Message: This program has met all our hopes and expectations, and we definitely encourage medical educators to adopt a similar approach.
#9FF11 (2418)
Community-Based Learning: Authentic Learning Experience of Second Year Medical Students in ‘Holistic Health Care I’ Course at Thammasat University.

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**Background:** Community-based learning was designed for medical students to learn and to gain authentic experience from field training in community so that they would be able to apply their knowledge to reality.

**Summary of Work:** This study aimed to evaluate students’ learning experience after field study. One-hundred and seventy 2nd-year medical students were individually assigned to write a reflection paper based on their own learning experience of a nine-day field study in Thai rural community.

**Summary of Results:** All student reports were analyzed. The result showed students demonstrate their knowledge of health determinants, communication skills and interpersonal skills, moral, self-discipline, planning and problem solving skills, team working, flexibility and adaptability, including positive attitudes to work with lay people in community in most papers.

**Discussion:** Communication skills, health determinants and flexibility and adaptability were top three topics students have learned from this course as expected. However, other activities provided their learning experience, for example, self-discipline and time management because not only studying and conducting a health project; they had to take turns to do cleanings.

**Conclusion:** Well-designed course as well as well-prepared training site was the most crucial for community-based learning because it enhanced students’ learning experience both intra-curricular and extra-curricular activities.

**Take-home Message:** Authentic learning experience will help them to understand lay people’s perspective upon humanistic doctors’ roles and to shape up students’ attitudes towards team working in the community.

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#9FF12 (1384)
The perceived usefulness of early community based learning experience (ECOBLE) regarding students’ community healthcare services and rural workplace choices.

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**Background:** Early Community Based Learning Experience (ECOBLE) is learning activities that indicate a health care service in rural communities for medical students, particularly first year students. The purpose of this study was to investigate students’ perceived usefulness of ECOBLE and its potential effect on their enthusiasm to work in rural areas.

**Summary of Work:** A study using questionnaires included 261 first year students (n = 261) was conducted. Pre- and post-evaluation was given. Subjective rating scales from 0 (min) to 5 (max) on many perspectives including role of community doctor, rural primary health care service, and working factors as a community doctor was applied.

**Summary of Results:** ECOBLE influences on motivation to work as a rural community doctor (p<0.01). Additionally, it enhanced understanding in role of community doctor and rural primary health care service (p<0.01). The majority of students reflected that ECOBLE may influence them to practice not only treatment but also health promotion and prevention.

**Discussion:** Community health perspectives of participants may improve along the academic year. The study was accomplished by staff of rural community doctor and this might have created some bias. However, using questionnaire with open ended questions and probing into rationales prevented these biases.

**Conclusion:** ECOBLE could influence medical students to have a willingness to work in rural areas and also enhance their understanding in role of community doctor and rural primary health care service. ECOBLE is an effective model of community health professional education.

**Take-home Message:** ECOBLE can be used to prepare and acclimatize healthcare professions to work in rural areas and also improve students’ preparation to deal with national health problems.
#9FF13 (690)
Integrated Learning: A New Approach for Community Geriatric Health Education

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**Background:** Aging society has become an emerging issue in Thailand. It is important to raise medical students’ awareness in health promotion and disease prevention for the elderly. This integrated learning (IL) approach aims to bridge this necessity with a Community Medicine course’s objective: students perform healthcare research during the four-week modules.

**Summary of Work:** The IL consists of classroom-based activities, home-visit programs, and geriatric health research. Team-based learning is used for teaching comprehensive geriatric assessment. During home visits, students assess the elderly’s holistic health. They researched on geriatric syndromes after learning about geriatric health situation and service in communities and did additional literature review.

**Summary of Results:** A group of students studied mild cognitive impairment (MCI) prevalence in senior citizens. They found that the MCI (dementia) prevalence is 77.6% (4.9%). MCI risk factors include lower income and central obesity. The protective factors are regular reading and exercises. They provided feedbacks useful for improving geriatric health promotion plans.

**Discussion:** All three aspects of the IL have helped the students gain insights in basic healthcare problems in an emerging aging society. Collaborations with other social network and allocation which support the community geriatric healthcare, besides the primary care units, are ideal but difficult due to the limited (four-week) course period.

**Conclusion:** An IL approach for geriatric health education has been designed. It helps the medical students gain fundamental knowledge through team-based learning and discussions in classroom, improves their skills in comprehensive geriatric assessment during home visits, and promotes their analytical thinking and research skills on geriatric health problems in the community.

**Take-home Message:** Integrated learning has been incorporated in Community Medicine course curriculum for fifth-year medical students, aiming to define geriatric health problems and health risks, and provide feedbacks for improving health promotion plans. Students’ collaboration with social organizations to support the community geriatric healthcare was infeasible because of the limited course period.

#9FF14 (2435)
Better Undergraduate clinical training in General Practice as a result of Medical School and Community Health Collaboration

Jane Smith, Bond University, Gold Coast, Queensland, Australia
Michael Yelland, Griffith University, Queensland, Australia
Peter Northcott, Gold Coast Primary Health Network, Queensland, Australia

**Background:** Ever growing numbers of Australian Medical students cause pressure on clinical placements. Different universities share placements but organisation of General Practice placements is haphazard. Sometimes there are not enough. Multiple requests from multiple Medical Schools and students are uncoordinated, create unnecessary extra work, and much confusion for General Practices.

**Summary of Work:** Academic General Practitioners from both Medical Schools, and Community Health Organisation staff communicate and meet regularly. We discuss and plan placement allocations, practice visits for endorsement, teaching, curriculum planning, and GP supervisor training.

All communication to General Practices is coordinated and made through a community health staff member.

**Summary of Results:** Over ten years, annual placement numbers have increased from 72 in 38 general practices, to 505 in 220 General Practices. The number of GP supervisors has similarly risen from 48 to 304. Since 2015 we have shared our entire GP curriculum, clinical activities, teaching program, and GP supervisor training.

**Discussion:** Working together to create a shared curriculum, teaching program, and assessments, as well as coordinating and controlling shared placements, has improved communication between all players. This has created incremental gains from each step, but the sum of the whole is more of a multiplication than an addition.

**Conclusion:** Our curriculum is more robust, and we have happier GP supervisors, academics, and students, all because of this coordinated streamlined approach. This model of collaboration could benefit other Medical Schools, their students and the General Practices that supervise their training.

**Take-home Message:** Working collaboratively creates benefits at multiple levels for university staff, students, community health, general practices and staff.
#9GG Posters: Virtual Patients and Games

Location: Hall 6

#9GG01 (2877)
Virtual Patients versus e-OSCEs. The students’ perspective.

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Panagiotis Bamidis, Aristotle University of Thessaloniki, Thessaloniki, Greece

Background: Modern medical education exhibits a wide variety of learning objects. Among them, Virtual Patients (VPs) and electronic OSCEs (e-OSCEs) seem to be powerful educational tools aiming to lead to effective learning and support clinical skills reasoning.

Summary of Work: The Medical School of Aristotle University of Thessaloniki has proceeded with the creation of an online pool of VP and e-OSCE cases. A total of 74 medical students were assigned to explore either VPs or e-OSCEs and then evaluate them. For that reason the eViP student questionnaire was used.

Summary of Results: The vast majority of students responded positively concerning their learning and clinical reasoning experiences with VPs and e-OSCEs, as well. However, a slight preference to VPs in comparison to e-OSCEs was demonstrated, especially concerning the authenticity of patient encounter and the consultation and the professional approach in the consultation.

Discussion: The results from the processing of the data were very positive and encouraging to see the continuation of the effort for VP and e-OSCE implementation in medical curriculum. A slight preference to VPs was shown, even though they were mentioned to have an increased level of difficulty.

Conclusion: Contemporary medical education includes unique types of learning resources, such as VPs and e-OSCEs. This valuable insight into medical students’ perception enables their curriculum integration according to students’ needs and preferences.

Take-home Message: Both VPs and e-OSCEs are considered from students as valuable tools for acquisition of clinical skills. A relative preference to VPs was demonstrated.

#9GG02 (1817)
Virtual patients in training against medical error: student experience of working with paediatric cases

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Viktor Riklefs, Karaganda State Medical University, Karaganda, Kazakhstan
Luke Woodham, St. George’s University of London, London, UK
Terry Poulton, St. George’s University of London, London, UK
Alma Muratova, Karaganda State Medical University, Karaganda, Kazakhstan
Gulmira Abakassova, Karaganda State Medical University, Karaganda, Kazakhstan

Background: Karaganda State Medical University (KSMU) leads the consortium on Training Against Medical Error (TAME) co-funded by EU Erasmus+ Programme, including 10 universities in UK, Greece, Czech Republic, Sweden, Vietnam, Ukraine, Kazakhstan, and providing research evidence addressing the most common medical errors in training of future physicians using virtual patients (VP).

Summary of Work: KSMU administered 6 adapted VP cases in paediatrics created by St. George’s University of London in linear and branched versions. The survey after each case aimed evaluating personal experience, perceived abilities, mental effort and emotional reactions. 15 interviews and 3 focus-groups clarified the survey findings.

Summary of Results: Surveying students, we got 255 responses out of possible 384 (66%). Factor analysis confirmed the 4 factor-model: perceived ability (22.7% of variance), positive experience (20.2%), negative (14.4%) and positive (7.2%) emotions. MANOVA of factor scores produced no significant differences between cases and their types (branched/linear). Post-hoc analysis revealed some differences.

Discussion: Negative emotions and positive experience were higher for branched cases; the perceived abilities increased for linear cases after case 3; positive emotions were higher for linear cases. No direct experimental evidence favoured branched or linear cases. In interviews and focus-groups, students defended the methodology they experienced.

Conclusion: In students’ opinion, linear cases provide safer environment and more discussion, branched cases provide more accountability. Focus-groups highlighted that continuous individual experience, residual effect from previous cases, tutor professionalism, and group dynamics were not taken into account. The research evidence for the best practice in TAME is not yet conclusive.

Take-home Message: The students seem to enjoy VPs, but the long-term effects are yet to be studied. Study limitations should also be accounted for. VPs in training against medical error seems to be a promising technology. More research is certainly needed into specific properties of VP case making it effective.
Methods to measure the development of clinical reasoning with virtual patients: a literature review

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Background: Clinical reasoning is assumed to be an important feature of virtual patients (VPs). The assumption is: allowing students to evaluate patients from history, diagnostics to treatment allows them to develop better diagnostic patterns leading to improved clinical reasoning. Growing evidence on VPs has not translated into diagnostic gains evaluation.

Summary of Work: In October-November 2016 a systematic search of Medline was performed. The search terms were “clinical reasoning” and “diagnostic thinking” combined with “medical education technology”. A further search was conducted with the search terms “clinical reasoning” and “diagnostic thinking”, “medical education virtual patients”.

Summary of Results: We found a total of 9 different articles concerning quantitative measurements of clinical reasoning. The methods used to evaluate diagnostic thinking/clinical reasoning were: the Diagnostic Thinking Inventory (DTI), pre- and post-test case scenarios and narrative case summarization.

Discussion: There were three commonly accepted tests to evaluate the students clinical thinking. Quantitative clinical reasoning progression in two evaluations, using pre- and post-test case scenarios and narrative case summarization. Testing of diagnostic thinking performed with DTI (self-reported scores) and narrative case summarization (tutor rating) are subject to bias by the rater.

Conclusion: Quantitative data to objectively evaluate the clinical reasoning skills gain through the use of VPs in our search query was very limited. Robust quantitative evaluation, such as script-concordance testing or other objective quantitative testing methods are needed to support the claim VPs improve clinical reasoning skills in students.

Take-home Message: Although publications claim a rise in diagnostic thinking ability through VPs this has not yet been supported sufficiently with quantitative data. Quantitative, standardized methodology is needed to support claims on clinical reasoning development.

Virtual patient in the clinician’s education: Theory knowledge and self-efficacy in anxiety diagnosis

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Calinici Tudor
Miclea Mircea

Background: In medicine and psychology getting from theory to practice it is difficult because students cannot practice from the start with real patients. Virtual patient (VP) may offer a safe context for them to acquire and exercise theoretical knowledge but also to build self-efficacy, a good predictor for later practice performance.

Summary of Work: Two courses on e-learning free Moodle platform, presented as virtual patient (VP) a panic disorder diagnostic, linear and branched design. Participants, 179 students, randomly assigned in conditions: control (traditional lecturing), linear and branched VP, were tested before and after the course with a questionnaire on theoretical knowledge and self-efficacy.

Summary of Results: Control group had a statistically significant difference between pre and post course knowledge level but not in self-efficacy. VP groups were associated with a statistically significant increase in both dependent measurements. The study failed to show if one of the two VPs types is associated with a significant better outcome.

Discussion: In theory knowledge all groups had a statistically significant increase, with no significant differences between groups. In self-efficacy only the VP groups had a statistically significant increase, with no significant differences between them, although we expected better outcome for branched VP. Cases with more co-morbidity should better reveal this.

Conclusion: The study shows that VPs, just like traditional lecturing, has a good effect in knowledge acquisition. But, in addition, help in transition to practice through self-efficacy increase.

The findings are consistent with previous literature, which places VPs at the beginning of transition from theory to practice in learning sources hierarchy.

Take-home Message: The theory acquisition is only the first step in a health specialist curriculum. Consolidating the knowledge and integrating it with procedural knowledge is facilitated by self-efficacy. VPs are accessible tools that help to develop self-efficacy, to be used in addition to traditional lecturing, before starting actual practice.
**Summary of Work:** 3rd year medical students at the beginning of their clinical education have been taught PBL sessions for 9 months either with paper based PBL cases or VP. The outcomes were measured with standard knowledge examinations at the end of each module and at the end of study year.

**Summary of Results:** Analysis was done using Mann-Whitney U test. Groups were comparable in size (nC=17; nT=16) as well as in mean scores (meanC=17.88; meanT=16.06). Our data shows that there is no significant performance difference (p=0.588) between students using VP or paper based PBL in a long-term exam outcomes.

**Discussion:** The standard knowledge examination scores are comparable even after long term use of VP. The examination scores of the control or experimental group remained statistically insignificant.

**Conclusion:** In comparison to our previous studies where students, using VP, did not outperformed students studying with traditional methods, there was no significant difference between the groups in a long-term study as well. Further evaluation follows.

**Take-home Message:** Virtual patients have not shown a substantial performance difference in comparison to linear PBL cases in regards to exam results in a long-term study.

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**#9GG05 (1917)**

There is no significant impact of virtual patients on exam outcomes in long term

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**Background:** Virtual patients (VP) have been in use as an add on educational methods to traditional methods for some time. However, the long-term impact of VP has not yet been studied in details. Our study examined long-term impact of VP, taught during problem based learning (PBL) sessions, on final exam results.

**Summary of Work:** 3rd year medical students at the beginning of their clinical education have been taught PBL sessions for 9 months either with paper based PBL cases or VP. The outcomes were measured with standard knowledge examinations at the end of each module and at the end of study year.

**Summary of Results:** Analysis was done using Mann-Whitney U test. Groups were comparable in size (nC=17; nT=16) as well as in mean scores (meanC=17.88; meanT=16.06). Our data shows that there is no significant performance difference (p=0.588) between students using VP or paper based PBL in a long-term exam outcomes.

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**Conclusion:** In comparison to our previous studies where students, using VP, did not outperformed students studying with traditional methods, there was no significant difference between the groups in a long-term study as well. Further evaluation follows.

**Take-home Message:** Virtual patients have not shown a substantial performance difference in comparison to linear PBL cases in regards to exam results in a long-term study.

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**#9GG06 (2215)**

**MEyeNET: an innovative online teaching project developed at Monash University, exploring the Eyes, Nose, Ear and Throat.**

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Dennis O’Connor, School of Rural Health, Bendigo, Faculty of Medicine, Nursing and Health Sciences, Monash University, Australia

Vanassa Ratnsingam, Jeffrey Cheah School of Medicine and Health Sciences, Faculty of Medicine, Nursing and Health Sciences, Monash University, Malaysia

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**Background:** Medical graduates commonly see patients with disorders of the eyes and ENT (ear, nose and throat), regardless of whether or not they specialize in these disciplines. Studies report that graduates lack confidence, cite insufficient training in medical school and can perform sub optimally when caring for patients with these conditions.

**Summary of Work:** MEyeNET immerses medical students in a simulated clinic as they diagnose and manage virtual patients with disorders of the eye and ENT. Consultations are complemented by modules building skills in anatomy, physiology and clinical examination. A strong focus on the acquisition of transferable skills in clinical reasoning, underpins the resource.

**Summary of Results:** Quantitative and qualitative results from pilot studies, in addition to unsolicited feedback from students, indicates that MEyeNET is usable, acceptable and shows potential to aid in skill acquisition. The project has also resulted in an exciting collaboration in 2 countries, involving General Practitioners, Ophthalmologists, ENT surgeons, Optometrists, Audiologists and students.

**Discussion:** Large cohorts, limited placement numbers and finite resources to provide face-to-face teaching, present challenges when delivering education to medical students in Ophthalmology and ENT. Graduates must however, be competent in these areas - they will frequently encounter patients with disorders of both, in the community and in hospital.

**Conclusion:** A high quality interactive online resource, can address these problems, particularly when complementing existing teaching opportunities. A third iteration of MEyeNET has commenced in 2017, with almost 1,000 medical students now having access to it. Research is ongoing to continue to evaluate and to further develop the resource.

**Take-home Message:** Medical students require additional educational opportunities in Ophthalmology and ENT. MEyeNET has the potential to provide this. Additional data is being collected from its roll-out to almost 1,000 students. Work has also commenced to extend the needs analysis to hospital and community-based doctors, with planned pilots in these cohorts.
#9GG07 (309)
Virtual Patients in Problem-Based Learning (PBL)

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Background: Students in Problem-Based Learning (PBL) are guided by objectives they set themselves from a well-planned patient’s scenario. The Problem is usually presented as text. This however lacks the authenticity of a patient encounter; it does not train or evaluate students’ behavioral abilities, reasoning, decision-making, or communication skills.

Summary of Work: Virtual-Patient Learning: an online simulator, based on artificial intelligence. Learners play the role of a physician who interviews a simulated patient. Decisions taken by learners affect patient’s reactions. The simulated encounter captures moods, attitudes, and communication. Learners encounter potential problems by selecting inaccurate decisions or poor communication strategies.

Summary of Results: Feedback to learners is given through a post-encounter communication between patient and family member. VPL has a “learning mode” and an “evaluation mode”. The first is meant to stimulate student-centered learning, and is linked to further educational resources. The later can be used for evaluating students’ decision-making and communication skills.

Discussion: VPL has been used on trial basis in Qatar, Lebanon, UAE, Italy, and France. First-hand experience with this innovative approach showed that most students and faculty enjoyed it. It encouraged them to be focused and systematic throughout the medical interview. Students feel more accountable for their decisions and communication strategies.

Conclusion: Further work is needed to explore its potential positive effects on clinical reasoning and communication skills by introducing such learning tool at different stages of the medical curriculum.

Take-home Message: Being highly authentic and going beyond simple acquisition of knowledge, we believe that VPL will gradually replace the traditional less authentic forms of the written PBL scenarios.

#9GG08 (1095)
How Can Virtual Reality Enhance Medical Education? A Pilot Study

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CCR Wiles
J Livingstone
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Background: Simulation is a hot topic in medical education but suites and equipment are often prohibitively expensive and lack immersion. However, recent commercial sector investment has greatly reduced the cost of Virtual Reality (VR) technology, leading to increased interest in how its immersive properties can enhance simulation in medical education.

Summary of Work: “Introduction to the operating theatre” was retrospectively identified by focus groups of medical undergraduates as a challenging educational transition. We developed two low cost VR scenarios to facilitate this transition using a commercially available camera to capture 360° footage. Students viewed these scenarios using smartphone compatible headsets, and provided feedback.

Summary of Results: From Likert scale data, 100% of students agreed this technology has potential to be an effective learning tool. Over 90% strongly agreed they were more valuable than watching a standard video. Themes emerging from semistructured questioning were the value of immersion and lack of external distractions.

Discussion: Many students experience apprehensions before entering theatre, such as where they can stand or what they can touch. VR provides a unique modality where students can ‘virtually’ experience the operating environment. This can be achieved with low cost off-the-shelf technology – the camera and headsets used here cost under £500.

Conclusion: Immersive VR scenarios can now be developed using relatively cheap technology. Our feedback has shown that medical students are willing to engage with this technology and that it has significant potential to be a valuable educational tool, for example by supporting transitions into undergraduate surgical teaching.

Take-home Message: Inexpensive VR technology allows the creation of immersive learning scenarios that can potentially improve student confidence during challenging educational transitions such as the start of undergraduate surgical training.
#9GG09 (2256)  
Using Augmented Reality App to enhance the learning of clinical skills and therapeutic modalities in Occupational Therapy students: Experience from Kaohsiung Medical University  

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Wen-Lung Liang, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan  
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Chia-Hsin Chen, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan  

Background: Occupational therapy (OT) students are interested but unfamiliar about clinical skills and modalities at the beginning of clinical course in their third year. Self learning would help them if appropriate tools are provided. Augmented reality (AR) App could be a useful tool for self-directed learning outside of class and hospital.  

Summary of Work: We created Aurasma™ based teaching materials which connected videos of splinting and clinical modalities technique and pictures of clinical situations. Instructions of using this AR App in clinical sites were taught after teaching course of these clinical skills. Students were encouraged to use this App to continue learning in clinical setting.  

Summary of Results: Questionnaire survey on student’s experiences of using this AR App was conducted in the end of their clinical course. The result indicated that AR App allow them more opportunities of self-learning about practical knowledge of clinical skill. Students responded that this help them to practice the splints independently with confidence.  

Discussion: Junior OT clinical students started their learning by “peripheral participation” of clinical tasks. Despite of great curiosity and motivation, their learning in clinical setting remains inefficient. Teaching material built on AR would provide virtual practice with instructions when they are not yet allowed with enough hand-on practice opportunity.  

Conclusion: In the past, student’s clinical learning rely on instructions and practice opportunities from clinical teachers who are clinical practitioner. When using AR Apps in our clinical courses, students can use their cellphones for an alternative way of learning in clinical setting when clinical teachers and hand-on practice opportunities are un-available.  

Take-home Message: Using Augmented Reality teaching materials in teaching junior clinical students is useful to improve the understanding and familiarity of clinical skills and modalities.

#9GG10 (2502)  
Learning by Avatars: A Qualitative Study of User Experiences During Multiplayer Virtual World training of CPR  

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Background: Computer gaming technology, such as multiplayer virtual worlds (MVW), is increasingly used in medicine. Resting on beliefs of increased engagement and appealing pedagogical characteristics, this tool could be an attractive addition for knowledge and skills learning. Little is known on the students’ perspective of MVW training.  

Summary of Work: Twelve first-year medical students at Karolinska Institutet were trained in groups of 3 in 4 scenarios. After each scenario the trainees were subjected to feedback focusing on adherence to B-CPR guidelines and effective teamwork. Semi-structured focus group discussions was carried out after the training sessions.  

Summary of Results: A qualitative content analysis was carried out. After analysis four categories characterizing the students’ experiences were found: “Focused mental training”, “The interface takes away focus from training”, “Benefits of practicing in a group”, and “Easy to lose focus when getting passive”.  

Discussion: The findings increase our understanding of medical students’ experiences of MVW-CPR training in groups. They support the theorized advantages with MVW for learning. However, such advantages cannot be taken for granted, but relies on trainees’ engagement. It appears that the learning can be viewed differently to traditional training.  

Conclusion: In MVW, designing the interface is of great importance both for gaming novices and experts and using a group training approach may increase engagement by the trainees. Probably several of our findings can be extrapolated to other MVW learning and training situations for other groups of adolescents and adults.  

Take-home Message: Multiplayer virtual world training has advantages in student engagement and activation. Thoughtful considerations on learning goals and content have to be made to make use of this tool in a good way. There seem to be a risk of supporting erroneous self-beliefs when using virtual world training.
#9GG1 (1042)
PlayMed: Bridging the Gap Between Student and Doctor with Serious Games

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(Keith) Chee Y. Ooi, School of Women's and Children's Health, Faculty of Medicine, University of New South Wales, Sydney, Australia

Background: We developed PlayMed as a novel and online highly immersive role-playing game designed to educate medical students through experience-based learning in a virtual hospital. Online experiential learning through case-based ‘bedside’ scenarios aims to challenge and improve the knowledge of management and decision making abilities expected of a junior doctor.

Summary of Work: A pilot case-control study of final year UNSW medical students was performed during their Paediatrics term. Students in the Game cohort had 4 weeks online access to PlayMed and completed a feedback questionnaire. Game and No Game (NG) cohorts were assessed using a 10-question Acute Asthma Knowledge Quiz (AAKQ).

Summary of Results: Sixty-two Game and 61 NG students participated. Game students had improved median (IQR) AAKQ scores over NG students, 7.0 (6-8) vs. 6.0 (5-7) respectively, P=0.002 (17% increase in performance). Game students agreed PlayMed helped their understanding of asthma (87%) and will prepare them for work-life (93%).

Discussion: PlayMed was associated with a 17% increase in AAKQ performance over standard teaching. The game challenged the management and decision making skills of medical students in several cases of paediatric acute asthma. Case-based and bedside teaching is at the core of medical education and PlayMed can make this accessible online.

Conclusion: This pilot study provides support for the role of serious games in medical and clinical management education. Online experiential role-playing can engage and educate students through transformational play. Further development of PlayMed as a comprehensive paediatric educational tool for medical students is underway.

Take-home Message: PlayMed is a novel computer-based approach to medical education which sets the foundation for developing a comprehensive and easily accessible learning tool. It provides a virtual environment where players can experiment with decisions and analyse their consequences. The aim is to improve the knowledge, decision-making and management skills of students.

#9GG12 (2876)
Serious game is an effective learning method for primary health care education of MD students: a randomized controlled trial

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Alessandra Dahmer, Federal University of Health Sciences of Porto Alegre, Porto Alegre, Brazil

Background: A serious game (SG) was developed to assist the learning of Brazil’ doctors on primary health care (PHC) topics. The player is challenged to select questions, exams and treatment to virtual patients. This is a controlled trial designed according to CONSORT Statement.

Summary of Work: This study evaluate the influence of SG dedicated to PHC learning on knowledge of medicine students. Students attended to a PHC lecture and then they were randomly allocated to one intervention group (Ggame: learning PHC by SG; Gcontrol: learning in a printed text based on the same contents of game).

Summary of Results: The students answered a ten questions knowledge test before, immediately and four weeks after intervention. Means Ggame’ score for baseline, immediate and four weeks’ knowledge test were 7.07±1.98, 8.00±1.84 and 7.15±1.41. Gcontrol means were 7.85±0.99, 9.00±1.87 and 7.69±1.44. There was no difference between groups’ score at the same test (p>0.05).

Discussion: In the immediate test both groups presented scores higher than in the baseline. A survey regards the user experience was answered by Ggame’ students. Most students consider that SG was realistic and favor to engagement. The use of digital media for education has been reported so effective as traditional methods.

Conclusion: The serious game was effective to improve the students’ knowledge on PHC. Learning based on a serious game is so effective as learning based on printed text.

Take-home Message: Serious game can be used as an effective tool and to transform the learning process attractive to MD students. The highlight of SG is the higher engagement compared to traditional methods, as verified in this study.
#9GG13 (2859)
Improving Adjustable Skill in Medical Students by Using Game Base Learning

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Background: In Forth year medical students, they move from preclinic to clinic class. Therefore, they need to cooperate with more people such as their classmates, residency, faculties. Mind wisdom activity was conducted as extracurriculum as game base learning. This activity will help them understand themselves and others when they cooperate.

Summary of Work: All fourth year students at Mahasarakham Hospital in 2016 were selected. Two-day camp was conducted by using game base learning. Understanding yourself games, adjustable skill games, and leadership games were used. After the camp, They were asked to complete questionnaires (most agree is 10 and most disagree is 1).

Summary of Results: Students had a better understanding toward themselves, mean was 8.5 (Min=3, Max=10). They had a better understanding toward individuals, mean was 9 (min=6, Max=10). They had adjustable skill in cooperating with others, mean was 8 (Min=5, Max=10). They were at ease in participating, mean was 8.5 (min=4, max=10).

Discussion: From the questionnaires show that the level of satisfaction and relaxing feeling for this activity was at good. The level of understanding themselves and others was at good as well. The level of having adjustable skill and applying in their daily life was also good.

Conclusion: Teaching skill in adjusting yourself with others is challenging. Accordingly, game was an instrument in improving this skill. Besides, students were fun and relaxed.

Take-home Message: Understanding yourself and others by using game base learning helped students have a better understanding when they work with more people.

#9GG14 (2898)
Gamification in Medical Education: Introduction of a Radiology Card-Board Game

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Mohammad Kiani, Iranian National Institute for Strategic Research in Medical Education, Tehran, Iran
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Background: The application of educational games in teaching and learning contexts is increasing fast and it is predicted that gamification will become a key instrument in health professions education including radiology. Therefore, it is an attempt to introduce a strategy card-board game with a specific focus on radiology history and management.

Summary of Work: According to the game genre, the main parts such as game scenarios, cards, boards, dices, etc. have been designed; afterwards, details of game elements and their effects on gameplay have been defined. In this game, 4 group of players (up to 8 persons) can play simultaneously.

Summary of Results: The audience of this game are radiology students and staff. Educational content includes radiology history and management that improves the audience knowledge and management skills. Follow up studies to evaluate the effects of the game on knowledge and skills of the learners is recommended.

Discussion: Literature review on gamification in radiology education indicates lack of ample attention to game element in educational contexts of the discipline. This card-board game with its specific focus on radiology will be a step forward to apply games in health professions education and could be considered as gamified curricula reinforcement.

Conclusion: Gamification in radiology education is a new opportunity to facilitate learning through gamified elements and in order to empower radiology students and staff, this card-board game is designed.

Take-home Message: Gamification in health professions education and game-based learning are recommended to improve learning outcomes. In this regard, radiology history and management card-board game is an educational game that can be used to fill the existing gaps in Radiology Education.
#9GG15 (1243)
Experts as novices: clinical educators’ reflections on learning an unfamiliar skill

Tim Fawns, University of Edinburgh, Edinburgh, UK
Gill Aitken
Derek Jones
Michael Ross

**Background:** Experts sometimes forget the challenges they faced in developing their expertise. Returning experienced teachers to the position of a novice can help them identify with the perspectives of their students and facilitate reflection on their own assumptions and beliefs around performance, learning and knowledge.

**Summary of Work:** Two cohorts of clinical educators studying the MSc Clinical Education at the University of Edinburgh learned a novel practical skill (e.g. drawing, juggling or rock climbing). Reflective blog posts from 31 students were thematically analysed in relation to the barriers and approaches to learning a novel skill.

**Summary of Results:** Unfamiliar tasks were often deconstructed, understood, and then integrated into embodied practice. Learners could get “stuck,” requiring identification and resolution of problematic attitudes and beliefs before finding appropriate approaches. Most relied on resources and social support when learning, yet judged their ability by whether they could successfully perform without these.

**Discussion:** In identifying barriers to their own learning, clinical educators reflected on challenges faced by their students and the factors that need to be addressed to overcome those barriers. We hope that such insights will have a direct impact on teaching by highlighting new approaches to helping clinicians develop clinical skills.

**Conclusion:** Learning unfamiliar skills requires identifying and confronting limiting assumptions, un-learning problematic habits, making effective use of resources, and developing a range of approaches to negotiating obstacles. By placing themselves in the uncomfortable position of a novice, clinical educators report better understanding how to help their own students to overcome barriers.

**Take-home Message:** When teaching unfamiliar skills, it is important to understand the different barriers faced by learners so that approaches are informed, not just by the mechanics of performance, but also by the negotiation of conceptual blockages and problematic beliefs and assumptions.

#9GG16 (1803)
Diagnostic Challenge-Based Learning

Fabio Fernandes Labanca
Rosa Malena Delbone de Faria, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

**Background:** Teacher-centered learning methodologies are demotivating. They do not foster growth in autonomy and lead to little clinical reasoning, resulting in insecure future doctors. The proposal of Diagnostic Challenge-Based Learning (DCBL) is to stimulate clinical thinking in a playful environment that combines collaboration and competition.

**Summary of Work:** DCBL is a methodology of gamified learning that fosters the development of clinical reasoning and competence diagnostic. It consists of three rounds: 1) What is it? (pathophysiological indications). 2) When to suspect a disease? (clinical and test results). 3) What to do? (therapeutic actions).

**Summary of Results:** The environment of collaboration and competition makes students pay close attention to the interpretation of clues that lead to the diagnosis. As a consequence, during the game there is great motivation to collect the information, because besides the satisfaction of winning there is the application of what has been learned.

**Discussion:** The intragroup collaboration and intergroup competition stimulate the discussion of the physiopathology, clinical examination and test results, and therapy involving the context experienced by each student. As the activity is supervised by the teacher, the teacher can intervene, give immediate feedback and evaluate the students’ performance simultaneously.

**Conclusion:** DCBL is a new active learning methodology, suitable for any classroom, in which students gamify the experienced context to develop clinical reasoning and competence diagnostic, leadership skills, decisions making, managing conflicts and working as a team under the supervision of the teacher, assuring immediate feedback.

**Take-home Message:** DCBL is a new active learning methodology that joins the current trend of teaching gamification to stimulate the development of clinical reasoning, competence diagnostic and teamwork in medical students.
**#9HH Posters: Students and Student Engagement**

**Location:** Hall 6

**#9HH01 (3326)**

**Great Expectations: A study to compare and contrast the expectations of radiotherapy students with those of nursing students at the University of Liverpool**

_Cath Gordon, University of Liverpool. Liverpool, UK_  
_Cathy Fletcher, University of Liverpool. Liverpool, UK_

**Background:** Attrition rates for radiotherapy programmes have been higher than other healthcare programmes and for 2010/2011 was quoted as high as 36.5% whereas, nursing programmes have had attrition rates as low as 1.6%. Literature suggests a need to generate a better understanding of the reasons why students exit these programmes.

**Summary of Work:** The aim was to compare the expectations of both student groups with the realities of life on a healthcare programme. Questionnaires were distributed to the year one students during the first week of semester one, and again in year two then the data scrutinised using the Miles and Huberman approach.

**Summary of Results:** Three emergent themes were noted across both student cohorts: Support was seen as important, including the approachability of academic and clinical staff. The need for effective communication in the assessment process was seen as being of significance. A lack of confidence was noted which was linked to clinical placement.

**Discussion:** Both nursing and radiotherapy students described their expectations of the academic and clinical environment and themselves. Changes have been made within both programmes to increase the level of academic support both within the university setting and clinical practice which has had a significant impact on the student experience.

**Conclusion:** The key findings from this study are that expectations were initially high for both cohorts but generally realistic and that, on the whole, these expectations were met by our academic and clinical staff.

**Take-home Message:** Students exit healthcare programmes for many reasons, some of which are within our control and some without. Being aware of the expectations of our students as they transition into Higher Education may help us to manage and meet those expectations and therefore, improve retention.

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**#9HH02 (87)**

**The parents expectations to the first year medical students of Naresuan University**

_Jatuwit Howannapakorn, Naresuan University, Phitsanulok, Thailand_  
_Rossukon Khotcharrat, Naresuan University, Phitsanulok, Thailand_  
_Supawadee Makanut, Naresuan University, Phitsanulok, Thailand_  
_Sirikasem Siriluk, Naresuan University, Phitsanulok, Thailand_

**Background:** As our missions are well planned and carried out with professionalism, perseverance, tolerance, and ethical consideration, we are certain to realized the goals of preparing good quality and ethical medical graduates and deliver international quality health service. Our faculty pay more attention to students and their parents’ opinion.

**Summary of Work:** A cross-sectional survey of the parents of the first year medical students (of the academic year 2016) was carried out to evaluate the parents expectation on the official orientation day. The questions were constructed into three different aspects ; (I) humanized doctor (II) 5 smarts identities (III) 7-star-characteristics.

**Summary of Results:** From the aspect of humanized doctor, the parents wish their children to be a people with happiness 37.30%. Whereas in the university’s 5 smarts identities, the parents expected smart at problem solving 54.70%. In term of the 7-star-characteristics, Empathy and humanized doctor = 48%. Where as in the university’s 5 smarts identities, the parents expected smart at problem solving 54.70%. In term of the 7-star-characteristics, Empathy and humanized doctor = 48%.

**Discussion:** According to the university instills in students at all levels the five “smarts” and the faculty of Medicine emphasize 7-star-characteristics. The parents expected in social skills and how the graduates behave more than the knowledge content or clinical skills.

**Conclusion:** The parents expectations of the medical students of Naresuan university were conform with our curriculum and harmonized with our organization’s mission.

**Take-home Message:** The expectations of steak-holder are important part of the mission of medical school to realize to conform with curriculum and harmonized with organization’s mission.
Summary of Results:
and support medical students in both studying problem
the mentoring system to provide effective counselling
Discussion:
meet  their advisors. The suggestion is to increase opportunity to
consult their parents. However 86.7% of them need
problem. For personal problems, 48.4% of students first
68.6% first consult their friends when they have studying
questionnaires, 69.4% met with their advisors only once,
advisors were asked from the students, as an open-ended
performing or personal problem(s). Suggestions about
students seek consultation from when they have academic
frequency of meeting advisors, details of people whom
students consult from when they have studying
Background:
Background: Medical students are likely to encounter a
variety of problems during their clinical training. However,
from anecdotal observations, students seem to not
consult their advisors as often as expected. This study was
done to address this issue of whether or not medical
students feel the need for having advisors.
Summary of Work: Questionnaire that collect data from
4th-6th year medical students regarding sex, age, GPAX,
frequency of meeting advisors, details of people whom
students seek consultation from when they have academic
performance or personal problem(s). Suggestions about
advisors were asked from the students, as an open-ended
question.
Summary of Results: 36/91 medical students replied the
questionnaires, 69.4% met with their advisors only once,
68.6% first consult their friends when they have studying
problem. For personal problems, 48.4% of students first
consult their parents. However 86.7% of them need
advisors, The suggestion is to increase opportunity to
meet  their advisors.
Discussion: Surin medical education center should revised
the mentoring system to provide effective counselling
and support medical students in both studying problem
and personal problem to succeed graduation and
happiness.
Conclusion: Medical student want to consult their
advisors, but also seek consultation from people whom
they trust.
The medical students can solved their problems by the
good mentoring system, so they can succeed graduate.
Take-home Message: Systems should be put in place to
enhance accessibility to advisors in order to promote more
frequent interaction between medical students and their
advisors. Good mentoring system is one of the key for the
success of undergraduate medical students.

#9HH04 (23)
The Predictive Role of Autonomous and Controlled
Motivation on Dental Students’ Behavioural and Affective
Outcomes: A Structural Equation Modelling Analysis
based on Self-determination Theory

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Santiago, Chile
Vivian Binnie, University of Glasgow, Glasgow, UK

Background: Autonomous and controlled motivation have
been shown to positively and negatively predict different
educational outcomes, respectively. However, limited
research has been conducted in dental education.
Therefore, this study tests a model hypothesising positive
associations between dental students’ autonomous
motivation and behavioural and affective outcomes,
effecting the reverse pattern for controlled motivation.
Summary of Work: A cross-sectional study was conducted
collecting data on demographics, motivation, behavioural
outcomes (Deep/Surface study strategies and
performance) and affective outcomes (Self-esteem and
vitality) from 941 Chilean undergraduate dental students.
A regression analysis was conducted by integrating all
variables in one structural equation model, controlling for
gender and year of study.
Summary of Results: The model fitted well the data and
all regression paths were significant (except Controlled
Motivation—Vitality, p=.06). Autonomous motivation
positively predicted self-esteem and vitality, and positively
and negatively predicted deep/surface study strategies,
respectively. The reverse pattern was shown for controlled
motivation. Additionally, deep/surface strategies positively
and negatively predicted academic performance.
Discussion: Students experiencing autonomous
motivation showed positive behavioural and affective
outcomes, whereas students experiencing controlled
motivation showed negative educational consequences.
Thus, it is not enough to be motivated to derive positive
educational outcomes. what is needed is to be motivated
in an autonomous fashion.
Conclusion: This study has shown that different quality
types of motivation lead to different educational
outcomes. These findings enhance our understanding of
motivation in dental education, highlighting the
importance of creating an environment that supports
students’ autonomous motivation as opposed to
controlled motivation, which can contribute to students’
development and wellbeing.
Take-home Message: Quality of motivation should be
considered in students’ learning experience. Essentially,
ways of encouraging autonomous motivation and
reducing controlled motivation should be taken into
account. This may result in students engaging and valuing
academic activities, which is expected to contribute
towards them becoming better practitioners and
therefore to increase patient-safety.
#9HH05 (2596)
Perception and Involvement of Medical Students in Extracurricular Activities

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**Background:** Extracurricular activities (ECA) play a vital role in student development in all stages of their schooling years. This study explores relationships between pre-clinical students’ participation in ECA and their characteristics (gender, year, nationality, academic performance), and investigates the students’ perceptions (motives and barriers) towards participation in ECAs.

**Summary of Work:** An online, anonymous, self-rating survey was administered to second-year and third-year medical students (n=350). Major factors that influence students to engage in or be deterred from participating in ECA, and impact on their academic performance, were collected. Two tailed chi square was used to correlate between participation and characteristics.

**Summary of Results:** 143 students (60.3%) participated in ECAs, and this percentage significantly differed by gender (p<0.037656), nationality (p<0.000015) and academic performance (p<0.0000024). The top two motives were: “improve resume” (83.5%) and “improve networking skills” (82.2%). The top two barriers were: “lack of time” (61.2%) and “lack of equal opportunities” (57.8%).

**Discussion:** Female students were less engaged than male students due to lack of equal opportunities. Non-Saudi students participated more than Saudi students, and this may be due to non-Saudi’s needing to improve their resume for residency matching opportunities abroad. If done in moderation, ECAs boost academic performance.

**Conclusion:** Many students at Alfaisal University engage in ECA to boost their CV’s and strengthen their networking skills, rather than for recreational desires. While many of those not involved in ECA cite time restraints, academic work-load, and lack of opportunities as their primary deterring factors.

**Take-home Message:** A majority of students report no negative effects on academic performance when actively engaged in ECA. Medical schools in the region must highlight the importance and various benefits of ECAs for the growth of its participating students.

#9HH06 (2030)
Student’s Engagement at FMUL as a road to Excellence. Students’ and teachers views according to ASPIRE criteria

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**Background:** It’s now world accepted that medical education basic-standards are necessary but not sufficient to comply with current challenges when training future doctors. The AMEE-Aspire-initiative was created in 2009 to recognize/reward Excellence in teaching with ‘Student engagement in the school and curriculum’ being one area where criteria for Excellence were defined.

**Summary of Work:** A questionnaire based on ASPIRE criteria was sent to all FMUL students/teachers to compare their views on the level of students’ engagement and the views from students/teachers integrating/having integrated in school boards versus other students/teachers. The aim was also to identify the strongest/weakest areas to drive changes at FMUL.

**Summary of Results:** Results (n=450) are globally positive showing no differences between groups in most criteria (research program/participation in meetings/x̅=6.53), teaching/assessment delivery/ x̅7.05, local community/service delivery/x̅8.61) except in one criterion (structures/processes (x̅4.65) with teachers’ perceptions being higher (p<0.02). Both groups agree the top weakest areas are involvement in staff promotion and staff development.

**Discussion:** Contrarily to our expectations, the perception of students’ involvement appears to be independent of being a student or a teacher as well as integrating or having integrated a Faculty board. However, one exception was reported, related to an aforementioned criterion, which curiously scored the lowest.

**Conclusion:** The top strongest and weakest areas identified by the questionnaire may guide the changes at FMUL. The fact that globally, no differences exist between stakeholders may facilitate the implementation of changes because if teachers and students have identical views we expect they also would have similar goals when driving changes.

**Take Home Message:** The ASPIRE initiative is a powerful guide to help schools to reach a higher level of Excellence regarding their students’ engagement. Despite the good overall ratings given by teachers and students, the fact that only 407 students replied is per se an indicator that more needs to be achieved at FMUL.
Background: In the era of knowledge explosion, student engagement and learner-centered teaching grow in popularity in education. However, it is often overlooked in medical education. To promote student engagement and enhance student entrustable competencies in our school, this study explored the problems and expectations of medical education from students' perspectives.

Summary of Work: To realize the opinions from students and teachers, a questionnaire including important factors of the class, self-expectation of the students, entrustable capacities that students need, and one open question for recommendation in medical education was applied. Totally, questionnaires from 296 students and 110 teachers in a medical school were collected.

Summary of Results: Both teachers and students recognized that important factors of classes include comprehensible lecture, student motivation, and basic-clinical connection (83.99%, 62.56%, and 54.43% respectively). Although 58% of students considered they should learn extensively by themselves, only 24% of students achieved the goal. Finally, technology-assisted instruction is recommended to efficiently promote learning.

Discussion: Comprehensible lecture is the most essential factor of a class. Possible reasons for discrepancy between students’ self-expectation and achievement might be lack of motivation and recognition gap between students and teachers regarding course design and progress. Additionally, technology-assisted instruction provides excellent prospects to support students’ active learning and competency development.

Conclusion: In agreement with Professor Elizabeth F. Barkley suggesting that student engagement is the product of motivation and active learning, our study indicated that comprehensible lecture is crucial and technology-assisted instruction could be a helpful strategy to facilitate student engagement and promote student motivation in medical education.

Take-home Message: From students' perspectives, our study suggested the importance of comprehensible lecture, raised the discrepancy between students' self-expectation and achievement, and proposed advantages of technology-assisted instruction. Accordingly, we emphasized that motivation and active learning are essential factors in student engagement.
#9HH09 (1578)  
The Calgary Guide To Understanding Disease: Teaching Medicine More Effectively  
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**Background:** How and why a disease manifests as it does can be challenging for medical students to truly understand. Traditional medical education resources often emphasize either rote memorization of lists, or overly-detailed knowledge beyond the medical-school level. Without access to simple, straightforward explanations, students risk not fully learning essential medical concepts.

**Summary of Work:** Since August 2012, Calgary medical students have been developing a free, open-access resource that helps students truly understand the manifestation of disease: the Calgary Guide to Understanding Disease (www.thecalgaryguide.com). It consists entirely of flow-charts, written in plain language, explaining pathophysiology in a step-by-step manner to minimize confusion and maximize learning.

**Summary of Results:** In four-and-a-half years since its online release, The Calgary Guide has been accessed over 1.6 million times by medical learners in over 150 countries around the world (Google Analytics data). Daily user count ranges from 300-500. Over 200 Calgary medical students and faculty members have contributed to the work.

**Discussion:** In a survey of first-year Calgary students, 88% of respondents found The Calgary Guide a “valuable learning tool” (n=77). By delivering educational content in a concise, easily understood way, we help students save time, reduce stress, and better learn medicine - thereby making them stronger, more confident future clinicians.

**Conclusion:** The Calgary Guide, and its philosophy of teaching medicine through simple language and step-by-step pathophysiology, can be transformative to improving medical education. Learners now no longer have to choose between rote memorization of all topics and overly-specialized learning of a few. The Calgary Guide offers a useful, non-overwhelming middle-ground.

**Take-home Message:** Globally, there is a need for medical education to be simple, coherent, pathophysiology-based, and clinically-relevant. The Calgary Guide to Understanding Disease meets this need by focusing on providing clear, step-by-step explanations in plain language. Such concepts can be effectively applied by medical educators everywhere in the teaching of their students.

#9HH10 (3043)  
Development of student-engaged clinical learning guideline: it is not a bed of roses.  
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**Background:** Transition to clinical learning environment could be very stressful since students are always confused of what-to-do and what-not-to-do, which may lead to teacher-student conflict. Student engagement committee at Chulalongkorn medical school, thus, initiated “Clinical Learning Guideline (CLG)” project, hoping to alleviate this problem.

**Summary of Work:** The CLG first draft was written by 12 role model students and reviewed by an intern, residents and teacher representatives from 4 departments. Its content was extracted and arranged into a questionnaire with 48 department-specific and 19 common items. Year 4 students’ perception of their importance and enforcement was evaluated.

**Summary of Results:** There was extensive heterogeneity of the 67 CLG statements in terms of how rational they were for the respondents. The rationality of the same CLG statements was perceived variously, depending on the departmental context. Of the 19 common CLG statements, seven were believed to be differently enforced among the departments.

**Discussion:** Discrepancies found in this study confirm why clinical students were confused as there has yet to be consensus between departments. Moreover, student’s strong disagreement on some CLG statements is a warning that, those statements must be carefully communicated on their rationale. If left without convincing explanation, student’s violation is imminent.

**Conclusion:** Our process of developing a clinical learning guideline seems not to be finalised in the near future. It has shown us how much communication between clinical departments and between teachers and students is needed.

**Take-home Message:** Developing a clinical learning guideline is a challenging task. It requires tremendous effort and effective communication with various stakeholders. It is definitely not a bed of roses.
#9HH1 (591)
**Student Engagement in Developing Web-Based Formative Assessment**

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**Background:** Chulalongkorn medical school has policies to promote student engagement and to provide students electronic resources anytime and anywhere. In 2016, second-year medical students developed 'ACcumulate', the website to promote self-assessment, underpinned by 'test-enhanced learning' theory. This research aimed to study users' behaviour and its correlations with examination scores.

**Summary of Work:** We used HTML5, JavaScript, CSS and Firebase to develop 'ACcumulate', which contained 446 MCQs. Its distinctive features include: returning to unsure items, score records of all previous test-takings, and feedback with detailed explanation. Users’ activities were monitored and analysed. Their appeals against answer keys and feedbacks were also collected.

**Summary of Results:** 139 participants (47.4%) used the website for 2276 times. 53% of the access were performed during 17.00-01.00 with significant increase in the last 2 days before examination. There were 90 appeals against answer keys and feedbacks were also collected.

**Discussion:** This introduction of web-based formative assessment received less-than-expected attention, probably due to students' familiarity to paper-based format. Lots of medical student learning happened during out-of-office hours; and our website accordingly served their learning. Several appeals indicate significant student participation which could lead to more engagement in the future.

**Conclusion:** We, medical students, have designed ‘ACcumulate’ - a tool for our classmates to assess their own knowledge. We plan to conduct a survey so that the result will be used for further development as we hope that ‘ACcumulate’ would be the students’ first choice of formative assessment of our faculty.

**Take-home Message:** Web-based formative assessment is an educationally sound technology to promote student learning outside classroom. It is, too, a practical strategy to enhance student engagement by involving them in the process of designing, managing, and evaluating the website.

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#9HH2 (2263)
**Value of engaging students to provide feedback**

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**Background:** Peer-assessment may enhance students’ metacognitive skills, their understanding of the grading process and ability to evaluate others. However, students may either under-grade or over-grade assignments. The objectives of this study were to compare tutor vs. students grades for MBBS group oral presentations and to assess the quality of oral presentations.

**Summary of Work:**  • All tutors and MBBS Year 3 students (N=210) received the grade descriptors to guide the oral presentation marking in following categories (1) content, (2) audiovisual material, (3) presentation and communication and (4) self-reflection.  • Quantitative data analysis was used to compare peer assessment in each category and overall.

**Summary of Results:** The peer assessment grades were higher than the tutor grades in all categories for 13 groups (p<.001). The maximum grade difference was 10.76% for the overall group score. Only 3 out of 110 graded items were under-graded (2.72%). 85.7% of groups achieved a distinction.

**Discussion:** Through peer assessments, students could learn strategies how to improve their own work; however students inclined to give higher marks than tutors during the peer assessment process. Further analysis is needed to determine if higher marks correspond to over-grading.

**Conclusion:** The study found differences in grading between tutors and peers with the peer assessments scoring higher in majority of graded items. Despite these discrepancies, presenting groups achieved a distinction for their oral presentation showing a very good quality standard of their work.

**Take-home Message:** Whereas results showed that grades assigned by students tend to be higher, students may benefit from peer assessment and learn how to improve their assignments to achieve a distinction in their group projects.
#9HH13 (2735)
Sharing a simple meal as a means to create a culture of Student-Faculty partnership in curriculum development

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Background: A continuous constructive dialogue between faculty and students is central for course development. However, it is often difficult to gather information in a way that secures reliability and validity. Digital evaluations often suffer from low response frequency and do not always yield qualitative, useful data that results in changes.

Summary of Work: In the Medical programme, we invite 6-8 students several times per semester, for lunch with the Faculty. These students bring questions and reflections to the table; thus achieving fora for the discussion of positive experiences and points of view to be improved. The students give feedback back to their peers.

Summary of Results: Faculty as well as the students state the lunches as most valuable for constructive discussions. The students feel that they have the ability to influence the course design, and the Faculty testify of a student interactive participation in course development. Furthermore, the arrangement facilitates a culture of dialogue and reflection.

Discussion: Student lunches were introduced when the Medical School at Örebro University started 2011, as one way to assure continuous feedback from these pioneer students. Apart from the impact on course evaluation and development per se, students as well as Faculty learn from each other and become more prone to cooperate.

Conclusion: The information gathered at student lunches are most actively taken into account when the formal course evaluation is set. Both students and staff consider it to be a valuable complement to data from digital surveys. Furthermore, a culture of interaction and shared partnership is formed between students and Faculty.

Take-home Message: The importance of creating a culture supporting shared partnership for students and faculty should not be underestimated at Higher Education. One way to create this culture is the arrangement of relaxed fora for mutual exchange of experiences between students and faculty while sharing a simple meal.

#9HH14 (279)
Classroom Strategies to Enhance Student Engagement and Learning: Examples from a Global Health Course

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Background: There has been an increasing interest in utilizing educational strategies which shift the focus from passive learning to student-centered active learning. Such strategies include audience response systems, videos, interactive discussions and use of online resources. These strategies improve students’ critical thinking skills, interactivity with peers, enhanced learning and student engagement.

Summary of Work: The study surveyed premedical students taking a global health course at Weill Cornell Medicine-Qatar in 2015. Interactive class discussion, clickers and video-facilitated learning were introduced during didactic sessions. At course conclusion, a survey consisting of open-ended questions was used to assess teaching effectiveness, student learning, engagement and participation.

Summary of Results: The study results of the survey revealed students’ overall satisfaction with active learning pedagogy. The vast majority of participants agreed that the use of videos during lecture discussions (90%), interactive class discussions (82%), and clickers during question and answer sessions (89%) improved their engagement and learning.

Discussion: This study demonstrates the usefulness of active learning strategies in a high impact undergraduate medical education learning environment. It shows that the integration of interactive class discussion, clickers and video-facilitated learning in a traditional method of teaching enhances participation, improves learning, and provides a collaborative platform for discussion and engagement.

Conclusion: The study establishes that students favor the use of active educational strategies compared to the passive teacher-centric methods of teaching. A student-centered approach that utilizes active learning also builds a community of learners who learn to negotiate, collaborate in groups and teams, and communicate their thoughts effectively and confidently.

Take-home Message: The use of active learning strategies should be encouraged in classrooms to enhance student participation and learning. However, instructional strategies should be commensurate with the learning profile and educational background of students. Additionally, instructors should stay up-to-date on active learning strategies to understand how learning has transformed for the millennials.
#9HH15 (947)
Student engagement and perception of e-resources developed to support and enhance learning in pain medicine and management

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Background: A good grounding in pain assessment and management is essential for future doctors, as most doctor-patient interactions involve discussions around pain. It is crucial therefore that pain medicine and management is covered appropriately and sufficiently in medical curricula. Changes to the curriculum at Cardiff University are discussed.

Summary of Work: E-resources in the form of interactive workbooks and virtual patients were introduced in year one to support and enhance students' learning. These e-resources will subsequently be revisited throughout the spiral curriculum, as the focus moves from basic science in the earlier years to clinical practice in later years.

Summary of Results: 60% of year 1 students rated the virtual patient included in their first case-based learning experience as a valuable e-resource. Only 69% of the cohort however engaged with the e-resource, suggesting that those students who did engage with the e-resource perceived this as having enhanced their learning.

Discussion: Tracking of student engagement revealed that just over two thirds of the cohort accessed the virtual patient e-resource. Feedback collated on various components of this case also assessed students' perception of the e-resource, and suggested that student satisfaction with the available resources was related to degree of engagement.

Conclusion: Student perceptions of learning, particularly in relation to self-directed learning, is influenced to a large degree by their engagement with supporting e-resources that are made available to them. Those who engage are more likely to report that these e-resources enhance their learning and contribute to their understanding of the material.

Take-home Message: With most medical curricula moving away from pure forms of traditional didactic teaching, the availability of online material is crucial in supporting students in their self-directed learning. Students' perceptions of their learning is influenced by the degree to which they engage with supporting material in case-based curricula.

#9HH16 (1520)
Empowering Curriculum Reform with Student Voices through Effective Evaluations

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Background: With an increasing focus on the students' voice and satisfaction in faculty development, course evaluations play a pivotal role in bringing students' voice into the discussion. This project explores students' views towards course evaluations in our medical school, and how this affects the dialogue between students and the faculty.

Summary of Work: A qualitative study with in-depth interviews was conducted. 20 preclinical medical students from the Chinese University of Hong Kong were invited to each take part in a 30 to 45-minute interview. Interviews were conducted in Cantonese or English, audiotaped, then transcribed and analysed for relevant themes.

Summary of Results: Students have detailed comments on how to improve the current evaluation form. Most students question whether their opinion was valued, some suggesting more transparency over the end results of evaluations. Other alternative forms of evaluation was also proposed, such as online evaluations, and evaluations hosted by class representatives.

Discussion: There is room for improvement in the communication between students and the faculty. Students welcome higher involvement in curriculum development, but they feel insecure to voice up when they doubt whether the faculty welcomes their input. Additional alternative methods to collect feedback may be beneficial to overcome such shortcomings.

Conclusion: Students are mostly eager to provide more in-depth evaluations, yet this is mostly limited by questions on evaluation forms and how evaluations are executed. Students also lack interest in evaluations since they cannot see the faculty's responses to evaluations, as they would like their concerns addressed after evaluations.

Take-home Message: Students can only deliver their thoughts and enhance medical education with appropriate evaluation tools. Faculties should then always remain open-minded and explore different modalities of evaluations. With a well-established channel of communication, students can express their thoughts and actively contribute to faculty development and curriculum reforms.
**#9II Posters: TBL**

**#9I01 (1694)**

Medical record review and TBL make intern conference more interesting and valuable

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**Background:** There’s many active learning to help interns gain essential skills. At our hospital case based learning is often used in intern conference to improve critical thinking and decision making in daily practice. Changing learning method to medical record review and team based learning (TBL) in conference was investigated by staffs.

**Summary of Work:** In intern conference, 21 interns reviewed medical record and found 39.8 % unreasonable prescription of antibiotics for acute diarrhea (ICD-10 code A09.9). After learned acute diarrhea using TBL and medical record as case scenario; staffs challenged interns to solve this problem. Then questionnaire was used to evaluate Intern’s opinion.

**Summary of Results:** 77.8 % of interns concluded that medical record review and TBL are more interesting, effective and want to use these methods in next conference. By product of solving irrational drugs use in acute diarrhea, they can created flowchart for approach acute diarrhea.

**Discussion:** Changing learning method to medical record review and TBL in intern conference is effective as case based learning and can solve clinical problem in daily practice. Moreover interns were engaged and discussed happily in conference.

**Conclusion:** Medical record review and TBL improve intern’s critical thinking, decision making and create something valuable such as flowchart for solving daily medical problem.

**Take-home Message:** Medical record review and TBL are useful learning method in intern conference.

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**#9I02 (997)**

Comparison of Team-Based Learning with Online Tools and Conventional Lecture for Summative Evaluation Scores

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**Background:** Team-Based Learning (TBL) is a fairly new teaching approach. In contrast to lecture, its efficacy depends on student responsibility and preparation. We conducted the study to determine whether student performance on summative evaluation is affected by classroom teaching with TBL versus lecture, and which factors can produce higher summative scores.

**Summary of Work:** Fifth-year medical students learned through lecture in 2015 and TBL in 2016. Readiness Assurance Tests (RAT) in TBL were administered online via Google Form. Both methods have similar learning objectives and duration (90 minutes). Characteristics of students and assessment scores for the content of learning and overall comprehension were analyzed.

**Summary of Results:** No differences were found in baseline characteristics and summative MCQs scores between TBL and lecture groups, 32 and 27 students respectively. Individual-RAT (iRAT) scores (r=0.58) and attitude scores (r=0.44) related to the final MCQs scores. After adjusting confounders, higher iRAT scores predicted higher than average final scores (OR=3.4, 95%CI=1.28-9.05, p-value=0.014).

**Discussion:** Both methods have the same efficacy in terms of final MCQ scores, but TBL research showed other benefits such as better student engagement. We found a tendency of increased MCQ scores in students with good attitudes and high iRAT scores. Both of these reflect preparation and interest in learning.

**Conclusion:** TBL and lecture based learning; each, resulted in insignificantly different summative assessment scores. Students with higher attitude scores and better pre-classroom preparation, reflected through higher iRAT scores, have a tendency to get higher final summative assessment scores.

**Take-home Message:** We should encourage more TBL. In TBL classrooms, iRAT score can identify students who tend to have better final examination assessments. Therefore; students with lower iRAT scores should get more attention from teachers’ encouraging and helping them to improve their learning and understanding difficult concepts.
#9II03 (51)
Evaluation of Team-Based Learning on Students' Accountability, Satisfaction, and Performance in Traditional Chinese Medicine Nursing

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Background: Team-Based Learning is considered as an effective strategy to improve student's learning accountability and performance in nursing education. No study used TBL in Traditional Chinese Medicine(TCM) Nursing in Taiwan. This study tried to evaluate the influences of TBL on students' accountability, satisfaction and performance in a TCM Nursing course.

Summary of Work: A single group pre-post test research was designed. Thirty four nursing students who elected the "TCM Nursing" course were recruited purposely from a medical university in Taiwan. Six-hour TBL sessions were given following the TBL sequential procedure. The TBL-SAI, IRAT, GRAT and final exam scores were measured.

Summary of Results: Results indicate significant changes in the scores of students' learning accountability and satisfaction within before and after TBL intervention. Both of the GRAT and individual final exam scores were significantly higher than the IRAT score. The students' accountability, satisfaction and academic performance significantly correlated among each others.

Discussion: Traditional Chinese Medicine Nursing course has been an indispensable course for meeting the specific culture and health care needs of Taiwanese. For long, TCM nursing have been taught with the passive learning or mentoring system. TBL provides an innovative solution for substituting the traditional teaching model of classroom instruction.

Conclusion: TBL is a highly structured educational strategy that improves students' learning accountability, satisfaction and academic performance in the TCM Nursing course. TBL may also build the professional skills such as communication, negotiation and collaboration that may apply in TCM Nursing and TCM Nursing practicum course as well in the future.

Take-home Message: Overall, we conclude that hybrid Team-Based Learning, as a flipped teaching model, may facilitate student's learning accountability and enhance academic performance in Traditional Chinese Medicine Nursing course. A bigger sample size and more randomized control trial design studies will be strongly suggested in the future.

#9II04 (2255)
Team based learning (TBL) in Flipped classroom model: engaging and empowering nursing students in CNS Pharmacology learning.

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Background: Pharmacology is perceived as a difficult course by nursing students1. Challenges lie in retention and application of drug based knowledge in actual clinical case scenarios2. This study reports the impact of TBL on knowledge, application and analytical skills in selected modules of clinical pharmacology.

Summary of Work: Seven out of sixteen modules were selected to be conducted with TBL. The students completed preparatory material ahead of class uploaded as “learning resource” on Black board system ©1997-2016 Inc. Retention of knowledge for key concepts was assessed in summative class quiz and clinical internship rounds on rubric score sheet.

Summary of Results: Individual student participation and short term memory retention was higher in TBL group (68%) compared to control group (32%). Clinical internship performance was significantly higher in TBL group. Difficulty index in summative quiz indicated point biserial ranging from 0.34 (77% correct) to 0.25 (96.77% correct) for TBL content.

Discussion: Andragogy has affected traditional pedagogy in direct and indirect manner. Hence it is important to keep abreast and apply innovative educational approaches in order to incorporate effective practice based learning in nurse education. Pedagogical methods of teaching fosters dependency whereas small group active learning models have gained popularity over time.

Conclusion: TBL has effectively increased knowledge retention and clarity of CNS pharmacology concepts. Swiftness of correct response was assessed to be higher in TBL model during clinical assessment.

Take-home Message: Learning motivation and numerical score satisfaction is associated with innovative models of leading in small groups with active participation on behalf of both the learner and the educator.
Relationships between different elements of Team Based Learning and students approaches to learning: A mixed-method study

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Background: Team Based Learning (TBL) is used more often in medical education. TBL is assumed to enhance a deep learning approach. Currently it is unknown how specific elements of TBL influence the students’ approach to learning. This study addressed how the various elements of TBL were related to the learning approach.

Summary of Work: A sequential explanatory mixed methods design was used, involving the R-SPQ-2F questionnaire to measure the students’ approach to learning and a questionnaire to explore students’ perceptions of the various elements of TBL (N=71). Additional qualitative data were collected with open-ended questions and two semi-structured focus group interviews (N=8).

Summary of Results: Linear regression analysis showed that the quality of the application exercises used during TBL was the strongest predictor (B=.62; p <.001; R2=.39) for a deep learning approach. Quality of the application exercises was influenced by self-study time, content and format of the assignment and teacher facilitation.

Discussion: The study took place in a setting where TBL was recently implemented within the first year. Another limitation was the limited response rate for the questionnaire data.

Conclusion: High quality application exercises are crucial to facilitate a deep learning approach. Designing application exercises that stimulate a deep discussion within teams is challenging as well as how to integrate TBL-sessions with other instructional formats used within the curriculum. More research is needed on designing effective application exercises.

Take-home Message: TBL is a teaching format that is nowadays used within several medical schools in order to facilitate deep learning. The construction and facilitation of effective application exercises is essential for the success of TBL.

Perceptions of Medical Students' Learning Experience and Instructors' Self-evaluation in Team-Based Learning: Through a Quantitative and Qualitative Lens

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Keh-Min Liu

Background: Team-based learning (TBL) has been incorporated into integrated basic and clinical science courses. However, there is little research on investigating longitudinal data through a quantitative and qualitative lens. This study aims to compare the perceptions of medical students’ learning experience and instructors’ self-evaluation between the first-year and second-year TBL programs.

Summary of Work: Questionnaire surveys were compared with medical students' responses (N=173, Y2015; N=171, Y2016) to the Questionnaire on Learning Experiences in TBL (QLETBL). Medical students' written responses and TBL instructors' interviews were coded. Before the 2016 TBL program, we implemented improvement interventions with faculty training, instructor guide, and teaching materials review system.

Summary of Results: Mean (±SD) scores (a five-point scale) were significantly higher in 2016 on the factors of Learning Enhancement by Instructional Design (3.53±.77 vs. 3.32±.75, p<0.05) and Integrative Learning Experience (3.58±.81 vs. 3.37±.82). Qualitative analysis demonstrated improvements on time management, TBL scheduling, level of difficulty in content, and ways of running TBL.

Discussion: Medical students advanced their learning experiences from instructional designs and higher-order thinking in the second-year TBL course. It needs further investigation to explain the lower scores in self-directed learning. Instructors concerned about practical issues in TBL course design and implementation.

Conclusion: Medical students have improved their learning skills through two-year TBL programs. Instructors encountered the challenges when designing and running TBL.

Take-home Message: TBL programs could exert positive learning experiences for medical students and instructional challenges for instructors. Medical students’ perceptions of TBL learning experiences provide valuable feedback for developing effective programs. Faculty training and intervention strategies are crucial for better instructional design and learning outcomes of TBL.
#9II07 (1231)
Impact of student’s assessment of TBL to active learning and final examination results in medical biology

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Marcela Klabanova, Diana Lucina, Prague, Czech Republic

**Background:** The TBL became one of the most popular teaching methods among students in Medical Biology. For assessment of TBL, we use a feedback model based on written survey. Our goal was to identify changes in awareness to motivate students and to correlate the TBL assessment and final examination scores.

**Summary of Work:** 182 medical students participated in TBL class in practical works (molecular genetics) in 2016. In the end of the course students completed a survey that analyzes their opinion. We analyzed relationships between the students’ TBL assessment and individual exam results in final exam.

**Summary of Results:** The general TBL assessment, teamwork awareness, and students’ motivation are closely related to individual exam scores (p<0.01) in the final exam. The TBL evaluation is less related to the number of exam attempts (p<0.05).

**Discussion:** Generally both groups, Czech speaking students and foreign students, were satisfied with the TBL sessions.

**Conclusion:** Students’ exam success was closely related to positive assessment and awareness of TBL. The foreign students appreciated motivation to learn and opportunity to collaborate above all, the accent of Czech students was on class performance in the first place.

**Take-home Message:** Our feedback model allows us to verify usefulness of TBL and to improve our pedagogical attitude although the same course may need a different approach.

#9II08 (305)
What do medical students find useful to help them learn clinical problem solving?

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Esther Yu
Julie Chen
Karina Chan

**Background:** Problem-solving is an essential clinical skill which medical students find challenging, particularly in Family Medicine settings where patients present with a range of undifferentiated problems. This study compared student perceptions of two interactive classroom activities to examine which features were most useful in helping students learn to problem solve.

**Summary of Work:** All year 4 medical students (n=210) participated in two workshops. Workshop A used Team-based Learning (TBL). Workshop B used role-plays with surrogate patients (SPs). Workshops were case-based using primary care clinical scenarios. Students completed a survey on classroom engagement and provided written feedback on which workshop they preferred and why.

**Summary of Results:** 201 and 178 surveys were returned after Workshop A and Workshop B. There was no significant difference in classroom engagement scores. 22.1% preferred TBL whilst 77.8% preferred role-play. Students liked the pre-reading, small-group brainstorming and gaming aspects of TBL; and the history-taking practice using role-play with provision of model answers.

**Discussion:** Beneficial features of TBL included appropriate pre-reading for knowledge acquisition, small-group brainstorming to broaden their thinking, and gamification for engagement. Beneficial features of role-play included having a broad range of cases for history-taking and problem-solving practice and a step-by-step dissection of model answers to better understand the problem-solving process.

**Conclusion:** Although the learning in TBL and role-play were both equally active in terms of student engagement, more students preferred role-play because it allowed them to practice both the skills of information gathering as well as problem-solving. Explanation of model answers helped students to grasp the conceptual processes involved in problem-solving.

**Take-home Message:** To make TBL more effective, application exercises need to be well designed and sufficiently challenging to stimulate team discussion of the best solution. Dissection of model answers and discussing the rationale for the best answer is useful in helping students understand the decision-making and prioritizing steps involved in clinical problem-solving.
Combination of team base learning and flipped classroom to effectively teach ECG knowledge for medical students

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Background: Flipped classroom (FC) has been applied to teach electrocardiography (ECG) interpretation in our medical school for 3 years with higher satisfaction rate (SA) and better student academic performance (SAP) than traditional lectures. However, during in-class activities, we found that it is difficult for students to present their own opinions and discuss with other students.

Summary of Work: Since September 2016, we have applied the team-based learning (TBL) model to ECG interpretation FC class for fourth-year medical students. Students were randomly assigned to FC or TBL groups. The core modules in TBL contain a pre-class individual quiz, grouped readiness assurance test (GRAT), appeals, discussion, feedback, mini-lecture, and application (final test).

Summary of Results: The SAP significantly improved after TBL (55.96±14.83 vs. 87.45±10.41, p<0.05). Students performed better in TBL group than FC group in the pre-class and in-class tests. The SA mildly increased in TBL group compared to which in FC group (91.78±11.24 vs. 89.14±12.69, p=0.38).

Discussion: FC would reverse traditional information-transmitted lectures into learner-centered active learning. The addition of TBL, an active learning strategy, provides more discussion, cooperation, peer-pressure, and higher-level problem thinking and solving, and eventually suggested significantly improved SAP. Besides, TBL could bring out more innovation in learning engagement and teaching efficacy.

Conclusion: With higher participation, the combination of peer pressure and peer evaluation with “enough teeth” motivates students to high levels of contribution in TBL model. The utilization of TBL does facilitate FC to teach ECG knowledge by pre-class preparation, individual quiz, GRAT, feedback and final tests for application of key concepts.

Take-home Message: Combination of TBL and FC models to ECG interpretation class may be an innovative and promising method for medical students with multidimensional advantages.

Is Team-based Learning (TBL) an effective strategy in undergraduate blood transfusion training?

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Ashley Hawarden, Keele University, Stoke-on-Trent, UK
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Background: The 2015 Serious Hazards of Transfusion report states 34.2% of adverse incidents related to transfusion are due to mistakes. Education is key and current methodologies are suboptimal (Graham et al. 2016). Team-based learning is a small-group teaching methodology which has not been applied to undergraduate transfusion training in the UK.

Summary of Work: A single team-based learning session in blood transfusion, following the General Medical Council requirements, was designed and delivered to senior medical students. Students multi-choice question (MCQ) scores within the readiness assurance testing were collected alongside a Team-Based Learning Student Assessment Inventory (TBL-SAI) which assesses the student experience.

Summary of Results: Pilot data taken shows a significant improvement in MCQ scores (6.6 vs 5.4, p=0.04, t(6) = -2.11) with students giving positive feedback on the session as a whole. This is being explored further utilising the TBL-SAI, the results of which will be presented on the day.

Discussion: Although this is ongoing, from the data gathered so far, team-based learning appears to be effective at encouraging knowledge retention at least in the short term. Students find the interactivity and variety in this type of session useful to their learning and tutors feel the session efficient to deliver.

Conclusion: Data gathered so far supports the idea that team-based learning has utility in the undergraduate medical curriculum for transfusion training. Transfusion training can be delivered succinctly in a single session with students engaging well and receiving a demonstrable benefit to their knowledge.

Take-home Message: We hope to demonstrate that Team-based learning is a successful methodology to deliver transfusion training in an undergraduate session.
The improvement of learners' motivation with "blended" team-based learning: an action research project.

Ikuo Shimizu, Shinshu University, Matsumoto, Japan
Tsuyoshi Tada

Background: In team-based learning (TBL), learners are engaged in learning contents with preparation for readiness assessment tests and its application to group assignments. Since the blended learning environment meets the needs of a diverse population of learners, it is considered that its implementation into TBL may increase learners' motivation.

Summary of Work: This study aimed to design a blended learning strategy in a TBL-style embryology class to increase learners' motivation. Action research was chosen for examining the spiral development process in three student cohorts (n=226). The research data consist of the Course Interest Survey (CIS) to measure learners' motivation and open-ended questionnaires.

Summary of Results: We provided online quizzes for preparative learning. Explanations are attached, which could be substitutes to a textbook. A discussion board for assignments was available during and after the class. The CIS revealed a statistically significant (p<0.001) improvement on the total score (from 2.73±0.57 to 3.55±0.56) during the investigation years.

Discussion: Quizzes in blended learning provide knowledge in a method that is not teacher-centred. Considering that learners' autonomy is associated with success in active learning, our blended TBL approach with online preparation can engage the class with higher motivation. Also, opportunities of additional discussions might improve learners' satisfaction of learning.

Conclusion: We revealed that blended learning with online quizzes improved learners' motivation in TBL. Further evaluation will be necessary with regard to more collaboration within groups and achievement of knowledge domain.

Take-home Message: The implementation of blended learning with online quizzes and a discussion board increases learners' motivation in a TBL class.

Perceptions among the first year nursing students on newly implemented team-based learning in Japan

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Yuko Katada
Kayo Kurihara

Background: Team-based learning (TBL) is a teaching format to promote active learning in health professions education. In our institution, TBL has been introduced for the first year nursing students. This study is to investigate perceptions among the nursing students on this newly implemented TBL.

Summary of Work: Team-based learning at our institution was designed as pre-class assignments, group discussion, group presentation, plenary discussion, and a wrap-up short lecture in each class. At the end of the course, an anonymous computer-based questionnaire was administered with 10 questions using a Likert scale (1 to 5) on the TBL.

Summary of Results: A total of 88 students were registered. All students (100%) responded to the questionnaire. Seventy students (79.5%) perceived the pre-assignments were useful. Over 50% understood the content. A total of 57 (64.8%) and 54 (61.4%) perceived group discussions and presentations very useful respectively. Sixty-four (72.7%) would recommend TBL.

Discussion: Our first year students were used to passive mass lectures since high school. They were very new to the active learning format. The majority perceived the new learning activities positively.

Conclusion: TBL was positively perceived and highly accepted among our first year nursing students. This format can be implemented further to promote active learning in our institution.

Take-home Message: TBL seemed promising to promote active learning in nursing students in Japan.
#9JJ Posters: Role of Patient, Simulated Patient and Student as Patient
Location: Hall 3 Foyer

#9JJ01 (547)
Reflections from the patient’s point of view: a comparison between the USA and Japan
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Puthiery Va
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Lisa Rucker

Background: Reflecting, usually done from the physician’s point of view, helps improve skills and behaviors. This study’s aim is to determine what problems physicians-in-training in the USA (U.S.) and Japan identified and what they learned when reflecting from the patient’s point of view on difficult patient-related interactions.

Summary of Work: A thematic analysis was conducted on 40 compiled narratives of reflective practice (NRP) from Internal medicine learners in a single center in the U.S. and Japan. The NRPs were analyzed using thematic categories that emerged. Descriptive and chi-square analysis was used to compare baseline characteristics and thematic categories between sites.

Summary of Results: Analysis reflected six themes regarding difficult interactions: Communication (U.S./Japan: 90%/85%), differing expectations (70%/50%), time (30%/60%), personal ability (15%/40%), healthcare system challenges (10%/5%), and the patient-doctor relationship (25%/5%). Lessons learned included empathy, self-awareness and willingness to change. Themes and lessons learned did not differ significantly between the sites, although trends emerged.

Discussion: Although not significantly different, U.S. participants emphasized difficulties understanding patients’ expectations and developing patient-doctor trust while Japanese participants noted lack of time. These differences may result from differences in cultures and systems. Both groups felt that reflection taught them lessons applicable to future patient encounters.

Conclusion: Reflections from the patients’ point of view led to physicians’ understanding of the cause of difficult interactions, clarifying gaps between patients’ and physicians’ thoughts and behaviors. Physicians-in-training in both countries reported they learned lessons that would improve future patient interactions, enhancing patient and physician satisfaction.

Take-home Message: Reflection can change physicians’ behavior. Unlike personal reflection, reflecting from the patient’s point of view can highlight the patient’s agenda. Physician reflection and willingness to change may improve physician-patient relationships, communication, and enhance care.

#9JJ02 (52)
Assessing shared decision-making skills of 3rd year medical students.

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Background: 70% of patients want to be involved in their care. Shared decision making (SDM) meets this need. Furthermore, it has a positive effect on patient: satisfaction, participation and adherence to treatment. Also, practising shared decision making diminishes overtreatment and decisional conflict in patients.

Summary of Work: We teach a 5-phase SDM model: 1. Start/goal 2. Informing 3. Deliberation 4. Preference. 5. Decision. Video recordings of students conducting SDM consultations were made, uploaded in Portfolio and assessed by teachers. Summative assessments: below expectations (4-5), meets expectations (6-7-8), and above expectations (9-10). Students both provided and received peer-feedback.

Summary of Results: A semi-structured rating list was developed to assess shared decision making skills of 360 medical students. The average assessment was 7.0. 24 students (7%) failed, whereas 22 students (6%) performed above expectations. The majority of students (87%) performed at ‘meets expectations’ level. All students fulfilled their reflective Portfolio assignment.

Discussion: Shared decision making skills are essential for good (clinical) practice. When practised effectively, SDM enables patients to choose a treatment option which best fits their needs and expectations. Practising SDM however, is a challenge for most clinicians. Therefore, SDM training should be implemented at different stages in their medical education.

Conclusion: Our 5-phase consultation model can be used to teach shared decision making skills. 3rd year medical students manage well with this model. Overall, they find the third phase ‘deliberation’ the hardest to carry out. We also conclude that shared decision making skills can be assessed using a semi-structured rating list.

Take-home Message: Shared decision making skills can be taught and assessed.
#9JJ03 (2841)

Research study ‘Learning about the Patient’s experience of illness’: Mentoring as a means of deeper learning

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Annie Cushing
Devina Raval

**Background:** Patients have always been a central part of medical education. In recent years, a more active role for the patient has been advocated through earlier contact during the course. This aims to develop non-technical skills. Direct and extended interaction with patients encourages learning to a deeper level through participation (Sfard,1997).

**Summary of Work:** This study investigated educational impacts of longitudinal patient health mentoring with second year medical students. It involved data collection through focus groups and interviews with participants undertaking a Selected Student Component about “Patient Health Mentoring” together reflective essay analyses. The SSC followed the journey travelled by patients with long-term conditions.

**Summary of Results:** Preliminary results reveal depth of learning around the concepts explored and changes in students’ appreciation of patient-centeredness. Data also suggests that a longitudinal patient participation program can enhance communication skills and empathy. Students noted how learning this way enhanced their perception of patients as a whole and not just diagnosis.

**Discussion:** The ways in which patients are involved in medical education varies largely. In order to promote lifelong excellence in managing patients, the method chosen by educators must be conscientiously evaluated. The project described the impact of patients taking on the role of teachers and discussing their personal experience of illness.

**Conclusion:** The fleeting interaction with patients on wards is not sufficient in understanding how illness affects them. Following the path of care for a patient allows the observer to see them as a person, and not just a patient. To truly achieve holistic care one must acknowledge this distinction.

**Take-home Message:** Patients are an invaluable resource in medical education. Educators are responsible for optimising the time they have with medical students effectively. A key aspect of doing this is the direct and personal interaction with patients early on in education (Towle,2015). These are essential traits for any healthcare professional.

#9JJ04 (1718)

A Singapore study to evaluate patients’ perceptions of having medical students as part of the healthcare team.

Lai Han Chow
Nicholas Wong
Derek Heng
Tang Ching Lau

**Background:** Patients’ willingness to allow medical students to be part of the healthcare team is vital for students’ clinical training. However, factors such as large student numbers & their lack of experience may evoke negative attitudes from patients.

**Summary of Work:** This is a cross-sectional study that relied on conducting face-to-face interviews with a random sample of patients admitted to the wards. The interviews were conducted by a trained research assistant between June 2016 and Jan 2017. The questionnaire contained 11 items, including patient’s attitudes, and their preferences of having medical students.

**Summary of Results:** 197 patients were recruited. Data collected show that 76.7% of the surveyed patients agreed that the medical students explained their condition and the medical care they received in a way they could understand; 88.2% felt that medical students treated them with kindness; 73.4% indicated interest to have a medical student.

**Discussion:** Patients were supportive of helping with training because of what they gained personally and what such training contributed to the medical system. We found the main reasons patients chose to have a medical student were that they could contribute to training new doctors and receive more opinions instead of 1.

**Conclusion:** The results showed that majority of the patients are receptive towards having medical students as part of the healthcare team providing care. They appreciate the value the students bring to their care.

**Take-home Message:** When patients are receptive towards students, this enhances the learning environment; enabling them to learn more effectively.
#9JJ05 (2402)
student reflective writing about outside-of-care meeting a patient

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Agathe Camus, Service commun de formation en Sciences Humaines et Sociales de l'Université Lyon1, Lyon, France

Background: Reflexivity plays a key role in patient-centered care. A sequence was devised with 3rd year students to develop their reflexive abilities. Students had to interview a patient with a chronic condition, to present this during a course, and finally to write an account -of any kind- about their experience.

Summary of Work: Course was not elective. Groups of 2–3 students interviewed 132 distinct patients. 4 criteria were used in evaluation: quality, coherence, finesse, originality. 15 out of the 332 individual texts stood out and were published (print and on a website). The whole corpus was screened using a lexicometric software (Iramuteq)

Summary of Results: Two main themes emerge: (1) the patient's experience with symptoms, diagnosis and life impact of their condition, (2) what the students learned. Note that they had to perform the interview out of the hospital (at home, at a café), i.e. as medical students and not as junior carers.

Discussion: Student engagement and satisfaction with this sequence was high. Texts were very diverse, usually with a highly personal tone. Qualitative analysis was challenging, but combining human lecture and software analysis provided a more quantitative view and emphasized how rich students production was.

Conclusion: This teaching sequence was highly appreciated. Its main originality lies in the combination of learning from real patients together with reflexive writing. The sequence seemingly displayed significant impact on students insight, which is highly valuable in a patient-centered care approach.

Take-home Message: Meeting patients outside of a medical context turned out to be an efficient trigger to an insightful reflection in students, about what being a patient means.

#9JJ06 (522)
Practicing for a dialogue with vaccine-hesitant parents: Pilot-testing an arts-based video case

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Juho Lehto, Faculty of Medicine and Life Sciences, University of Tampere, Tampere, Finland
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Background: This arts-based study concerns a challenging and urgent topic of vaccine-hesitancy. An artist-researcher has developed two interrelated tracks: 1. mapping health-beliefs that background parents' vaccine-hesitancy, and 2. developing a rich video case for medical education, based on the interviews with vaccine-hesitant parents and a reflection with a vaccine researcher.

Summary of Work: One third-year PBL group was recruited for this video case pilot-testing. The video and a written exercise create a mediated dialogue between a patient and a student, by employing the parents' authentic questions about vaccines. The authors compare the students' responses in a peer group and through writing.

Summary of Results: Most students respond differently to vaccine-hesitancy in the classroom than in their written homework. The classroom discussion simulates a hospital break room, in which physicians express their thoughts more freely. When addressed with the patient's questions directly as a doctor (homework), the student is likely to adopt a professional role.

Discussion: The parents' non-compliancy triggers frustration in many students. In a classroom this is vented with a tone of voice, and a withdrawal from the professional role, which may be absent in other clinical scenarios. It is important that the student learns to moderate the various roles they may respond from.

Conclusion: Arts-based approach can provide innovative ways to introduce the patient in the classroom. The authenticity of the case characters is important, as well as activating the students' professional role in an imagined dialogue with the patient. The students' responses to vaccine-hesitancy differ in a peer group and the writing exercise.

Take-home Message: Involving patients in video case production increases the authenticity of them. Certain clinical scenarios may benefit from an additional written exercise next to group discussion. The students welcome videos of patients they have less possibilities communicating with, such as mentally disabled and children.
Simulated medical consultations with standardized patients: In-depth debriefing based on emotions as a way to address professional identity formation and hidden curriculum

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**Background:** The undergraduate medical curriculum is often insufficient in providing appropriate environments for students to reflect on professional identity formation and on the future challenges of their profession. The consolidation of a professional identity committed to patients’ interests is challenging when students are not comfortable in their role as caregivers.

**Summary of Work:** Authors conducted a simulated medical consultation activity with standardized patients and an in-depth debriefing based on patient’s and student’s feelings. During each encounter, we discussed the development and consolidation of professional identity. Fourth- and sixth-year medical students (n=551) participated and answered a questionnaire about the didactic intervention and learning outcomes.

**Summary of Results:** Students felt an environment open to dialogue and free of judgment. Ninety percent reported they would apply what they learned in professional and personal lives, especially the abilities of understanding, listening, and dealing with conflicts. More than half were motivated to study, not only doctor-patient relationship, but medicine in general.

**Discussion:** Reflecting on disease and its impact on patients’ daily life may motivate learning in medicine, allowing for the recovery of the personal and social meaning of its practice. In-depth debriefing was important to nurture professional identity committed to empathy and patients interests.

**Conclusion:** Students reported a kind of rescue of the initial reasons that had driven them to the medical profession in the first place. It seems that didactic interventions planned to discuss the influence and importance of emotions in medical practice may help students to reconcile personal and professional identities.

**Take-home Message:** Medical students have few opportunities to address their emotions under the guidance of an experienced physician, which can undermine their self-confidence to deal with real patients in stressful situations. Emotional detachment and cynicism are defense mechanisms, which can emerge as a consequence.

Different perspectives on learning in a simulation with a standardized patient in undergraduate medical education

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Gudrun Edgren, Lund University, Lund, Sweden
Mats Lindström, Lund University, Lund, Sweden

**Background:** Simulations with standardized patients are used in medical education for training communication skills. There can be three different participators involved in the learning activity: learner, standardized patient and clinical teacher. The three individuals involved have different roles and thus presumably different perspectives on the activity.

**Summary of Work:** The aim of this study was to explore and describe different perspectives of the learning process in a simulation activity in psychiatry. Video recordings of standardized patient encounters were used as stimulated recall in semi-structured individual interviews with the participators. Transcribed interviews were analyzed using inductive and deductive content analysis.

**Summary of Results:** Three themes emerged. One theme was the authenticity, regulated by the actor (standardized patient) and the preparation by the supervisor (clinical teacher). Another theme was the students (learners) and their emotions during the simulation. The third theme was the participators different roles in the reflection after the simulation activity.

**Discussion:** The actor had a key role in the learning process. He/she regulated his/her responses so that the students experienced authenticity and were pushed to develop in the space between the professional role and the private person. The supervisor enhanced authenticity by preparing the students to create motivation and concentration.

**Conclusion:** The actor had a dominating role over the process and the actor’s responses to the actions by the student gave rise to emotions and reflections on the part of the student. The supervisor was disadvantaged in the reflection session by not being directly involved during the simulation activity.

**Take-home Message:** The simulations were perceived as valuable learning activities by the students. In the learning process, it is important to pay attention to the influences by the person who is portraying the standardized patient. The supervisor’s role could be developed and strengthened in being more directly active in the simulation.
Impact of personality traits and learning approaches of clinical skills evolution during a standardized-patients program

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Background: In our institution, SP sessions are designed implying they are equally beneficial to the student whatever his psychological profile, learning features (style, approaches and strategies). The aim of the study was to evaluate the impact of personality traits and learning approaches on clinical skills developed during a standardized-patients program (SPP).

Summary of Work: Year 3 students have been followed over 3 years. The SPP consisted in 5 half-days of 3 simulated consultations. Personality traits, learning approaches and clinical skills have been assessed by the Big Five Inventory (BFI), the Biggs questionnaire, the Maastricht questionnaire and a validated French score of clinical abilities, respectively.

Summary of Results: The statistical analysis included principal component analysis, determining subgroups with the same characteristics using an Agglomerative Hierarchical Clustering, a description of the subgroups according to the studied variables and a multiple linear regression according to the BFI and Biggs scores.

Discussion: Among the 111 included students, five subgroups have been identified with similar characteristics in terms of personality traits and learning approaches. The third group had the best results on clinical skills assessments.

Conclusion: The common personality traits of the students of third group were altruism, originality, open-mindedness and the fact that they all favored deep learning. Conversely, superficial learning, nervousness, neurotic trends and negative emotions found in two groups were associated with poorer performances.

Take-home Message: students who benefit SP sessions the more are altruist, open-minded and deep learners.

An Integrated standardized patient simulation program for international medical students-----a pilot study. Is it practical and helpful to the students?

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Ru-I Huang, Department of Family Medicine, EDA Hospital, Kaohsiung City, Taiwan  
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Background: Simulation is useful in creating student centered curriculums. It can provide a safe and controlled learning environment in first clinical year and let learners get more involved. There is a lack of organized integrated simulation course in clinical training and its efficacy and practicality have not been fully proved.

Summary of Work: We implemented an integrated simulation program for international students in 4-year graduate-entry medical courses of EDA hospital, Taiwan, during clerkship rotation in family medicine. It contained 30mins lecture, 15mins standardized patient simulation, 10mins mini-CEX feedback and ended with 5mins discussion. The program was revised monthly according to students’ qualitative feedbacks.

Summary of Results: 32 third-year students were recruited (2015.08~2016.06). 32 mini-CEX were performed by faculties with mean 4.05±0.33/6. 32 360 degree feedbacks were done by standardized patients with mean 4.84±0.84/6. Positive feedbacks included improvements in history taking and confidence on real patients. Negative views included limited time and expectation of more varied cases.

Discussion: Through the process nearly all the ACGME competencies can be trained including not only patient care, but also professionalism, interpersonal communication skills as well as practice base leaning and improving. An one hour Integrated standardized patient simulation program may be proved to be practical and efficient in clinical teaching.

Conclusion: An one hour Integrated standardized patient simulation program is useful and practical for international medical student in the first clinical year. And it is especially useful as a clinical bridging course for international medical students with huge language barrier with the native patients.

Take-home Message: Simulation-based Integrated medical education is proved to be practical and efficient for medical students. Educators should be encouraged to incorporate simulation training within clinical curricula. Repetitive practice, real time feedback with subsequent program revision and follow up of clinical performances of the trainees can increase efficacy of the program.
Applying Psychodrama Theory to Standardized Patients training

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Yi-Chien Lu
Ching-Chung Lin
Yih-Jer Wu
Hung-I Yeh

Background: After performing sadness in the scenarios related to bad news, dying, or communication with difficulty, standardized patients (SPs) may suffer from more physical and mental stress. In this study, we aim to help SPs reduce their psychological burden by applying psychodrama theory in their training program.

Summary of Work: In a four-hour workshop, consultative psychologists introduced psychodrama skills in the SP training program. First step: warm-up by running test scenarios and reviewing past experiences; second step: intuitive reasoning by developing new strategies and role play; and final step: de-roling by integrating reflection and application the feedback for corrections.

Summary of Results: We provided professional emotional support throughout the program. All SPs presented with high satisfaction in 1) empathy for and mastery over different roles, 2) de-roling and greater release of emotional stress, 3) handle themselves after their performance, wherein they trigger their inner emotions, 4) how to play specific roles.

Discussion: Consultative psychologists enhanced the SPs’ performance by using psychodrama theory to reduce the psychological burden after playing the gloomy mind as a real patient. The SPs can get mutual emotional support and expand their lifelike expression of the roles. This training gave the SPs positive energy for their further performance.

Conclusion: In summary, we demonstrated the significant role of applying psychodrama theory to standardized patients training which fulfilled the missing part to make the performance of SPs more closer to reality and not to be hurt by the vivid but glooy emotions.

Take-home Message: Standardized patient training by consultative psychologists, which includes warm-up, intuitive reasoning, and de-roling can help SPs quickly integrate into the role and reduce the sadness and stress after the some woeful scenarios.

Barriers to Medical Students Visiting the Doctor as Patients

Tanvi Raghvani, Barts and The London School of Medicine and Dentistry, London, UK
Siobhan Cooke, Barts and The London, London, UK

Background: Personal health experiences impact overall wellbeing and the education of medical students. Medical schools are responsible for creating professional physicians who can recognise personal limits including health needs, and subsequently seek help accordingly. Doctors notoriously demonstrate poor health seeking behaviours; we explore whether this stems from medical school itself.

Summary of Work: Mixed methods were employed to investigate health-seeking behaviours amongst medical students. Focus groups and individual interviews were primary sources of qualitative data. Analyses also evaluated the influence of the number of years spent at medical school. Participants verified themes, contributing to a questionnaire to quantify the scale of the problem.

Summary of Results: There were significant barriers to medical students visiting the doctor as patients, for example, concerns about confidentiality. Many students wish to be treated as patients, detached from the medical profession, with no assumed prior knowledge. Much anxiety derives from observations of attitudes on clinical placements, and previous bad experiences.

Discussion: It appears that medical students, like doctors, are particularly poor at managing their own health. Students, upon witnessing examples of presenteeism, corridor consultations and cynicism, learn to liken illness to weakness. A culture has been created, where such unspoken rules dominate the ‘hidden curriculum’, having a strong influence on students.

Conclusion: Students have changing perceptions of illness during medical school training. It is important to note that physicians must not only regard students as future doctors, but also, as future patients. Clinical experiences not only shape the way in which students will behave as doctors, but also as patients.

Take-home Message: Explicit education on the role of the doctor as a professional, particularly regarding personal health responsibilities is needed. Medical schools and physicians should recognize barriers to students visiting the doctor as patients, so that they can subsequently be addressed. Further research into how such barriers may be overcome is needed.
#9KK Posters: International Education

**Location:** Hall 3 Foyer

### #9KK01 (1673)
**International Visits Supplementing Medical Teaching**

*Pauli Puolakkainen, University of Helsinki and Helsinki University Hospital, Helsinki, Finland*

**Background:** Over the last 40 years, in Helsinki, there has been a tradition of 4th year medical students to cruise to Stockholm for Sweden and to visiting local hospitals. This activity has been supported by our Faculty of Medicine. Also, medical students from Stockholm have paid similar annual visits to Helsinki.

**Summary of Work:** Up to 80-90% of the students participate this visit. The program involves surgery and internal medicine. On board we have lectures and small exams. In Stockholm, students visit various hospitals where the focus of teaching is international. On the way back we collect oral feedback on the whole curriculum.

**Summary of Results:** Both Finnish and Swedish medical students repeatedly are very pleased about this possibility of international collaboration in medical teaching. Especially, the possibility of giving direct feedback to the teachers is traditionally highly appreciated. This method has proven extremely useful.

**Discussion:** Medical practices somewhat vary between countries. Therefore, it is highly important that the medical students are provided with a possibility to international interaction during their studies.

**Conclusion:** The international visits supplementing medical teaching have proven very useful between Finland and Sweden and should be continued in the future. Expanding this tradition to other countries is suggested.

**Take-home Message:** Part of the teaching during medical school should be off-campus and in that, international collaboration, such as the one between Finland and Sweden described here, is suggested and recommended.

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### #9KK02 (1868)
**Globalizing International Postgraduate Electives: Challenges and Solutions**

*Anna M. Iacone, Educational Commission for Foreign Medical Graduates (ECFMG), Philadelphia, PA, USA*

*Sohaila Cheema, Weill Cornell Medicine - Qatar, Doha, Qatar*

*Jorge Carvajal, Pontificia Universidad Catolica de Chile, Santiago, Chile*

*Klaus Puschel, Pontificia Universidad Catolica de Chile, Santiago, Chile*

**Background:** Postgraduate residents are increasingly interested in international electives to complement their training. However, there is limited data on clear educational goals, process guidelines and outcomes of these international resident exchanges.

**Summary of Work:** Scholars, educators, administrators and students from 14 countries responded to questions on challenges associated with international opportunities. The qualitative data collected were synthesized using a framework methods approach. Challenges and solutions for developing effective international electives in residency training were identified from four perspectives: host, home, resident and organization.

**Summary of Results:** Regulations, licensure for clinical privileges, financial constraints, language proficiency, cultural barriers, risk management and training equivalency were identified as challenges for resident exchanges. Accessible elective information, financial reciprocity, establishing trust between participant institutions, and limited license privileges to assure hands-on clinical experience emerged as potential solutions.

**Discussion:** Our study provides important information on key challenges and potential solutions for enabling and globalizing postgraduate exchanges. There is a need for outcome-based information on the benefits and limitations of international exchange programs. Facilitation of institutional relationships should enable these exchanges to be meaningful learning experiences.

**Conclusion:** This study provides an international perspective on challenges and identifies potential solutions to enable international resident exchange programs. The results of this study provide a framework to facilitate discussion among institutions offering international medical elective training at the postgraduate level.

**Take-home Message:** Globalization of medical exchange programs is challenging but solutions potentially exist. In a globally engaged world, sustainable collaborations and strengthened regional partnerships pave the way forward. This work provides the basis for development of a framework to facilitate international exchanges, creating meaningful and engaging experiential learning opportunities worldwide.
#9KK03 (2316)
International placements in health professions education – a meta-narrative review

**Background:** In order to be prepared for professional practice in a globalized world, health professions students need to be equipped with a new set of knowledge, skills and attitudes. Experiential learning gained during an international placement has been considered as a powerful learning experience promoting the acquisition of global competencies.

**Summary of Work:** The aim was to review approaches of empirical work examining the process and outcomes of international short-term placements in health professions education. A systematic review was conducted using a meta-narrative approach. Eligible studies were first considered within their research traditions before comparing and contrasting findings between research traditions.

**Summary of Results:** Most papers were identified in the disciplines of medicine, nursing and allied health professions. Iteratively this review was focused on student placements in socio-economically contrasting settings. Early findings suggest 3 main research traditions, which have evolved separately in different health professions disciplines: educational effectiveness, learning experience and transformative enquiry.

**Discussion:** Each research tradition provides a different perspective of how international short-term placements have been conceptualized influencing research questions and methods. Whereas earlier studies have focused on the examination of effectiveness to justify this educational method, recent studies have adopted a more critical approach addressing broader issues in global health education.

**Conclusion:** Findings of this review suggest that international short-term placements contribute to the preparation of professional practice in a globalized world, although approaches vary across disciplines and geographically. Recommendations will be made for educational practice and research.

**Take-home Message:** This meta-narrative review has demonstrated that important insights into the process and outcomes of international placements can be gained by considering multiple perspectives in terms of research tradition and health professions discipline.

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#9KK04 (2003)
Developing a Cadre of International Educators

**Background:** The Royal College of Physicians & Surgeons of Canada recruits ~75 medical educators annually to participate in international activities. Selecting and preparing international educators requires a well-defined process to ensure the success of the activity and the fulfillment of the educators.

**Summary of Work:** Defining host expectations and assuring educator competencies are essential for successful activities. The RCPSC implemented a process for soliciting input and feedback from both the host and visiting educators. This includes advance discussion with the host and educator as well as questionnaires and informal discussion during and after the activities.

**Summary of Results:** Key educator competencies are personality traits (flexible, non-judgemental, comfortable with uncertainty) and educational expertise (program director, examiner, specialty expertise). The educators require clarity regarding expectations for their activities, information on the host medical education system and local culture and values. Hosts provided follow-up information through detailed activity evaluations.

**Discussion:** Identifying criteria for selecting international educators helps ensure a good match for the international activity. Providing education and support to educators reassures them of the value of their contribution as well as comfort in the international environment. Feedback from both hosts and educators assures ongoing quality improvement.

**Conclusion:** Defining the skills and personality traits of educators assists in ensuring a good match of educator to international activity. Understanding the needs of the host and the cultural environment is also crucial. Preparing international educators for the trip and activity, strengthens their ability to provide a high quality service.

**Take-home Message:** Before undertaking international activities and recruiting educators for those activities, it is important to have identified criteria on which to base the match of educator to activity to host. Ongoing support and follow-up with the educator is also important.
#9KK05 (2963)
Deliberate use of Gibbs' Reflective Cycle to Capture Transitional Issues and Strategies for International Students Joining a Full-time Medical Education Masters in Dundee

Andini Wardhani, Centre of Medical Education, University of Dundee, Dundee, UK
Achara Wuttipratisritpol
Tanongson Tienthavorn
Linda Jones

**Background:** Ten doctors, from four countries experiencing multiple transitions, moving to full-time study, in Dundee, away from predominantly scientific and clinical practice to a social science education, were studied to understand the coping strategies in use.

**Summary of Work:** Nine weeks into the course, ten students, were invited to complete a reflective diary using Gibb's reflective questions to explore their feeling and experiences during the three-month transition; to articulate the strategies used and share their action plan. A thematic analysis of 6/10 diaries was undertaken.

**Summary of Results:** The new learner-centred learning culture and English language were initially the most troublesome transition accompanied by emotions including sadness, fear and happiness followed by acceptance, optimism and experiencing positive peer and educator relationships. Coping mechanisms included self-talk, discussion with peers/tutors and access to an individual mentor.

**Discussion:** Experienced postgraduate students found academic transition problematic and overwhelming. It was beneficial when educator provided both academic and social support. Deliberate use of reflective processes such as Gibb’s reflective cycle enabled students to recognise and evaluate the challenges, being faced and develop resilience by articulating the coping strategies in use.

**Conclusion:** Both problem based and emotional coping strategies were used by individuals and encouragement to use self-reflective activities alongside social support enhanced adaptation to adapt during the transition period.

**Take-home Message:**
- Encourage use Gibbs' reflective cycle to assess the transition cycle experienced.
- Optimise academic and social support during the transition process.
- Further study is needed.

#9KK06 (1192)
Testing health care vocabulary knowledge of immigrant physicians in Finland

Maija Tervola, University of Tampere, Tampere, Finland

**Background:** Updating education for immigrant physicians is a key issue in developed countries, due to increased mobility. Language barriers are the major obstacle in becoming a fully functional physician in a new environment, also in Finland. In this study immigrant physicians’ knowledge of Finnish health care vocabulary is examined.

**Summary of Work:** Structured vocabulary test of 50 stimulus words, each with six associated words was used to measure the vocabulary knowledge of 82 immigrant physicians and control groups of 35 interpreter students and 35 native Finnish adults. Correlations and regression analysis were used examine effect of variables and differences with control groups.

**Summary of Results:** Native control group had a strong agreement (98,6 %) in test scores with standard deviation of 1,3 %, whereas non-natives’ mean score was 70,2 % with standard deviation of 12,9 %. Interpreter students had slightly better scores than immigrant physicians, the strongest explanatory variable being the time spent in Finland.

**Discussion:** Immigrant physicians do not master health care vocabulary better than non-physician immigrants (interpret students) although they are known to rehearse their professional Finnish skills. Both non-native groups know well the frequently used accurate diagnosis-like condition words but lack the extent of vocabulary, physicians more than the control group.

**Conclusion:** Narrow medically focused language learning in short time can provide physicians with knowledge of the most needed tool words for health care work but gaining more extensive professional vocabulary takes time and rehearsal. Immigrant physicians need more support in language learning, to be able to enter work force without delays.

**Take-home Message:** Spectrum of professionally relevant vocabulary needs to be expanded from mere diagnosis-like concepts to a wider range of health related vocabulary, concerning also psychological and social experiences, emotions and every-day life arrangements. Support must be better tailored for immigrant physicians to overcome language barriers causing delay to career progression.
Benefits of an Additional Medical Education program: as perceived by immigrated physicians

Linda Sturesson, Karolinska Institutet, Stockholm, Sweden

**Background:** Immigrated physicians can offer recipient countries workforce. Additional Medical Education (AME) programs are provided to ensure that the competences of immigrated physicians are coherent with current regulations and practices of the country. The aim of this paper is to describe how physicians perceive the benefits from such an AME-program.

**Summary of Work:** This study employed a mixed methods approach, including a quantitative questionnaire sent to former participants (response rate 69%, 207/302) to identify their perceived benefits of the AME. The comments to open ended questions were thematically analyzed. Identified themes were then explored in-depth by using semi-structured interviews (n=10).

**Summary of Results:** According to previous AME-participants working as physicians, the most useful learning outcomes were made during clinical practice regarding aspects of health care culture differing from prior experiences, e.g. in how to interact with colleagues and patients. The new experiences influenced the participants’ personal and professional identities, thoughts and behavior.

**Discussion:** Sometimes the physicians’ beliefs of how to act in a situation was in contradiction with the norms applied in that context. As result, new ways of interacting with patients and colleagues created internal and external conflicts. The latter suggests that the program induces a professional adjustment process in its participants.

**Conclusion:** The most useful outcome of the AME-program was the participants’ adjustment to the new health care culture, a process influenced by a variety of factors. Internal and/or external conflicts may arise, which can have can having lasting impact on the immigrated physician’s entry to and sustainability on the labor market.

**Take-home Message:** When designing an AME-program, both theoretical knowledge, and clinical knowledge and practice should be included. Elements on how to work with patient-centered care and in teams with colleagues are cultural factors that may differ from participants’ previous experiences and therefore need to be supported by supervisors and teachers.

Exploring the Ties that Bind: Mapping the Missions of U.S. Allopathic Medical Schools

Frederic Hafferty, Mayo Clinic, Rochester, USA
Philip K. Hafferty
Douglas Grbic

**Background:** “There’s an old saying, ‘If you’ve seen one medical school, you’ve seen one medical school.’ What is meant by that is that all medical schools are unique. They vary in mission, location, size, and countless other variables.” AAMC: Choosing A Medical Career

**Summary of Work:** In this study, we thematically coded the content of all U.S. medical school mission statements (MSs), social network analysis to compute thematically-anchored linkages among schools, and hierarchical cluster analysis to identify and label school groupings. We also deployed a set of exogenous variables to further demarcate school groups.

**Summary of Results:** Utilizing this stepwise process of content, network, and cluster analysis, we identified eleven unique school constellations, each characterized by a set of MS themes, including diversity and social responsibility. No medical school was found to be unique based on its stated mission.

**Discussion:** A variety of theoretical frameworks, including loose coupling theory, institutional isomorphism, organizational ecological theory, and social network theory assert a relational and interdependent existence for organizations occupying a similar occupational field. Our unique deployment of content, network, and cluster analysis allowed us to map and quantify these connections.

**Conclusion:** Medical schools carry out their work within a network of thematically interconnected and quantifiable patterns of affiliation based on their MS themes. Theoretical frameworks stressing a relational approach to organizations were supported.

**Take-home Message:** This study establishes that medical education can be empirically dissected and conceptually framed at a systems level. In turn, schools can use study data to systematically explore where they fit into the overall web of MS claims, including the identification of likeminded collaborators or alternative exemplars of contrasting organizational values.
Evaluation of clinical bases of Medical schools in the Republic of Kazakhstan

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Zaure Baigozhina, Republican Center for Health Development, Astana, Kazakhstan
Ayagyz Umbetzhanoova, Astana Medical University, Astana, Kazakhstan
Aigul Abdakhmanova, Republican Center for Health Development, Astana, Kazakhstan
Banu Khandillaeva, Republican Center for Health Development, Astana, Kazakhstan
Gulmira Derbissalina, Astana Medical University, Astana, Kazakhstan

Background: National Program for Health Development "Densaulyk" set a goal to improve the infrastructure of clinical training of health professionals through the introduction of a model of university clinics of leading world-recognized Medical schools. Our study was based on an assessment of the level of interaction between medical schools and clinics.

Summary of Work: The objects of our study was the level of interaction between medical schools and their clinical bases - more than 500 health organizations (PHC clinics and hospitals). Clinical bases evaluated by the following components - management and financing; educational activities; clinical activity; research and innovation activities.

Summary of Results: Thus, the results indicate a low level of interaction between medical schools and their clinical bases - primarily in management and finance, there is a low involvement of faculty members in clinical practice, and clinic staff in mentoring activities. Also, there is a low joint research and innovation activity.

Discussion: In general, the analysis shows that the potential of faculty members and health professionals in clinical bases is not used to the full. Results of the analysis indicate the need for a phased development of clinical bases according to model university clinics.

Conclusion: The development of clinical training infrastructure in medical schools should be aimed at creating conditions and mechanisms that motivate healthcare providers (PHC clinics and hospitals) to become a clinical base of medical school and receive the status of a university clinic.

Take-home Message: As a result of our research we have objective information about the level of interaction between medical schools and their clinical bases. This makes it possible to develop a set of measures to improve the infrastructure of clinical training in medical schools.
SESSION 10
Wednesday 30th August: 0830-1015

#10A Symposium: Is the Traditional Lecture Still Relevant? Is the Traditional Physical Examination Still Relevant?
Location: Hall 1

Steven L. Kanter, University of Missouri-Kansas City School of Medicine, USA
Leila Niemi-Murola, University of Helsinki, Finland
Jussi Merenmies, University of Helsinki, Finland
Gary Sutkin, University of Missouri-Kansas City School of Medicine, USA

Summary: The presenters will form pro and con teams to argue each question in the title according to the method of “structured controversy.” A structured controversy is similar to a debate. However, in a debate, the goal is to win; in a structured controversy, the goal is to learn.

The first question enables presenters and the audience to explore the time-honoured value of the traditional lecture as well as its limitations, and how technology and other educational approaches are changing educational practice.

The second question enables the presenters and the audience to explore the traditional value of the physical examination and how technology, including hand-held ultrasound and other imaging modalities, are changing priorities.

The session will be structured as follows: For the first question: 4 minutes for each side, pro and con, to make an opening statement; 3 minutes for each side to present a rebuttal; 1 minute for each side to present a conclusion; 20 minutes to interact with the audience and take questions and comments. This structure will be repeated for the second question. Finally, 20 minutes for general summary remarks.

Who should participate in the symposium? Medical educators with responsibilities and/or interests related to the role of the traditional lecture and the role of the traditional physical examination in the medical curriculum should participate.

What will they gain from participating? Participants will broaden and deepen their own thinking and perspectives as they listen and respond to the presenters argue, according to the method of structured controversy, two important topics that are central to medical education today. The use of “structured controversy” leads to a dynamic and spirited discussion of the issues.

#10B Symposium: "Certified... now what?" On the challenges of lifelong learning
Location: Hall 3a

Carolin Sehlbach, School of Health Professions Education, Faculty of Health, Medicine and Life Sciences, University of Maastricht, Netherlands
Ebbe Thinggaard, Copenhagen Academy for Medical Education and Simulation, University of Copenhagen, Denmark
Frank Smeenk, Catharina Hospital Eindhoven, Faculty of Health, Medicine and Life Sciences University of Maastricht, Netherlands
Helena Prior Filipe, Hospital of SAMS, Lisbon; College of Ophthalmology Board of the Portuguese Council of Medicine, Portugal
Jonathan Bennett, University Hospital Leicester, UK
Martin Balzan, Medical Association of Malta, Malta
Fedde Scheele, VUmc, Amsterdam, Netherlands

Summary: It is said that learning never ends. However, to ensure lifelong learning different approaches and procedures have been applied, which help assessing professional competence, certification and re-certification. Through these procedures, healthcare professionals demonstrate that they are competent and able to deliver high quality care. Yet, the procedures can be very complex. Also, certification and re-certification procedures differ widely across different countries and disciplines.

During the symposium we will share experiences of certification and re-certification and facilitate a debate on how best to overcome the challenges faced by lifelong learners.

Who should participate in the symposium? This symposium will give healthcare professionals an overview of existing lifelong learning schemes. The topic of the symposium is relevant for a broad variety of medical specialists and other healthcare professionals and will engage with those who have recently been certified, are enrolled in a re-certification process or are committed to lifelong learning.

As examples from different medical specialties and different countries will be presented, an international and interdisciplinary audience is invited to participate and to actively contribute.

What will they gain from participating? Participants will get an overview of different licensing and re-certification procedures in different countries and different specialities. Participants will get the opportunity to actively engage in discussions concerning certification and re-certification. The importance and effectiveness of lifelong learning and re-certifying will be discussed amongst panellists and participants. The symposium aims at creating a platform to share experiences and best practices of certification and re-certification.
**#10C Symposium: Professionalism Remediation: The challenge to ensure successful and long-term impact – an international perspective**

**Location:** Hall 3b

**Malissa Shaw, Chang Gung Memorial Hospital, Taiwan**  
**Heather Lochman, University of Ottawa, Canada**  
**Ian Wilson, University of Wollongong, Australia**  
**David Irby, UCSF School of Medicine, USA**  
**Lynn Monrouxe, Chang Gung Memorial Hospital, Taiwan**

**Summary:** Professionalism is a core competency for health professionals. Professionalism lapses occur for many reasons, including pressure from the hidden curriculum, burnout, mental health issues and systems issues. In turn, professionalism lapses cause individuals a great deal of moral distress themselves. The fallout includes loss of job satisfaction, medical errors and possibly dismissal. Professionalism lapses in medical school have been associated with disciplinary actions in practice. Once a determination that remediation is required an individualized remediation plan should be considered. Remediation practices vary but can include reflective writing, remediation workshops and coaching. In some cases remediation is not possible, such as with a major breach and lack of insight. This symposium will discuss the challenges as well as how evidence can support best practices for prevention and remediation from an international perspective.

**Questions the symposium will address include the following:** What frameworks for professionalism are being used to remediate professionalism lapses? What are some remediation strategies aimed at different levels (students, residents, practicing physicians)? What are best practices in remediation? What are the major challenges? What is the role of prevention? What is the evidence that remediation works?

**References:**

**Who should participate in the symposium?** This program is ideal for those involved directly in determining a remediation plan for learners and faculty with lapses in professionalism, including program directors and those involved through their roles in professional affairs, faculty development and continuing professional development.

**What will they gain from participating?** The symposium will provide unique perspectives on the international landscape in the best practices available to address professionalism lapses, at undergraduate, postgraduate and faculty levels.

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**#10D Symposium: 2016 Advances in International Accreditation: Purpose, challenges and quality outcomes. XV Ibero-American Session**

**Location:** Hall 3c

**Pablo Pulido, PAFAMS**  
**David Gordon, WFME**  
**Dan Hunt, USA**  
**Ricardo Leon Borquez, Mexico**  
**Jorge Luis Pales Argullos, Spain**

**Summary:** This session, with input from academic leaders from diverse national and international experiences in accreditation, will highlight the similarities, challenges, and differences in medical education approaches to critical societal issues that impact health and medical education systems. The long-standing Ibero-American relationship in medical education is central to academic medicine and has benefited the global community. The depth and breadth of this relationship is demonstrated through an appreciation of the scope and diversity that exists among and between its members. Since 1962, the Pan American Federation of Associations of Medical Schools (PAFAMS) has provided an organizational network supporting this relationship. With new challenges present, there is a renewed interest in enhancing the quality of medical education systems through more comprehensive and concordant approaches. Recently, the International Accreditation Institute (IAI), has emerged as a critical accreditation organization designed to highlight successes, challenges, resources, and leadership needed to ensure quality medical education programs. While still new, IAI has already made an impact and its anticipated future will be outlined during this discussion session. There will be an opportunity to learn from select case studies from multiple countries, more so through an orderly discussion with the Deans of the Americas attending the session. Leaders in academic medicine must make decisive decisions, based on the analysis of facts and application of resources, when creating optimum learning environments. This session will provide an opportunity and practical understanding that will enable leaders to enhance their decision-making in medical education, ultimately leading to the improvement of the delivery of healthcare locally, regionally, and globally.
#10E  Research Papers: Testing of and for Learning

### Location: Hall 3d

#### #10E1 (75)
**Testing Test-Enhanced Continuing Education - A Randomized Controlled Trial**

Mark Feldman, University of Toronto, Hospital for Sick Children, Toronto, Canada
Oshan Fernando
Michelle Wan
Tina Martimianakis
Kulamakan Kulasegaram

**Introduction:** Enhancing retention and application of knowledge through continuing professional development (CPD) is challenging. Recertification may require CPD using assessment and feedback. Test-enhanced learning (TEL) is effective for increasing durability of teaching in undergraduate medical education. However, the value of TEL in CPD is under-researched. Limited data suggests that TEL for CPD may be inefficient or ineffective. Furthermore, how best to deploy testing and its impact on knowledge is still poorly understood. In this pragmatic RCT we investigated the use of an efficient, pre/post TEL package at a national conference and its impact on knowledge as well as self-reported learning behaviours.

**Methods:** Set in Toronto, Canada, we conducted a randomized controlled trial of TEL for paediatricians who registered for an annual CPD update conference. Participants were randomized to receive 5 standalone pre-workshop MCQ tests followed by the same post-workshop MCQ tests (with feedback) or to receive no pre/post-workshop testing. MCQ tests were delivered electronically before and after attending the conference. Results from the pre-tests were given to workshop teachers to supplement their needs-assessments. Post-tests results and explanations were given to participants. Our primary outcome measure, a clinical vignette based retention and application test, with different MCQs, was delivered to all participants a month following the conference. We analyzed our primary outcome with each workshop considered to be an individual ‘study’ and cumulatively compared performance for the intervention across workshops using a random-effects meta-analysis model. Secondary outcomes examined participant satisfaction, self-reported changes in learning behaviour and completion rates.

**Results:** The study was conducted for 15 individual workshops whose leaders provided MCQs. One-hundred eighty-six participants across Canada consented to participate in the study; each was randomized to receive testing for some workshops and to the control (no testing) group for others. For our primary outcome, one-hundred twenty-six participants completed the retention test. On average, retention test scores were significantly higher for participants (71.2%) who received TEL than those randomized to workshop-only (60%); this was a moderate effect size (Hedge’s g of 0.46, 95% CI: 0.26-0.67). The majority of participants (80%) agreed that pre-tests helped identify knowledge gaps and enhanced learning at the workshop and that post-tests with feedback helped verify learning.

**Discussion and Conclusion:** Our TEL strategy demonstrated benefit for both perceived and objective measures of knowledge retention with moderate effect size. How TEL will transfer to clinical outcomes was beyond the scope of our inquiry. Our results may underestimate the benefit of TEL. Repeated inclusion and crossing over of participants may attenuate effects. Only 5 MCQs were assigned per test. Effect size may increase with MCQ number and quality. Even so, our results indicate that this portable model of testing with feedback can be broadly leveraged to efficiently and effectively improve outcomes of CPD. Evaluating clinicians not only enhances learning but may also help gauge knowledge; requisite for competency-based CPD. These findings will improve practice for CPD in Canada and fill a gap in the CE literature internationally.

**References:** Neurology. 2015 Feb 17;84(7):748-54; J Con Educ Health Prof. 2015 Spring;35(2):119-22

#### #10E2 (217)
**Avoiding medical skill decay: can we apply the testing effect?**

Dario Cecilio-Fernandes, Center for Education Development and Research in Health Professions (CEDAR) - University of Groningen, University Medical Center Groningen, Groningen, Netherlands
Fokie Crossen, University of Groningen, Groningen, Netherlands
Stephan Moolbroek
A. D. (Debbie) C. Jaarsma, University Medical Center Groningen, Groningen, Netherlands
René A. Tio, University Medical Center Groningen, Groningen, Netherlands

**Introduction:** The acquired skill will decay after a period of non-use. From cognitive psychology, research has shown that long-term knowledge retention increases more by being tested than by repeating the learning material(1). However, evidence for this so-called testing effect in medical skills training is lacking. In this study, we investigated whether the testing effect would improve students’ long-term retention of making a transthoracic echocardiogram (TTE). Since all skill acquisition starts with knowledge, novices would benefit from retrieving the required knowledge. We hypothesized that an interim knowledge test would improve students’ skills retention, since their performance is still not automatized, which requires students to retrieval their knowledge.

**Methods:** 43 medical students without TTE experience participated in this experiment. In the first session, students took a baseline theory test consisting of 20 questions on structures, functioning of the heart and about manipulation of the probe. Then, students watched a video which explained the basic anatomy and function of the heart, and gave an introduction on echocardiography and the required views. Afterwards, students practiced in groups of two to four people. The students practiced six
views on the simulator, followed by a theory and TTE test. The practice time was equal for all students. After 3 weeks, all students performed a theory and/or TTE test, and were assigned to one of the four groups; group 1 only knowledge test; group 2 only a practical test; group 3 a knowledge and practical test; group 4, the control group no test in between. After eight weeks, all students took a both tests.

Results: There were no significant differences between groups for neither baseline nor end of training measurements. The interim knowledge test had an influence on the follow-up knowledge test (F(1,31) = 1.20, p = 0.229) whereas the practical interim test nor taking both interim tests had a significant effect. The interim practical test had an influence on the follow-up practical test (F(1,31) = 2.99, p = 0.06) whereas the knowledge interim test nor taking both interim tests had a significant effect.

Discussion and Conclusion: We had hypothesized that an interim knowledge test would improve students’ retention on making an echocardiogram. However, our results demonstrated that students only benefited on the follow-up knowledge test. It seems that taking an interim practical test would be more beneficial for students in making an echo. This may perhaps be explained by the fact that making an echo is a perceptual-motor tasks in which students learn in an intuitive fashion by only practicing. In conclusion, the testing effect may avoid skill and knowledge decay. In addition, it may be concluded that the testing effect is very specific to the type of knowledge: theoretical vs practical.


Very Short Answer and Single Best Answer Questions: comparison of precision, students’ performance, discrimination and acceptability

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Carlos F Collares, Department of Educational Development & Research, Maastricht University, Netherlands
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Val Wass, Faculty of Health, Keele University, UK
Keean Schupke, Fry-it, London, UK

Introduction: Single Best Answer (SBA) questions are used widely in undergraduate and postgraduate assessment. However, there are pedagogical concerns that SBAs may not provide a true reflection of knowledge as they rely on recognition of the answer rather than recall of knowledge. [1] We developed a novel assessment tool that facilitates efficient marking of open-ended ‘Very Short Answer’ (VSA) questions. We compared VSAs with SBAs in terms of precision (reliability), student performance and discrimination. We also evaluated the acceptability of VSAs according to the opinions of the students.

Methods: Medical students sat a 60-question formative examination in either VSA then SBA format (group 1, n=155) or the reverse (group 2, n=144). VSA questions were presented on a tablet with space to type a short answer (1-4 words), which was computer marked. Two examiners reviewed the machine-marked VSAs taking on average 1.36 minutes per question for all students. The SBA assessment was delivered in paper format with answers recorded on a machine-marked scoring card.

Item response theory (IRT) analysis was used to estimate difficulty and discrimination parameters, precision and latent scores for both response formats in the two groups using the measurement alignment approach [2]. Angoff and Ebel methods were used to set the cut scores for both question formats. Positive cueing, defined as percentage of questions answered correctly in the SBAs and incorrectly in the VSAs, was also assessed. A post-test survey was conducted using a 5-point Likert scale.

Results: Mean precision estimates (reliability) were higher in VSAs (0.91 and 0.90) than the SBAs (0.83 and 0.85) and the differences between groups were significant (Games-Howell post-hoc test). Item discrimination was significantly higher for VSAs according to point biserial correlations, but not according to IRT discrimination parameters. Positive cueing was seen in 19% of questions. When students sat the VSA test first (group 1), the mean latent score was lower than when they sat the SBA test (Cohen’s d coefficient = 0.40). The difference in mean latent scores decreased in group 2 (Cohen’s d coefficient = 0.14). A higher proportion of students were below the cut scores in the VSA. Although 81% percent of students thought the VSAs were more difficult, 69% found them more authentic.

Discussion and Conclusion: The results of this study demonstrate for the first time the utility of VSA questions as a novel assessment instrument. Student performance in the SBA test was significantly better, likely due to cueing: cueing is not a feature of VSA questions. VSA questions also enable testing of knowledge that is known to be difficult to assess in SBA format and avoids the need to identify congruent (but incorrect) alternative options. VSA questions demonstrated higher precision but evidence on item discrimination is heterogeneous. VSA questions are more authentic and, therefore, may have superior consequential validity.

Introduction: Learning curves (LCs), produced by sampling a large number of cases and compared against expert performance, are an ideal method of competency-based assessment. Learning curves emphasize the level of competency all learners must achieve, while describing the individual effort required to achieve this goal.

Learning to interpret visual information such as an ECG in the clinical setting is often inefficient and ineffective and formal assessment is limited. The advent of large computerized image banks affords access to large volumes of cases using principles of mixed practice, immediate feedback and assessment through LCs.

We describe an on-line ECG learning system using LCs as a competency-based approach to diagnosing a learner, predicting the trajectory of their learning, and suggesting the volume of cases required to attain competence.

Methods: We developed an on-line program of 293 anonymized ECGs collected from an electronic patient database. Each ECG was diagnosed by 3 cardiologists and annotated to highlight key features. ECGs were presented in mixed order, with 114/293 (39%) normal ECGs. Voluntary participants reviewed each blank ECG and selected their final diagnosis. Immediate feedback was provided as the ECG with computerized interpretation, expert annotation, and correct diagnosis.

In 2015, 63 medical students, 10 PGY-1 residents and 5 cardiology fellows each completed at least 60 ECGs. Data included descriptive data and diagnostic accuracy per ECG completed. We calculated sensitivity and specificity and correct diagnosis.

Results: Time spent per ECG was 41.5 s for students, 68.3 s for residents and 14.0 s for fellows. Data analyses are presented in the Table. The predictive model showed a statistically significant effect of number of ECGs read (log odds = .181, SE = .025) and expertise (log odds fellows = .738, SE = .169), on accurate response. Interestingly, each group learned at approximately the same rate, albeit from different starting y-intercepts.

Discussion and Conclusion: An on-line ECG learning system, based on principles of mixed and deliberate practice and attending to real-world prevalence of normal cases, was effective at improving learners’ competence in ECG interpretation. While individual differences exist, learning curves by level of expertise were established, which allows establishing levels of prior knowledge (y-intercept), prediction of the trajectory of learning (achievement at 100th case) and the volume of cases required to achieve a competency threshold. The method also clearly demonstrates the progressive decrease, with practice, in between-learner variance. These properties were determined without having to resort to separate assessments, but rather while the individuals were practicing and improving their skills.

References: Hatala, R. M., Brooks, L. R., & Norman, G. R. (2003). Practice makes perfect: the critical role of mixed practice, in between-learner variance. These properties were determined without having to resort to separate assessments, but rather while the individuals were practicing and improving their skills. Comments: Hatala, R. M., Brooks, L. R., & Norman, G. R. (2003). Practice makes perfect: the critical role of mixed practice, in between-learner variance. These properties were determined without having to resort to separate assessments, but rather while the individuals were practicing and improving their skills.

### #10E4 (263)
Can practice make perfect? Learning Curves inform assessment of ECG competency

**Rose Hatala, University of British Columbia, Vancouver, Canada**

**Jacqueline Gutman, New York University School of Medicine, New York, USA**

**Marc Triola, New York University School of Medicine, New York, USA**

**Martin Pusic, New York University School of Medicine, New York, USA**

<table>
<thead>
<tr>
<th>Mean y-intercept (Accuracy)</th>
<th>Mean absolute increase percent correct</th>
<th>Average Predicted 100th Case</th>
<th>Average Sensitivity [95%CI]</th>
<th>Average Specificity [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>19.8%(+/- 6.9%)</td>
<td>68.4%(+/- 5.7%)</td>
<td>90.6%(89.2 – 92.0%)</td>
<td>80.4%(77.8 – 82.7%)</td>
</tr>
<tr>
<td>Resident</td>
<td>18.6%(+/- 6.7%)</td>
<td>72.2%(+/- 4.7%)</td>
<td>90.2%(88.0 – 92.4%)</td>
<td>84.0%(76.7 – 91.3%)</td>
</tr>
<tr>
<td>Fellow</td>
<td>14.0%(+/- 5.0%)</td>
<td>82.0%(+/- 5.0%)</td>
<td>93.9%(91.7 – 96.0%)</td>
<td>94.8%(92.1 – 96.6%)</td>
</tr>
</tbody>
</table>

### #10E5 (261)
A pluralistic approach to standard setting in knowledge tests

**Jonathan Darling, University of Leeds, Leeds, UK**

**Matt Homer, University of Leeds, Leeds, UK**

Introduction: Test-centred approaches to standard setting (such as Angoff or Ebel) for knowledge tests are problematic because expert judges may struggle to predict item difficulty. They are also demanding of assessor time. An alternative approach by Cohen suggests use of high performing students (eg those at the 90th or 95th centile) within the assessment cohort to set the standard for the exam, by fixing the passing score as a proportion of their score. This method is straightforward to run, and is attractive because it gives a ‘student view’ of the difficulty of the exam and adjusts the passmark accordingly. Rasch analysis allows the difficulty of each item to be calibrated against other items, both within one assessment, and across multiple assessments through use of common items.

Methods: We used Rasch analysis to compare Ebel and Cohen approaches to standard setting in a summative Year 4 medicine knowledge test in adjacent years (2014 and 2015). Each test consisted of 200 single best answer items, covering paediatrics, psychiatry, obstetrics and
gynaecology, emergency and critical care, and cancer and continuing care. Ebel was the main standard-setting method, where multiple examiners agreed the difficulty and importance of each item (each on a three point scale), and this then determined the passing score according to a pre-agreed matrix. Item-level scores were then summated to give the passing score. For the Cohen approach we calculated the 90th and 95th percentiles of student total scores to compare the difficulty of both tests. Finally we used Rasch analysis to link the two tests, using 50 anchor items shared by both tests, distributed across all the speciality areas.

Results: There were 293 and 274 candidates in 2014 and 2015 respectively. 2 and 9 poorly performing items were removed from 2014 and 2015 tests respectively. The Ebel standard in 2014 was 55.6% and 55.0% in 2015, suggesting similar test difficulty. However the Cohen percentiles (2014/15) respectively were 74.2/79.6 (90th) and 76.9/81.7 (95th), equivalent to a difference in passing score (based on the 90th and 95th percentiles of 4.0% and 3.5% respectively, with the 2014 test being harder. Rasch analysis showed good fit to the model, demonstrated that the tests were very close in difficulty, and that the Ebel standard setting (rather than Cohen) had maintained an equivalent standard year-on-year. The two cohorts were shown to be of different average ability (2015 were more able).

Discussion and Conclusion: Using Rasch analysis we have compared Ebel and Cohen standard setting methods across two exam cohorts. In this study, Ebel was shown to be effective at maintaining a similar standard across the two cohorts, while the Cohen method’s assumption that bright students will demonstrate equivalent performance in different year groups was shown not to hold, since the 2015 cohort were a stronger group sitting an exam of similar difficulty to 2014. Our research indicates that pragmatic use of multiple approaches in concert is likely to result in a deeper understanding of exam data, and a more nuanced standard setting process. In the last part of this presentation we will discuss how a pluralistic methodological approach would work in practice.

Student engagement in biomedical courses: Studies in technology-enhanced seminar learning

Rianne Bouwmeester, University Medical Center Utrecht, Utrecht, Netherlands
Renske de Kleijn, Utrecht University, Utrecht, Netherlands
Hendrika Westerveld, University Medical Center Utrecht, Utrecht, Netherlands
Olle ten Cate, University Medical Center Utrecht, Utrecht, Netherlands
Harold van Rijen, University Medical Center Utrecht, Utrecht, Netherlands

Introduction: Academic medical and biomedical curricula are designed to educate future academics contributing to new developments in science, clinical practice and society. Undergraduate programs are typically focused on the acquisition of knowledge and understanding of the interdisciplinary fields that these medical and biomedical student will participate in. Theoretical courses are an important component of these undergraduate curricula. This thesis aimed to determine how technology-enhanced education and flipped classrooms can stimulate student engagement and meaningful learning in these theoretical courses.

Different elements of several courses were studied using different interventions: the use of online material in order to prepare for in-class activities and summative exams, student-centered interventions to enhance engagement in classrooms and a pilot experiment intended to improve retention of knowledge.

Methods: The studies were conducted using both quantitative measurements and qualitative approaches. Preparation for in-class activities by students was not directly measureable therefore self-reported use of materials was determined via online questionnaires. These questionnaires were composed of Likert-scale questions supplemented with open-ended questions. In-class activities were ethnographically studied using a locally developed observation scheme and the duration of verbal contributions was measured using audio recordings. The use of online formative assessments in preparation for the summative exams was explored using the tracking data in an online learning environment. Students’ motives for using and not using the online study materials and students perception of student-centered learning were identified using open-ended questions and Likert-scale questions in (online) questionnaires. Teacher perceptions of flipped classroom teaching were investigated in individual interviews. Retention of knowledge was determined by examination without feedback did not improve the retention of knowledge.

The introduction of student-centered interventions, such as buzz-groups, resulted in improved preparation of students and active participation during classroom sessions. In flipped classrooms, students preferentially used learning tools that supported the acquisition and application of knowledge. Cognitively challenging materials were used less intensively. In-class observations demonstrated that flipped classrooms were more interactive and discussions more in-depth compared to traditional forms of education. These outcomes are in line with teachers’ perceptions of flipped classroom teaching.

Discussion and Conclusion: To better understand the contribution of different forms of blended learning to student engagement and meaningful learning, empirical studies were reviewed from a cognitive perspective by framing the face-to-face and online components in the Community of Inquiry framework. This framework aims learners to form a cohesive and interactive community with the purpose to analyze and construct meaningful knowledge.

Framing enabled the findings of individual studies to be discussed in relation to each other, from which the overarching conclusion can be drawn that blended learning and flipped classrooms have the potential to contribute to meaningful learning and are able to enhance student engagement when students perceive the existence of cognitive presence in combination with teaching presence. Social presence of peers seemed to facilitate students’ active participation.


Can patient portraits increase the quality of interpretation of radiographic images and physician-patient relationship? An eye tracking study

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Jan M. Zottmann, Klinikum der Universität München, Institut für Didaktik und Ausbildungsforschung in der Medizin, Munich, Germany
Hanna Zimmermann, Klinikum der Universität München, Institut für Klinische Radiologie, Munich, Germany
Martin R. Fischer, Klinikum der Universität München, Institut für Didaktik und Ausbildungsforschung in der Medizin, Munich, Germany
Markus Bolzer, Klinikum der Universität München, Institut für Didaktik und Ausbildungsforschung in der Medizin, Munich, Germany

Introduction: Studies have found that accompanying patient information can affect searching behavior when interpreting radiographic images. Hobus et al. (1987) showed that higher rates in initial generation of diagnostic hypotheses correlate with the ability of experts to better utilize contextual information presented in the form of a
patient portrait and clinical history. The question remains open whether the sole presentation of a patient portrait can affect interpretation of radiographic images. Glazer et al. (2011) found that radiologists typically have little personal contact with patients. This study investigates the influence of patient portraits on a) perceived radiologist-patient relationships, b) gaze behavior, and c) correctness of interpretation of radiographic images across different levels of examiner expertise. The overall goal is to improve learning materials and inform clinical practice.

**Methods:** In a 2x3 experimental design, participants interpreted six radiographic images in three groups. Dependent variables were perceived relationship to the patients, gaze behavior and correctness of radiograph interpretations. Independent variables were presentation of a patient portrait (yes/no) and expertise level (beginner/intermediate/expert). Group 1 consisted of 20 medical students in their clinical part of studies. Group 2 consisted of 20 final-year medical students who completed a three-month elective at the department of radiology. Group 3 consisted of residents in radiology and radiologists. To assure that medical students were ready to interpret radiographic images, Group 1 and 2 had to pass an online training with test in advance. Presentation of the patient portrait together with the radiograph was systematically varied. Eye movements and gaze duration were recorded with an eye tracker. After the examination, participants additionally filled in a questionnaire about their perceived relationship to the six patients.

**Results:** A first analysis of the collected data suggests a positive influence of the presentation of a patient portrait on perceived relationship to the patient, gaze behavior, and correctness of interpretation of radiographic images. These indicators have been found across all levels of expertise. Longer gaze duration positively correlated with correctness of interpretation and perceived relationship.

**Discussion and Conclusion:** It appears that the presentation of a patient portrait positively influences the perceived relationship to the patient, gaze behavior, and interpretation correctness. Increased gaze durations and indicators from the questionnaire suggest that this might be due to an increased sense of responsibility of the examiner towards the patient. As a next step, we plan to present medical students with adapted learning materials in a radiology course, to substantiate the found effects in a follow-up study with a treatment-control-group design.


### #10F3 (45)

**It does not need to be voiced to be counted: Non-verbal behaviour influences assessors’ global marking when examining medical students using objective structured clinical examinations**

*Sami Alnasser, Saudi Arabia
Richard Fuller, University of Leeds, UK

**Introduction:** Whilst OSCEs are a well-recognised format for assessing clinical competence, an increasing body of research focuses on the factors that contribute to differences in assessors’ judgement in performance assessment. Perspectives from psychosocial research have explored factors influencing these differences, but less attention has been paid to non-verbal behaviours of candidates, assessors and patients that could influence assessors’ judgements during OSCEs. This PhD report investigates how non-verbal behaviour influences assessors’ global marking when examining undergraduate medical students using OSCEs.

**Methods:** In reaching theoretical saturation, 18 OSCE assessors participated in 1:1 interviews (11 male; 7 female, all medically qualified and had undergone OSCE faculty training). Each participant scored 2 videos of students consulting with a simulated patient (these were carefully constructed to layer in multiple non-verbal behaviour types), and made judgements on each performance using a standard scoring format and written feedback. A retrospective think aloud methodology was used as a stimulus to explore factors in the students’ performances. Interview transcripts were coded and a modified grounded theory approach used to develop a framework to interpret results.

**Results:** Thematic analysis revealed a rich framework where the interaction of non-verbal behaviours of assessors, patients and candidates all contributed to global ratings. Assessors’ identification and response to candidate behaviour was complex and individual. Subthemes included the importance of ‘body language’ and the impact of assessor fatigue, coupled with individualistic approaches to the use of (and reliance on) pre-determined stereotypes. All these themes are further influenced by organisational and environmental factors.

**Discussion and Conclusion:** In the ‘theatre of performance’ of the OSCE, all the characters contribute to variance – and thus (unlike many other papers) this research does not just focus on one character or another, but all and the environment. The nonverbal behaviours of the three ‘characters’ in the OSCE (student, patient and assessor), and the environment in which it is situated, make significant contributions to global ratings and contribute to the multiple factors that influence inter-rater reliability. This is important in station and scoring format design, assessor selection and training and the ongoing research into assessor decision-making in high stakes performance tests.

### #10F4 (47)

**International students in professional practice placements: experiences, competency development and outcomes**

*Stacie Attrill, Flinders University, Adelaide, Australia
Michelle Lincoln, University of Sydney, Sydney, Australia
Sue McAllister, University of Sydney, Sydney, Australia*
**Introduction:** Professional placements are a critical component of health professional education programs as they facilitate students’ competency development. However, these workplace situated placements are challenging for international students who must utilise communication skills and adjust for learning environments that differ to their prior experiences. Previous studies have not explored how international students experience learning in placements. This research examined background information about international students in Australian speech-language pathology programs, their competency development and experiences in placements. International students’ placement outcomes were compared with domestic students, and investigated to identify whether being an international student or a student from a culturally and linguistically diverse background, or factors related to English use predicted placement difficulties. Finally, facilitative learning strategies utilised by placement supervisors and international students were identified.

**Methods:** Four studies were conducted between 2009 and 2013. Where appropriate, the theories of acculturation, cognitive load and workplace learning were applied as explanatory frameworks to interpret the findings. The first study gathered existing information about speech-language pathology international students and their placement performance, through a survey and descriptive analyses. Studies 2 and 3 then utilised a qualitative approach to explore the experiences and perceptions of speech-language pathology international students and placement supervisors about professional placements and competency development. Focus group interviews were used to gather data and analysed thematically. The final study identified predictors of speech-language pathology students’ performance in professional placements. Multilevel regression analysis was used to determine if being an international student, being from a ‘perceived CALD’ background, speaking English as an additional language or being a primary English speaker who also speaks an additional language at home predicted poor placement outcome.

**Results:** International students in this study were predominantly from Asia, and this background informed the interpretation of the results. International students and placement supervisors perceived that developing competency in placements was complex for international students, especially those undergoing simultaneous cultural, learning and language adjustments. However, participants were also positive about their experiences and identified mutual intercultural skills that developed from interacting and learning together. Strategies to manage cultural behaviours and learner preferences were identified, but facilitating communication competencies was difficult in placement contexts. The quantitative data identified that being an international student predicted an ‘at risk’ placement outcome. Whilst this finding supported perceptions that international students experience extra learning challenges in placement, the small effect size suggested that other factors also influence placement outcome.

**Discussion and Conclusion:** This study investigated speech-language pathology students, but the findings have broad relevance for health professional education. Many international students successfully adapted their learning, cultural and communication behaviours to participate in placement learning activities and develop competency. However, these acculturative adjustments may add processing demands for students. Being an international student contributed to ‘at risk’ placement outcome, which may relate to these adjustments and associated cognitive load. Processing demands may also be greater for placement supervisors who facilitate international students’ competency development as they enact adjustments. Despite these challenges, positive, mutual intercultural learning was identified which should be explored further. Future research investigating how acculturative adjustments impact cognitive load will inform learning strategies and provide a more complete understanding of international students’ competency development in placements.

PechaKucha™ 3

Location: Hall 3f

Lessons learned: Implementing a UK developed simulation training course in a Canadian setting

Alyssa Kelly, Centre for Addiction and Mental Health, Toronto, Canada
Erica McDiarmid, Centre for Addiction and Mental Health, Toronto, Canada
Latika Nirula, Centre for Addiction and Mental Health, Toronto, Canada
Chris Kowalski, South London and Maudsley NHS Foundation Trust, London, UK
Asanga Fernando, South London and Maudsley NHS Foundation Trust, London, UK
Ivan Silver, Centre for Addiction and Mental Health, Toronto, Canada

Summary: Co-morbid psychiatric and physical illness is a burgeoning clinical care imperative. The Maudsley Simulation Centre (England) has, through their one-day training program 'Simulation Workshops at the Mental Physical Interface' (SWAMPI), pioneered simulation education for interprofessional healthcare learners to address deficits in collaborative care of patients with mental health needs. The Centre for Addiction and Mental Health (CAMH) (Canada) partnered with them to expand this work internationally. Using the PechaKucha methodology, we will tell the story of how CAMH planned, implemented and evaluated the SWAMPI courses in the Toronto context.

SWAMPI is delivered in two formats: one focused on adults, and one on children and youth. Both SWAMPI courses were piloted at CAMH to explore the applicability of the Maudsley's curriculum in a Canadian context. CAMH hosted psychiatrists from Maudsley Simulation to provide training and guidance for local SWAMPI faculty development and program implementation. Faculty from four Toronto healthcare organizations were recruited and trained to deliver the courses, and key local stakeholders were selected as participants. Simulated patients were hired and trained on specific scenarios pertaining to SWAMPI. The courses addressed challenges related to the collaborative care of patients across specialties through interactive simulations and purposeful debriefing. Upon completion of the courses, an evaluation was conducted to understand the value to participants, cultural relevance of the content, and faculty readiness to facilitate future courses. The evaluation highlighted challenges and provided recommendations for future iterations. To better understand the effectiveness of this resource-intensive training program, CAMH is developing improved evaluation tools, which will then be shared for use by the Maudsley Simulation Centre to allow for cross-comparison. Throughout this presentation, we will share lessons learned that CAMH is incorporating to improve the development of future courses and further discuss next steps in this international partnership focused on medical psychiatry training.

Orange is the New Black: Focus Groups with Female Inmates

Louanne Keenan, University of Alberta, Edmonton, Canada

Summary: In prison, I joined an infectious disease physician, a psychiatric nurse, and an aboriginal occupational therapist. My presentation is a re-examination of how we managed to conduct focus groups on the topic of “Womens’ Health” within a correctional facility. Research projects within restricted areas requires intense planning, exhaustive attempts to attain ethical approval from the university, the solicitor general, and the health system. This research would not have been possible without the pre-established relationship within the correctional facility and among the research team members. Simultaneously, I had to learn how to enter prison, and how to overcome its numerous, inherent struggles. I will provide flashbacks of significant events from various focus groups with the inmates and interesting encounters with the prison guards and the canteen staff. These flashbacks typically explain how the inmates came to be in our focus groups, which allowed us to further develop their representation of life outside and inside the prison, and how that affected their interactions with healthcare providers.

The session will draw attention to how instances of poor housing, poverty, loss of children, and brutality at the hands of partners and family members adversely impacted not only the female inmates' health and well-being, but also the healthcare professionals' basic ability to fulfill its fundamental responsibilities and ethical obligations within a corrections institution. One of the key supporters involved in the process of being allowed to conduct this research was the Infectious Disease physician, whose efforts and aims as a physician were constantly in conflict with the realities that the female inmates faced when they were released into the community.

Students and residents within Faculties of Medicine & Dentistry benefit from faculty members that have access to vulnerable populations. They are part of our research teams and we incorporate our lived experiences into their curriculum.
Preceptor Pearls: A medical education email marketing campaign for faculty development

Meghan Treitz, University of Colorado, Aurora, USA
Janice L. Hanson, University of Colorado, Aurora, USA

Summary: Faculty development is increasingly difficult in the pediatric clerkship due to numerous preceptors, time constraints, and sites. In addition to offering traditional faculty development workshops, we decided to use a marketing approach to faculty development. We created Preceptor Pearls, a series of emails using infographics and other professional images to promote high quality education.

To describe the development, implementation, and evaluation of an innovative tool for marketing medical education to clinical preceptors.

MailChimp was selected as our marketing platform. Email headers, images, and other branding were created in Photoshop. Content was designed to be read by busy practitioners in, at most, several minutes. Strategies for content presentation include infographics and very short “10 second tips.” The communications are grouped into 3 series: an instructive series around grading and evaluation, a quick tip series on practical teaching strategies, and an informational series to relay details about our training program. Faculty preceptors and resident/fellow supervisors were uploaded. Emails were scheduled through MailChimp for distribution twice per month. Data was provided through analytics embedded within MailChimp and a survey sent to subscribers.

Our email marketing campaign currently has 355 subscribers. The average email open rate as calculated by MailChimp is 35%, compared to the “Education and Training” industry average of 14%. To date, only 2 individuals have unsubscribed. Survey revealed: 94% of preceptors identify something specific learned (all different responses), 81% report trying something new as a result of the email campaign. Preceptor Pearls is an integral part of our multi-pronged approach to faculty development. We actively reach over 125 preceptors twice per month. Preceptors have reacted positively towards the campaign and have reported increased knowledge in evaluation and teaching of students and have incorporated new strategies into clinical teaching.

A modified application of the aphorism “carpe diem” to convert challenges into opportunities for enhancement in the educational environment

Cristian Stefan, New York University College of Dentistry, New York, USA

Summary: This presentation consists of a series of practical examples based on how the Latin aphorism “carpe diem” (“seize the day”) could be applied to enhance the principles of education in the healthcare professions. As each day and instructional activity within that day could be seen as entities and at the same time as links within the continuum, they form the subject of an orchestrated long-term curricular planning. In order to be effective, the scaffolding provided by the long-term planning should be organized and balanced, while retaining the necessary flexibility and adaptability to respond to even short-notice changes in the academic environment. Moreover, whenever possible, sudden changes and challenges should not be automatically considered as having a negative impact on the outcomes. They could also represent valuable potential opportunities to be analyzed and converted into improvements regarding the instructional process. Concrete examples discussed in this presentation include: increased horizontal and vertical integration; meaningful trimming or fine-tuning related to the presented material; switching the focus from passive learning to critical thinking and experiential learning; initiating or consolidating collaborations among faculty as well as students; and increasing the congruency between teaching, learning and testing. When appropriate, learning objectives for individual lectures could be supplemented by global teaching objectives that transcend the tendency to think and study in silos. Most important, any possible opportunity should be identified and used to spark teachable moments that engage the learners; make their knowledge meaningful; highlight the clinical significance and applicability of concepts; stimulate intellectual curiosity; and target emotional intelligence. By adopting this perspective, the aphorism “carpe diem” gets a broader interpretation and applicability, making the academic day more interesting, efficient, enjoyable and rewarding. The resulting memorable educational experience facilitates deep learning as well as an increased awareness regarding the place of each curricular component across the continuum.
#10G5 (2561)
Sorry, you are not a winner. Please try again

Claire MacRae, University of Edinburgh, Edinburgh, UK
Michael Ross, University of Edinburgh, Edinburgh, UK
Terese Stenfors-Hayes, Karolinska Institutet, Stockholm, Sweden

Summary: Most people who work with medical educators will be familiar with complaints that the role of the teacher is not valued as highly as other roles such as clinician, researcher or manager, and that teachers frequently report feeling that their efforts go unrecognised and unrewarded. If medical schools attempt to tackle this, a typical first response is to introduce annual ‘teaching awards’ which often have a disappointing impact, despite initially positive feedback.

In this PechaKucha we will present and discuss the findings of a realist literature review, which examined attempts made by various organisations to recognise the contribution of individuals working for them. A realist literature review allows exploration of a wider selection of literature than might normally be considered, and aims to establish what works, for whom, under what circumstances, and why. Our review considered why some types of recognition interventions were more successful than others, and what factors might be contributing to that success. Our results suggest that, regardless of context, awards ceremonies are amongst the least successful types of recognition, particularly in the long term where they often create a competitive culture in which there are few winners and many losers. More successful strategies involve recognising as many contributors as possible; are based on objective measures of effort or skill; and are context-specific. In other words, organisations need to expend time and effort to determine what type of recognition is most valued by the people they are trying to recognise.

A realist review can never provide concrete ‘answers’ to a problem but we hope that our findings will open up discussion about what constitutes ‘recognition’; what we are trying to achieve through recognition schemes; who should be recognised and why; and, perhaps most importantly, how we could get better at recognising teaching.

#10G6 (2567)
Global Health training programme – success of international faculties in Chile, Finland, Nepal, Philippines and Tanzania

Juha Pekka Turunen, The Finnish Medical Society Duodecim, Helsinki, Finland
Archana Amatya, Tribhuvan University, Institute of Medicine, Kathmandu, Nepal
Edelina Dela Paz, College of Medicine, University of the Philippines, Manila, Philippines
Alejandra Fuentes, School of Public Health, Faculty of Medicine, University of Chile, Santiago de Chile, Chile
Elia Mmbaga, School of Public Health and Social Sciences in Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania
Ulla Ashorn, University of Tampere, Tampere, Finland

Summary: Social determinants of health are globally unequally distributed. The overall objective of our Global Health (GH) program is to reduce burden of diseases and poverty through enhanced multi-sectorial action for health.

The programme was initiated by Finnish doctors who faced a lack of teaching in GH. It is based on international collaboration between a Finnish network of health professionals and partner universities in Nepal, Tanzania, the Philippines and Chile. Medical, dental and veterinary students and doctors were invited to apply for the courses and activities planned by international GH faculties. During 2001-2016 more than 650 participants have graduated from the courses. 17 international courses, eight local courses, three GH Summits and Update seminars, four Training for trainers modules and five eLearning modules were arranged, resulting in an outstanding global network of students and teachers. Local GH Units, sustainable alumni work with partners and in projects, as well as education of health related professionals, have been established.

Only a part of the applicants has been approved to GH courses. 2.5 m€ total funding has been provided 85% by Finnish Ministry for Foreign Affairs Development Cooperation Funds and 15 % by the Finnish partners. Currently, GH network is planning new ideas for cooperation and funding to continue this important work. The project has grown into a multi-professional training effort engaging institutions from four continents including countries with a wide spectrum of social determinants of health and subsequent health status of populations. The faculty of the collaborating institutions, together with the Global Health course alumni, now form an active network of global health-minded health professionals. GH education benefits from international partnership. GH issues become increasingly important, since health inequalities, gender issues and climate change affect us all.
Telemachus: Honoring your mentor

Eric Meyer, USUHS, Bethesda, MD, USA
Holly Meyer, USUHS, Bethesda, MD, USA
Simon Auster, USUHS, Bethesda, MD, USA

Summary: When Odysseus left for the Trojan War he left Mentor to raise his son, Telemachus. It is from this tale that we gain the modern term of mentor. But what happens when the mentor becomes crippled with dementia? How can those he has mentored over the generations give back? While there is some heated discussion in the literature about “Forever Professors” needing to move on to make space for new professors (Fendrich, 2014) and models for “Emericus Colleges” where such faculty can contribute (Auerbach, 1984), there is little discussion of what can be done for a faculty member with a visual field deficit and short-term memory losses. Dr Simon Auster has been at the Uniformed Services University for the Health Sciences (USUHS) for over 30 years. He taught human context, a course that helped budding military physicians appreciate their own context and the potential context of the patients they would soon serve. I was one of many who would call Simon a mentor. Shortly after I returned to USUHS, Simon suffered a neurocognitive loss due to a stroke. Totally capable of recalling the quips of Osler and able to dissect an argument with ease – core Simon was still there. But his ability to interact was compromised and his ability to work through digital means is limited. Trapped in his home, the only thing the teacher wanted was to teach. This PechaKucha will share how committed students and faculty members at USUHS created a means for Simon to teach again. By recording Simon answering some of the very questions he used to ask students (e.g., What is the difference between a patient and a friend?) in short 5-10 minute videos and sharing them school wide, Simon was able to continue to mentor a new generation of students and faculty.

Influencing Students’ Motivation and Demotivation

Farhan Cyprian, College of Medicine - Qatar University, Doha, Qatar
Xiangyung Du, College of Education- Qatar University, Doha, Qatar

Summary: Candidates who end up in medical schools are usually high academic achievers and particularly goal oriented. Their initial learning drives are a perpetual momentum of past success in academia. The skill sets that the candidates need to develop are highly variable ranging from knowledge acquisition to overcoming language barriers and behavioral adaptations. The internal and external driving forces therefore are considerably altered throughout the educational experience.

In a recently established college of medicine at Qatar University we have had the opportunity to observe and discuss the underlying factors associated with the candidates’ motivation or demotivation that influences students’ progress. Understanding these motivational drivers at an early stage provides valuable information in introducing environmental adaptions to improve candidate’s success, institutional effectiveness and an environment conducive to learning. It is equally important to assess motivation of the candidates to help and guide them to reach early informed career based decisions. This data being presented is expected to be closest to authentic feedback as the means of acquiring this information was informal peer based discussions where candidates were more open to freedom of expression.

The data presented entails the 10 major motivating and demotivating factors observed in our medical colleges in the gulf region.
#10G9 (3225)
Study Engagement. Which are their basic distractors?

Carmina Flores, ACANEMED, Mexico
Diego Meraz, ACANEMED, Mexico

Summary: Study engagement is a state of mind related to work which is positive and fulfilling. It is characterized by dedication, vigor absorption. We usually think that age, social networks and technology in general are the main distractors our students have. We conducted a study on 399 medical students using the UWES-S Test as well as interviewed them to be able to learn which are our students main distractors when it comes to engaging in their studies. In terms of vigor, most of them were in the average group (57.7%) in terms of dedication, most of them qualified on high (55%) as for absorption, most of them qualified on high (55%). When we asked them about their main distractors, distance between school and home and their peers showed to be the first cause of lack of engagement, followed by sports practice, family and at the very last video games or social networks. Students living with their parents and siblings, as well as female and second semester students have the highest study engagement scores in all the three categories. We've always believed that technology, gadgets and social networks intervene with student engaging their studies, these results helps us understand better our students. Study engagement in the 21st century is worth further research due to its importance in the long term for students outcome.

#10G10 (3296)
Transforming the learning environment: design of the first Medical Student Wellness Program in Mexico

Maria Luisa Ballí Marroquín, Wellness Institute Tec Salud, Monterrey, Mexico
Raquel Solís, Wellness Institute Tec Salud, Monterrey, Mexico
Mary Ana Cordero Díaz, Tecnológico de Monterrey School of Medicine, Monterrey, Mexico
Irving Rodríguez González, Tecnológico de Monterrey School of Medicine, Monterrey, Mexico
German Garza, Tecnológico de Monterrey School of Medicine, Monterrey, Mexico


Approach: According to Drolet and Rodgers (2010) a way to promote student well-being is through the coordination of new and existing resources. We began the design of the first Medical Student Wellness Program in Mexico by linking existing departments and projects in the Tecnológico de Monterrey School of Medicine and the Tec Salud Academic Medical Centers. Wellbeing includes a balance among emotional, social, physical and mental spheres, we included all the existing departments and programs that covered these spheres. Through electronic surveys applied to medical students (WHO quality of life survey, nutrition, physical activity, stress management, sleep pattern, academic performance and extracurricular activity), once the data was recollected and analyzed, we identified the main medical student’s problems.

Lessons Learned: We identified the following main problems: 1st and 2nd year students inadequate study skills; 3 and 4 year academic burnout, fatigue and a higher rate of substance use (e.g. tobacco and alcohol); 5 and 6 year - clinical clerkships - burnout, depersonalization, fatigue and sleep deprivation. We concluded that each year needs specific but continuous interventions through a Wellness Program, such as: diagnostic assessment (nutritional, physical and mental), teaching mindfulness techniques and self-care, mentoring, counseling for mental health and substance abuse, transforming duty hours, nutritional and physical activity programs. The goal of this program is to modify the fatigue cycles, burnout and depersonalization that also affect patient safety and health care.

Significance: This program is being implemented as a pilot at the Tecnológico de Monterrey School of Medicine and could be replicated in other Mexican schools to change the paradigm from nostalgic professionalism to well-being.
#10G11 (1602)
Learning by interactive playing — application of interactive student exercises in clinical teaching

William J. Huang, National Yang-Ming University, Taipei, Taiwan
Ling-Yu Yang, National Yang-Ming University, Taipei, Taiwan
Jing-Feng Lirng, National Yang-Ming University, Taipei, Taiwan
Chen-Huan Chen, National Yang-Ming University, Taipei, Taiwan
Alex TL Lin, Taipei Veterans General Hospital, Taipei, Taiwan

Summary: Medical knowledge can be taught in many ways. The most effective is to use Interactivity and providing meaning of connection. More significant is to build the links of basic medical knowledge to clinical application. To enhance the learning experiences, we have adopted an interactive playing model in our curriculum. We first introduced this methodology in urological block. In lectures for clinical diagnosis and core urology imaging, students are invited to come up to the stage to join the play and demonstration. The play is followed by an immediate response quiz, discussion among learners to help revising the quiz answers.

For example, at teaching the vasculature of great vessels, 1 student plays aorta, the other student plays inferior vena cava. All students are encouraged to discuss the correct anatomical orientation of the vessels. Many related diseases can then be explained from the abnormality in the established framework of anatomy. Some other models of demonstration are also applied in this way to explain the typical findings from the physical diagnosis, such as testicular torsion and hydroceles etc. Students’ feedbacks were extremely encouraging, many of them stated that the memory after the learning experiences is very durable, and very easy for them to share (teaching others) other students not taking the course. This lecture has been listed as one of the best lectures in university for years. This teaching has also been suggested as model demonstration at the faculty development program in many medical universities in Taiwan.

To involve students in an interactive exercise format is very powerful in teaching. Teachers should be encouraged to create more interactive exercises and faculty development program can also support the works in developing more courses to adapt this methodology.

#10G12 (2813)
Five years of interprofessional simulation for medical and nursing students - ten lessons learned

Liisa Carlzon, Sahlgrenska University Hospital, Gothenburg, Sweden
Tine Högborg, University of Gothenburg, Gothenburg, Sweden
Camilla Eide, University of Gothenburg, Gothenburg, Sweden
Torben Nordahl-Amoröe, Sahlgrenska University Hospital, Gothenburg, Sweden

Summary: All medical and nursing students in Gothenburg University participate in mandatory 2-day simulation-based course in teamwork and interprofessional communication. This course was the first interprofessional course connecting these two programmes and has therefore raised questions about educational methods and faculty development connected to interprofessional education. Traditional educational structures with professional “silos” seems to be a common obstacle for interprofessional education initiatives in many organisations. Data and experiences from this project highlight some of the important aspects to consider in planning interprofessional initiatives.

Data for this presentation combines three methods. 1) Analysis of student evaluation forms (n=297), 2) focus-groups with students in the begining of the project and 3) intervjues with faculty members. Students find the interprofessional simulation highly valuable for their future professional work. They appreciate feedback from peers and working in authentic, sometimes stressful situations. Interprofessional simulation-based training seems to remodel their attitudes even though the settings are very practical and learning objectives mainly addressing behaviors. Developing and running the course has had implications for faculty development. The interprofessional approach has put more focus on peer-learning and facilitating groups instead of traditional teaching. The simulation environment provides a new type of setting raising reflections about other learning environments in the programmes. Bringing teachers from different programmes together has implications for faculty development.

Developing interprofessional simulation-based course provides constructive learning environment and is highly appreciated by students and teachers. Interprofessional initiatives depend on collaboration within and between professions revealing differences in organisation and culture in faculties.
## #10H  Short Communications: Diversity 2
### Location: Hall 3g

### #10H1 (3272)
**Breaking barriers - improving cultural competence**

Amy Moran, PGMDE, King’s College Hospital, London, UK
Thomas Sanctuary, PGMDE, King’s College Hospital, London, UK
Katy Watson, PGMDE, King’s College Hospital, London, UK
Cathryn Mainwaring, PGMDE, King’s College Hospital, London, UK
Oliver Keane, PGMDE, King’s College Hospital, London, UK
Simon Calvert, PGMDE, King’s College Hospital, London, UK

**Background:** Our hospital serves a culturally diverse population. This poses challenges: language barriers must be overcome, cultural or religious beliefs may influence patients’ health attitudes and cultural practices can conflict with the law. Evidence shows health inequalities across different ethnicities. We developed a multidisciplinary simulation course to help navigate these challenges.

**Summary of work:** We collaborated with experts to address topics such as communication barriers, attitudes towards blood transfusion, beliefs surrounding end of life care, female genital mutilation, transgender patients and eligibility for medical care in the UK. The one day course uses hybrid simulation.

**Summary of results:** We have so far delivered the course twice with 13 participants including nurses, midwives and doctors. Feedback has been excellent with all participants ‘satisfied’ or ‘extremely satisfied’ with the course. Participants confidence across all objectives improved after the course, as did their knowledge of where to seek advice.

**Discussion:** The course was challenging to develop. We felt there was a risk of unintentionally stereotyping and causing offence. Liaising with experts was invaluable. The numbers enrolling on the course have been limited. The reasons are unclear but we hope the positive experience of participants will help attract more interest.

**Conclusion:** We have successfully designed and delivered a simulation course that raises awareness of cultural differences that can impact on a patient’s attitude to healthcare, and gives the participants guidance on how to navigate these challenging areas. The course feedback has been positive and shows the objectives are being met.

**Take-home message:** In an ethnically and culturally diverse society, health professionals should be aware of the impact that different beliefs and traditions can have on attitudes to health and healthcare, in order to provide accessible, high quality care for all. Using simulation to teach this topic is novel but can be effective.

### #10H2 (2549)
**Status Quo of the Integration of Gender-Specific Medicine into Medical Education in German Universities**

Sabine Ludwig, Charité-Universitätsmedizin Berlin, Germany
Susanne Dettmer, Charité-Universitätsmedizin Berlin, Germany
Harm Peters, Charité-Universitätsmedizin Berlin, Germany
Gabriele Kaczmarczyk, German Medical Women’s Association, Germany

**Background:** To ensure the quality of medical care for women and men, knowledge and skills on sex and gender differences in the development, prevention, diagnosis, therapy and research of diseases are important. The aim was to assess the current status of integrating Gender-Specific Medicine into medical curricula in Germany.

**Summary of work:** A questionnaire was sent to 36 German medical faculties. The response rate was 89%. They were asked how it is ensured that Gender-Specific Medicine is taught, in which medical subjects it is integrated and if new research findings on sex and gender differences are integrated into medical education.

**Summary of results:** To ensure the integration of Gender-Specific Medicine two faculties have a change agent. Only 16 faculties have integrated Gender-Specific Medicine in more than 2 medical subjects. In 13 faculties, the teachers are responsible for integrating new research findings on gender differences and ensuring the sustainability of the integrated aspects.

**Discussion:** The questionnaire was sent to the deans of student affairs of the different faculties who might not have had all the information required. Furthermore, the questionnaire did not comprise all the aspects needed to evaluate a successful integration of Gender-Specific Medicine into medical education according to the international standards.

**Conclusion:** Only one faculty has achieved a full integration of Gender-Specific Medicine into their curriculum. Gender-Specific Medicine content is therefore not yet integrated systematically in medical curricula in Germany.

**Take-home message:** Overarching concepts to improve the integration of Gender-Specific Medicine and further diversity issues into Medical Education and into the curricula of other health professions as well as the establishment of supporting structures are necessary.
Promoting Diversity through Teaching about the History of Minorities in the Health Professions

Preston Reynolds, University of Virginia, Charlottesville, USA

Background: Minorities, including African Americans, have faced enormous barriers to careers in medicine, nursing, dentistry, veterinary medicine, and public health in the US and around the world. This paper addresses an innovative strategy to promote health professions diversity through teaching about the history and contributions of African American health professionals.

Summary of work: This undergraduate and medical school courses examine how racism shaped American health professions education and healthcare delivery; describe the achievements of Black health professionals in overcoming racial barriers and the impact of major social events on reform of public policies and healthcare, and conclude with a discussion of health disparities.

Summary of results: Undergraduate students consistently rate the course as outstanding; narrative feedback reveals the format inspires them to pursue careers in the health professions, and reduce health disparities. Medical students consistently rate the course as excellent; narrative feedback also reveals the lack of any exposure to the history of minority health professionals.

Discussion: Health professions education, including the medical humanities, has failed to teach students the complete history of American medicine with its legacy of racial discrimination. The lives of Black health professionals can serve to inspire students at all levels, and their experiences with racism provide a deeper understanding of health disparities.

Conclusion: Minority and non-minority students are eager to learn about the history of health care in America, and appreciate learning about the enormous contributions made by African American health professionals. This content is not included in undergraduate and health professions curricula despite its relevance to historical and current problems of diversity.

Take-home message: The medical humanities offer a strategy to promote diversity, and to inspire pre-professional and current health professions students to achieve excellence in the face of institutional racism. Five years of teaching the history of African Americans in the health professions to students at all levels of education confirms this assertion.

“Netherlands should not become a paradise for undocumented migrants”. Student discourses on medically necessary healthcare

Hannah Leyerzapf, VU University Medical Center, Amsterdam, Netherlands
Rashmi Kusurkar, VU University School of Medical Sciences, Amsterdam, Netherlands
Petra Verdonk, VU University Medical Center, Amsterdam, Netherlands

Background: Physicians’ stereotyped assumptions are a barrier for healthcare delivery to undocumented migrants (UM). Medical students must gain an insight into the health problems of UM, and in their own assumptions towards this marginalized group. We implemented a two-hour practical in bachelor year two and analyzed student discourses on these issues.

Summary of work: We audiotaped and transcribed the practicals of 30 student groups on UM, of which 8 were purposefully sampled based on teacher’s gender, experience and professional background (ethicist, social scientist, anthropologist), and on critical incidents during the practical. We obtained informed consent from all participants. A discourse analysis was conducted.

Summary of results: We identified three discourses: (1) medical professional, emphasizing UM as ‘patients’ or ‘cases’ and doctors as emotionally and socially detached professionals; (2) humanistic, emphasizing UM as ‘persons’ or ‘victims’ from a paternalistic human rights perspective; (3) economic, labelling UM as ‘opportunists’ or ‘criminals’ who are too costly and usurping resources.

Discussion: Students held essentialist views on UM and showed tendencies of “Othering”. Engagement with marginalized groups was seen as politics and not medical, and therefore beyond professional responsibility. There was little knowledge about and empathy for UM and their health issues, and about medically necessary healthcare from a social justice perspective.

Conclusion: As health disparities are increasing in today’s multicultural Western societies, social justice is a health issue that requires medical schools’ full attention. In order for teaching on diversity to effectively enhance diversity responsiveness of students, awareness of stereotyping, social hierarchies and racial prejudice on undocumented-migrants and refugees is needed.

Take-home message: To ensure inclusive and equitable healthcare for all patients, besides teaching students diversity-sensitive knowledge and practical skills, reflection and reflexivity on what being a good medical professional entails and how professional ethics relate to societal issues, is required. Students and teachers should critically discuss dominant norms in academic medicine.
Enhancing Cultural Competency through Self-Reflective Writing and Peer Feedback

Nanna Shannon, American University of the Caribbean, Cupecoy, St. Maarten
Jackson Golden, American University of the Caribbean, Cupecoy, St. Maarten
Boppanna, Ranu, Boston, USA

Background: The development of cultural competency, increasingly recognized as important in medical education, is an active process which requires self-reflection. This self-reflection process can be enhanced through writing exercises and sharing with peers.

Summary of work: Students complete a reflective writing exercise about their cultural background that includes values, lifestyles, behaviors, and beliefs. They then share their experience with two peers, and reflect on the sharing experience by writing more. Students complete a pre and post exercise survey assessing changes in their awareness.

Summary of results: In preliminary surveys, students have indicated that this process has heightened awareness about their own experiences, as well as exposed them to others with different backgrounds. We will present the data from pre- and post-assignment surveys completed by 110 current first semester students of basic sciences.

Discussion: A self-reflective exercise that also incorporates peer sharing can foster greater cultural awareness for students, and also promote culturally competent patient care. One student commented “Even though I thought myself to have quite a deep understanding and exposure to different cultures, there is still much to learn.”

Conclusion: Interweaving of personal reflection, peer sharing, and cultural awareness in medical education is a positive platform for promoting cultural competency in medicine. The results indicate student’s endorsement of this being a beneficial exercise to implement into the medical curriculum.

Take-home message: This unique exercise of self-reflection and peer sharing can assist students understand why the development of their own cultural awareness is critical in becoming a culturally competent physician as well as providing care to a diverse population.

Diversity in medical education: hearing the student voice

Hester Radstake
Maaike Muntinga, VUmc School of Medical Sciences, Amsterdam, Netherlands
Petra Verdonk

Background: VUmc School of Medical Sciences has been integrating diversity issues in their curriculum through an ‘Interculturalization and Diversity’ track. To evaluate whether students’ learning needs are met and to identify opportunities for improvement, we explored the experiences of undergraduate students with the way in which diversity issues are currently addressed.

Summary of work: We assessed the formal, informal and hidden curriculum from the students’ perspective by means of a qualitative evaluation study. Study population: 1st and 2nd year students of various sociocultural backgrounds. Students (N=14) shared their diversity-related observations by means of field diaries and through semi-structured interviews.

Summary of results: Thematic content analysis showed students were generally positive, although casuistry was sometimes perceived as stereotypical. Students observed missed opportunities for dialogue between students of different backgrounds about their diversity-related experiences, beliefs and values due to lack of teacher competencies, organizational factors and student segregation along cultural and religious lines.

Discussion: As diversity content is often designed by (white) educators with majority backgrounds, dominant ideas about which diversity issues are ‘legitimate’ – and should be implemented and evaluated – are reproduced. This blind spot prevents faculty from further developing diversity competencies, revealing the need for more diverse organizational and educational staff.

Conclusion: While formal diversity content was received mostly positively, we identified factors at an organizational, faculty and student level that may influence our curriculum’s diversity-responsiveness. Student segregation, as well as lack of teacher competencies, may impact the informal and hidden curriculum, and prevent students and teachers from learning from each other.

Take-home message: Multi-stakeholder conversations about diversity, equity and inclusion are essential for diversity learning but may be prevented by structural barriers that are not always visible to evaluators. To increase diversity-responsiveness of the curriculum, the student perspective should therefore be involved both formatively and summatively when evaluating diversity content of medical curricula.
#10H7 (388)
Tackling issues of Sexism, Sexual Abuse and Harassment in University

Hannah Marriott, SGUL, London, UK
Margot Turner, SGUL, London, UK
Sarah Lasoe, SGUL, London, UK

Background: Sexual harassment and sexual assault are important issues. Recent studies have suggested that large numbers of students have experienced some form of sexual abuse whilst at university. Many of these incidents go unreported. This has a significant impact on the individual’s health and well-being as well as disrupting their education.

Summary of work: We wanted to find out how our student body was affected. We worked with the Student Union to create a confidential online survey exploring attitudes and understanding of these topics. This was given out to all students. We also researched possible forms of support which could be put in place.

Summary of results: 41% of students reported witnessing sexism at university and over 50% identified activities that promote sexual abuse. Additionally, less than 15% of students were aware of relevant policies or campaigns. Most importantly 58% of students reported experiencing or knowing someone who has experienced sexual assault and 19 disclosed personal experiences.

Discussion: Results showed that sexual abuse at university affects both male and female students. They highlighted the social cultures that encourage it, most prominently within sports societies and Fresher’s events. It galvanized staff and students to put in place measures to tackle this situation, including creating a series of awareness campaigns.

Conclusion: Sexual assault is a significant problem and there is a need for action from the university to both prevent it and support students. Steps are being taken to tackle certain student cultures and increase awareness around issues of sexism and sexual abuse, as well as provide support for survivors.

Take-home message: There is a clear need for universities and student bodies to work towards educating students and staff. Literature shows this is an international problem therefore international education forums should encourage all universities to find out the extent of any problem so no one abused feels they are on their own.
**#10I Short Communications: Curriculum - Education Environment**

Location: Room 101 a/b

**#10I**

Curriculum Innovation and management of change

Verónica Aliaga  
Erika Carreño  
Esteban Cortés  
Viviana Cristi  
Paz Jorquera  
Nicolás Pietrasanta  
Virgínia Varela  
Natalia Bravo  
José Peralta

**Background**: Higher education institutions have transformed their academic and organizational structures to offering multi-disciplinary programs that reflect the inherent connections among various disciplinary fields. Therefore, Universidad de Chile Faculty of Medicine, undertook a curriculum change process based on dialogue and consensus among key players within the entire academic community.

**Summary of work**: This qualitative study seeks to recognize the cultural perspectives of change and describe the organizational structure that configures innovations management. The information was gathered by primary and secondary sources, using semi-structured interviews to Faculty authorities and institutional documents. A content analysis was used considering an inductive and deductive encoding.

**Summary of results**: Institutional willingness to manage curriculum changes was the main facilitator. It implied a structure composed by a leading and local commissions. The main resistance was the community rejection owing the competences model proposed. Hence, socialization and validations strategies, as a webpage, mass meetings and academic and students assemblies were adopted.

**Discussion**: Create an institutional structure for curricular change was essential to achieve support and participation of the academic community. It highlights the importance of socialization and validation strategies to face barriers emerged in an innovation process, that in this case turn around the resistance to the competencies based learning.

**Conclusion**: This study underlines the importance of designing a participative and supported curriculum change process. A dialogue between authorities, academics and students is crucial to move towards an inter and transdisciplinary education, according to community needs and twenty-first century educational demands.

**Take-home message**: Every process of curricular change should be planned considering an organizational and communicational structure of change. Strategies of socialization and validation should be developed taking into account an active participation of all community members into curriculum transformation, deeming their paradigms, interests, needs and their role within the institution.

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**#102 (3232)**

The Change Laboratory: A Research-Intervention Approach for Collaborative Design of an Integrated Pharmacy Curriculum

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Paul Gallagher, School of Pharmacy, Royal College of Surgeons in Ireland, Dublin, Ireland  
Brett Bligh, Department of Educational Research, Lancaster University, Lancaster, UK

**Background**: Redesigning health professions education curricula from traditional to integrated model requires careful reconfiguration of teaching and learning activities and involves a wide variety of experts from health sciences and clinical disciplines. We used the Change Laboratory methodology to provide a theory-informed participatory structure to our redesign of the pharmacy curriculum.

**Summary of work**: We aimed to examine how the Change Laboratory methodology facilitated the redesign process; to explore the experiences of participants; and to trace how the participatory decision making influenced the final curriculum design. Data were collected from twenty semi-structured interviews with participants in the process and triangulated with document analysis.

**Summary of results**: Analysis of the transcripts indicated that participants reported predominantly positive experiences of the curriculum redesign process. Participants felt that the Change Laboratory sessions allowed staff members from outside the teaching faculty to have meaningful input. The structured process allowed the curriculum to be designed with due consideration to systemic constraints.

**Discussion**: Although the use of the Change Laboratory methodology in medical education is embryonic, its use has been well documented in other organisational change situations. In this study we found that the benefits identified in other complex system change management initiatives were also identifiable in the context of curriculum reform.

**Conclusion**: The Change Laboratory methodology is a research-intervention approach that can be considered for use in the design of integrated curricula. Unlike other change management approaches, this methodology is strongly underpinned by theory. We observed several benefits from using this approach, particularly due to its structured and participatory nature.

**Take-home message**: The Change Laboratory methodology should be considered by those involved in curriculum reform who wish to use a theory-informed approach. The Change Laboratory methodology uses activity theory principles to assist the change management process in a structured way, and was very well received by staff and regulators in our experience.
Revision of medical curriculum for orthopedics and traumatology required a complete attitude shift from the teachers – Helsinki experience

Mikko Heinänen, Helsinki University Hospital, Helsinki, Finland
Ilkka Kiviranta, Helsinki University Hospital, Helsinki, Finland
Teppo Järvinen, Helsinki University Hospital, Helsinki, Finland

Background: Systematically collected feedback on our orthopedics and traumatology curriculum revealed that it had too few teaching hours and to our opinion it lacked relevance to GPs, as it was too diagnosis-oriented. When Dean’s office approved our requests for added teaching hours, we decided to revise the curriculum entirely.

Summary of work: We sought the overall importance of our discipline and the relative contribution of various individual musculoskeletal problems to the GPs from two databases, one containing 12 million GP-patient visits and another containing 100,000 minor trauma unit visits. We complemented the effort by interviewing our “super tutors” (experienced GP-tutors).

Summary of results: Our analysis showed that patients with various musculoskeletal complaints represent roughly 20% of GPs’ daily work. We further noticed that most of these patients present with a somewhat vague set of symptoms and given the resources (e.g., imaging) available, a specific diagnosis is neither feasible nor possible in general practice.

Discussion: Acknowledging the apparent poor conformity of our curriculum to the needs of present general practice, we adopted a completely new approach for the creation of new curriculum, an approach we coined “bottom-up” instead of “top-down”: Teaching sessions were constructed to be primarily symptom-oriented, rather than aiming for specific diagnoses.

Conclusion: We here describe our process for revising the orthopedics and traumatology curriculum, in which we utilized the available registries and the knowledge of experienced GPs. We are hopeful that the revised curriculum arms our young doctors with better skills to treat patients with various musculoskeletal problems.

Take-home message: When planning a new curriculum for medical students, it is wise to step down from the “University Ivory Tower” to the GP level.

Developing a modular, customizable, reusable medical school curriculum

Tao Le, University of Louisville, Louisville, KY, USA
YunXiang Chu, Harvard University, Boston, MA, USA
Kristine Krafts, University of Minnesota, Minneapolis, MN, USA
Catherine Johnsons, ScholarRx, Elizabethtown, KY, USA

Background: Curriculum development can be challenging due to limited faculty resources, time constraints, and lack of standardized curricula. We are developing a low-cost, componentized curriculum platform and exchange that will allow schools to rapidly develop and deliver a high-quality curriculum customized to their local needs.

Summary of work: We designed a hematology course pilot led by a multidisciplinary planning team. Course concepts were organized into 97 component “bricks” which were then authored by medical students authors with expert faculty guidance. Each brick is a 15-20 minute learning experience consisting of narrative text, images, mnemonics, and self-assessment questions.

Summary of results: The hematology pilot will be implemented at several US medical schools this year. Medical student engagement and satisfaction with the curricular “bricks” will be assessed with end-of-course surveys. Faculty feedback with regards to the curriculum content will be collected through surveys and interviews.

Discussion: Several other course systems are currently in the planning stages. The pilot results will provide early validation of the reusable “brick” concept as well as essential guidance for our quality improvement process as we further evolve and scale the project.

Conclusion: If effective, the componentized curriculum platform could be used by medical schools throughout the world as a major resource for low-cost, high-quality curriculum development and delivery.

Take-home message: Many medical schools struggle to develop curriculum with limited resources. A componentized curriculum platform and exchange with standardized learning and assessment “bricks” can enable medical schools to rapidly develop and deliver a customized high-quality curriculum while decreasing the cost of education.
How the learning environment influences students’ learning strategies: a comparative ethnographic study

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Caragh Brosnan, University of Newcastle, Callaghan, Australia
Robbert Duvivier, University of Newcastle, Callaghan, Australia
Martin Veysey, University of Newcastle, Callaghan, Australia

Background: Learning environments convey messages to students regarding the culture of medical education and the profession. These unwritten messages have been referred to as hidden and informal curricula. So far, other than in relation to professionalism, little research has examined the content of these curricula and their influence on learning.

Summary of work: A multi-sited comparative ethnographic study was conducted in the context of a joint medical program delivered at two different medical schools. A combination of research methods, including observation and interviews, was used to study the curricular activities and the learning strategies of students in the preclinical years.

Summary of results: Thirteen interviews of first- and second-year students and seventy-two hours of observation of learning activities were conducted. Thematic analysis of the qualitative data collected was used to understand the development of learning strategies and uncover elements of the learning environment that have an influence on this process.

Discussion: The delivery of the same program at two different institutions allows the influence of learning environment to be studied separately from the formal curriculum, which is the same in both places. Elements of the institutional culture, expressed in the hidden and informal curriculum, influence the students’ learning strategies.

Conclusion: The learning environment is a complex entity that influences the students’ learning, as well as their socialization in the medical profession. A better understanding of the learning environment will assist medical educators in directing the students towards effective learning strategies.

Take-home message: The institutional culture that permeates the learning environment exercises a powerful influence on students’ learning strategies. Assessments and alteration of the learning environment to facilitate the students’ learning needs to consider the effects of the institutional culture.
Conclusion: foundational knowledge underlying a skill.

transfer. Our work expands this concept of ‘cognitive

spontaneously, explicitly integrated instruction better

connect procedural and conceptual knowledge

Take-home message:

other clinical skills.

suggesting this instructional design feature may benefit

integration’ from clinical reasoning to procedural skills,

must design instruction that explicitly integrates

when learning simulated LP skills. Thus, educators likely

reasoning skills, trainees struggle to integrate clinical and

Discussion:

“How” group on both retention and transfer.

”spontaneous integration’ group will outperform the

Summary of results:

We randomized 66 medical students

practice simulated lumbar puncture (LP) using a specific

interval video during a 1-hour session: i) “How”

instruction only, ii) isolated “Why” then “How” instruction

(spontaneous integration); and iii) instruction with “How”

and “Why” integrated explicitly throughout. We compared

trainees’ post-, retention-, and transfer-test performances.

Summary of results: We hypothesize that the ‘explicit

integration’ group will outperform all groups at retention

and transfer, but not at post-test. Also, we expect the

‘spontaneous integration’ group will outperform the

“How” group on both retention and transfer.

Discussion: Studies suggest that when learning clinical

reasoning skills, trainees struggle to integrate clinical and

basic science knowledge. We expect our participants will

also struggle to integrate “How” and “Why” knowledge

when learning simulated LP skills. Thus, educators likely

must design instruction that explicitly integrates

foundational knowledge underlying a skill.

Conclusion: Though trainees have some capacity to

connect procedural and conceptual knowledge

spontaneously, explicitly integrated instruction better

supports this process and improves skill retention and

transfer. Our work expands this concept of ‘cognitive

integration’ from clinical reasoning to procedural skills,

suggesting this instructional design feature may benefit

other clinical skills.

Take-home message: Educators may maximize trainees’

learning outcomes by designing instruction that explicitly

integrates “How” (i.e., procedural) and “Why” (i.e.,

conceptual) knowledge. Our study has implications for the

types of instructional design features simulation educators

are encouraged to use, and for how education researchers

study the transfer of procedural skills.

Background: Competency in bedside procedures requires

understanding both how and why each step is performed.

However, procedural knowledge (“How”) and conceptual

knowledge (“Why”) are often taught in isolation, which

assumes trainees can spontaneously integrate the two.

We studied how different types of integrated instruction

impact skill retention and transfer.

Summary of work: We randomized 66 medical students
to practice simulated lumbar puncture (LP) using a specific
instructional video during a 1-hour session: i) “How”
instruction only, ii) isolated “Why” then “How” instruction
(spontaneous integration); and iii) instruction with “How”
and “Why” integrated explicitly throughout. We compared
trainees’ post-, retention-, and transfer-test performances.

Summary of results: We hypothesize that the ‘explicit
integration’ group will outperform all groups at retention
and transfer, but not at post-test. Also, we expect the
‘spontaneous integration’ group will outperform the
“How” group on both retention and transfer.

Discussion: Studies suggest that when learning clinical
reasoning skills, trainees struggle to integrate clinical and
basic science knowledge. We expect our participants will
also struggle to integrate “How” and “Why” knowledge
when learning simulated LP skills. Thus, educators likely
must design instruction that explicitly integrates
foundational knowledge underlying a skill.

Conclusion: Though trainees have some capacity to
connect procedural and conceptual knowledge
spontaneously, explicitly integrated instruction better
supports this process and improves skill retention and
transfer. Our work expands this concept of ‘cognitive
integration’ from clinical reasoning to procedural skills,
suggesting this instructional design feature may benefit
other clinical skills.

Take-home message: Educators may maximize trainees’
learning outcomes by designing instruction that explicitly
integrates “How” (i.e., procedural) and “Why” (i.e.,
conceptual) knowledge. Our study has implications for the
types of instructional design features simulation educators
are encouraged to use, and for how education researchers
study the transfer of procedural skills.
**#10J3 (2311)**
Video as a learning tool in clerkship

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*Sidse Arnfred, Region Zealand Psychiatry West, Slagelse, Denmark*

**Background:** A number of challenges are reducing the quality of the learning processes in clinical psychiatry, which is regrettable as the core concepts are known to be hard to understand and intangible. Video libraries or instructions have shown potential as learning tools supporting the clinical training in other medical fields.

**Summary of work:** Medical students at University of Copenhagen join a three weeks clerkship at a psychiatric hospital. During the clerkship we introduce a video library consisting of interviews with real patients, summaries of medical records and mental status examinations of each patient. We explore how it affects the clerkship using ethnographic methods.

**Summary of results:** Different learning theories are used for the empirical analyses. Initially the material shows unexpected ways in which the video library is used and is expected to provide an understanding of what the video library offers in the clerkship as well as new insights into the learning processes during clerkships.

**Discussion:** The pro and cons of offering a video library is discussed along with the possible difficulties of implementing a new tool in a strained organization.

**Conclusion:** Analyses are undertaken currently.

**Take-home message:** Analyses are undertaken currently.

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**#10J4 (2160)**
“What we say we do and what we do” – Learning from ED observations of Education in Paediatrics to enhance learning and teaching

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*Amy Gray, Department of Paediatrics, University of Melbourne, Melbourne, Australia*
*Paul Monagle, Department of Paediatrics, University of Melbourne, Melbourne, Australia*

**Background:** Teaching medical education in a busy paediatric Emergency department is a complex process. Competing demands for service provision and patient flow places education under pressure. In our paediatric tertiary hospital, education is perceived to be prioritised amongst Emergency staff, yet little objective data on teaching and learning activity exists.

**Summary of work:** We used an ethnographic approach to observe education “on-the-floor” in the Emergency department over two months. We observed learning opportunities; what is explicitly taught, methodological approaches used, case presentation structure and whether educational pedagogy underpins practice.

**Summary of results:** Whilst elements of excellent teaching were present, education was largely teacher centred, implicit and ill defined. Medical student education was prioritised while trainee doctor education was more adhoc. Teaching content was often clinical, while communication and professionalism were frequently ignored. Trainee observation by consultants rarely occurred and feedback was rare.

**Discussion:** Our findings highlighted significant missed educational potential in the Emergency teaching environment as well as a need for a shift in educational focus. Consultants are perhaps unprepared for the educational complexity required to facilitate complex teaching to multi-level staff in a highly pressured environment and would benefit from educational support.

**Conclusion:** ED environments have enormous educational potential however more effective education could be systematic with increased methodological rigour, without detracting from clinical imperatives. We will use our findings to develop an educational framework for quality education for all trainees in the Emergency setting and quality care of our patients.

**Take-home message:** Observing education in practice and reflecting on what we do is essential for continuing quality educational practice and care.
#10J5 (1968)
Adult learning curves and embryo transfers: An activity and goal orientated learning process

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Lee Nai Lim
Nitish Narvekar

**Background:** Embryo transfer (ET) is the final critical stage of an in vitro fertilisation (IVF) treatment cycle. It is one of the cornerstone procedures in the training of a reproductive medicine specialist. Surgical procedure training is done through observation, simulation and repetitive procedural practice.

**Summary of work:** The cumulative pregnancy rates (CPR) between August 2008 - November 2013 were divided into two categories: Consultants and Trainees. The consultants were accredited to perform ETs, whilst the trainees were new to the skill. Data was collected retrospectively for their first and last 50 consecutive ETs, accounting for confounding variables.

**Summary of results:** The CPR did not differ between Consultants (39%) and Trainees (45%) for the first 50 (p=0.41) and last 50 (40.7% versus 42.7%) (p=0.81) ETs. The CPR for each individual remained consistent with their peaks and troughs mirroring the overall success rates of the unit.

**Discussion:** Houle’s activity and goal-oriented learning theories is represented here. A Reproductive Specialist aims to achieve optimal live birth rates (LBR) from every ET. We demonstrate that 50 initial supervised ET procedures are required by an adult learner, to achieve and sustain an optimal LBR that is comparable to experienced clinicians.

**Conclusion:** The relationship between volume of work and outcomes is established in postgraduate medical education. A set amount of time is required for an individual to achieve optimal outcomes (Luft et al., 1979). The exact number required to achieve clinical competence is dependent on the procedure and intensity of the workload.

**Take-home message:** Activity and goal orientated training play a key role in medical education, particularly in a postgraduate learning environment where success of procedures are evaluated based on clinical outcome. Trainers should actively be aware of these learning theories and use them to design the teaching modalities to improve learning outcomes.
Health professions educators' attitudes, practices and perceived barriers and facilitators to using research evidence in educational practices

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Background: Health professions educators (HPE) are increasingly called upon to embrace and apply an evidence informed approach to teaching and assessment practices and policy. There is scant empirical research exploring health professions (HP) educators' attitudes, practices and perceived barriers and facilitators in using research evidence in educational practice.

Summary of work: Guided by a knowledge translation (KT) framework, we conducted a survey of AMEE members to explore 3 domains related to evidence informed HPE: 1) attitudes; 2) actual practices; and 3) facilitators and barriers. Analyses involved descriptive statistics to characterize participants' responses per domain, exploratory factor analysis and multivariate regression analyses.

Summary of results: 396 (~10%) participants representing HPs, non-HPs (e.g. PhDs) and different roles (e.g. teacher, administrator) completed the survey. Internal consistency for each domain ranged from very good to excellent. Attitudes towards evidence informed HPE were generally favourable. Several barriers preclude participants from engaging in evidence informed approaches to HPE.

Discussion: This study provides preliminary evidence on attitudes towards (importance of HPE research) and perceived barriers and facilitators (e.g. access to resources) of research use in HPE from different groups of HP educators, clinicians and administrators. The findings from each of the 3 domains will require additional exploration using qualitative methodologies.

Conclusion: Targeted KT interventions designed to increase the uptake of research in HPE should take into account different stakeholder groups’ perceptions regarding these approaches, current vs. best practices and the factors that may impede evidence-informed approaches to HPE.

Take-home message: As the HPE community advocates evidence informed approaches to teaching and assessment practices, we must identify different HPE stakeholders’ attitudes towards these approaches, current practices, and the determinants (supports and barriers) to research use. This international study on evidence informed HPE is the first to explore this area of scholarship.

How do clinicians become clinical teachers? An ethnographic exploration

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Willem De Grave, Maastricht University, Netherlands

Background: Clinical education is often criticised as being unplanned, haphazard and intimidating. Clinical teachers are critical determinants of the quality of clinical education, yet most clinical teachers have not been trained to teach. We set out to explore the reciprocal relationship between social structure in clinical workplaces and the development of clinical teacher identity. This presentation relates to an ethnographic study of clinical teacher identity as performed and negotiated in the context of working and participating in clinical teams.

Summary of results: Using Goffman’s dramaturgy theory as an orientating concept, this research set out to observe how teachers construct and co-construct teacher identities and practices during social interaction. Using standard anthropological approaches of marginal peripheral participation and thick description, this study involved 34 weeks of participant observation within 4 different clinical teams. Observation included observing, photographing and videoing all clinical team activities including social gatherings. All participants underwent at least one semi-structured interview. Data were analysed using typical anthropological phases of thematic coding followed by interpretation and the derivation of illustrative thick description narratives.

Summary of results: Participants consistently performed roles as teacher/actors and audience members in keeping with Goffman’s dramaturgical frame. Participants mutually coordinated their performances as actors and audience in order to maintain an impression of competence whilst avoiding the revelation of any discreditable features. Teachers performed formal “front stage” representations of teacher identity in the presence of patients, in interdisciplinary case conferences and in educational set pieces such as grand rounds. Teachers constructed quite distinct teacher identities in informal backstage settings such as corridors, team meetings and in the coffee shop. Ward rounds and outpatients were places where teachers arbitrarily flipped between front and back stage performances of teacher identity without changing physical location, by using shifts in language, gestures and body position.

Conclusion: Front and back stage performances of teacher identity often occur in the same physical space, whereby teachers create virtual barriers between patients and team members using language gesture and corporeal signals. These findings suggest that teacher identity and practice is essentially co-constructed between team members and that clinical teams are largely conserving of established ways of being and becoming a teacher.
Factors that (de)motivate teachers: a longitudinal survey study

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Background: Competent teachers are indispensable for high quality education. Becoming competent implies gaining knowledge and skills but starts with motivation to learn and develop. We conducted a longitudinal survey study to investigate how context change affected faculty teachers’ work engagement and motivation for teaching at one academic medical center.

Summary of work: We surveyed faculty members in 2011 and 2016, before and during major curriculum integration and reform, and implementation of enhanced faculty development opportunities. Respondents (306 in 2011, 154 in 2016) rated their overall work engagement and for teaching, research, and patient care, and rated factors affecting their motivation for teaching.

Summary of results: Teaching engagement increased despite no change in overall work engagement. Factors that became stronger motivators were freedom to determine one’s teaching, teaching with colleagues from other disciplines, and teaching with emphasis on learning process. Teaching about one’s specialty remained the top motivating factor, but with a lower score. All p<0.05.

Discussion: Despite potential stressors from major curriculum reform involving interdisciplinary integration, faculty motivation for teaching increased and attitudes toward collaborative teaching improved. The concurrent implementation of new faculty development programs and increased support and career advancement for faculty teachers, likely helped to discern the opportunities rather than the challenges.

Conclusion: Faculty teachers are generally motivated to teach, but curriculum change can be challenging and stressful. Our experience suggests that when curriculum reform is coupled with an increased attention to institutional support and faculty development, faculty engagement with and motivation for teaching can be sustained or even increased.

Take-home message: The provision of formal structured faculty support and development during curriculum reform can help ameliorate the stress associated with curriculum change and allow the excitement of innovation to invigorate faculty teachers and shape their attitudes toward new teaching strategies.

Scholar teachers’ formal and informal practices in Life Science Education

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Background: Teaching in higher education has increasingly become a communal practice. Scholar teachers interact and collaborate with their peers and the academic community. They are members of various communities and contribute to the development of teaching. However, concerns have been raised whether the potential of collaboration is fully utilised.

Summary of work: The portfolios of 43 scholarly teachers of life sciences, including medicine, pharmacy and veterinary medicine were analyzed by qualitative content analysis. The aims were to explore what kind of interactive practices in formal and informal settings the teachers described, and what were the shared objects of their collaborative practices.

Summary of results: Five categories of teachers’ interactive practices were found: 1) Interacting with peers for personal development, 2) sharing good teaching practices, 3) teaching together, 4) producing educational artefacts, and 5) developing education systematically. These practices were realized in formal or informal settings and both settings were identified in each category.

Discussion: Nearly all the teachers were members of formal communities. These practices were mainly seen as responsibilities and described briefly whereas the work in informal communities was seen as part of own learning, described in an enthusiastic way and showed commitment. Occasionally a purely informal practice became an established formal practice.

Conclusion: Most of the interactive practices described by the teachers were informal and took place in a nearby context in teachers’ own discipline. However, if most of the development processes are very local they may disappear, or the wider academic environment will not adopt the best practices.

Take-home message: The engagement shown by scholar teachers in informal communities is not necessarily fully utilized by their institutions. The various ways to utilise the developments beyond the discipline-specific contexts should be facilitated and more attention should be paid to engage teachers to formal communities and foster the feeling of personal commitment.
Tensions Towards Identity Formation as a Medical Educator

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Sean McAleer, University of Dundee, UK
Susie Schofield, University of Dundee, UK

Background: Previous studies have attempted to identify tensions medical faculty may encounter but not specifically those with a qualification in medical education and towards identity formation as medical educators. We explored the tensions of medical educators with qualifications in medical education at various stages in their career from academic centers worldwide.

Summary of work: The experiences of a diverse pool of thirty-six educators who had undertaken or were undertaking a postgraduate qualification in medical education from the Centre for Medical Education, Dundee were explored through semi-structured interviews. The data were analysed using constructivist grounded theory analysis in ATLAS.ti 7.

Summary of results: Participants reported juggling multiple roles challenging their work-life balance. They observed low social and economic capital for pursuing a career in medical education. Their job descriptions and promotion policies were unclear. They also reported challenges towards further development in medical education. Graduates with extensive experience in education had no fears.

Discussion: Identity development as a medical educator has associated tensions. These tensions identified by the educators complements and extends those identified in the literature. After being insecure initially upon entering an educational practice, the medical educators learn to comply, develop and participate as they develop a sense of belonging.

Conclusion: Understanding these tensions towards identity formation should help improve the educators’ experience and aid the professionalisation of medical education. Acceptance of health professionals with full-time careers in medical education is critical to their retention and success. Separate career routes, job descriptions and workload models for medical educators are recommended.

Take-home message: Institutional policies and practices should reward the educational scholarship as much as research. Medical educators should be given protected time and funding to improve their teaching, introduce innovations and interact with an educational community. Postgraduate programmes in medical education should help students identify these tensions and develop coping strategies.

Factorial Structure of the Occupational Commitment Scale in healthcare teachers

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Background: A main aspect of professional identity is occupational commitment which has shown significant relationship with motivation and positive mental state in healthcare environments. However, it is not clear how occupational commitment is related to teaching practices in universities. Occupational Commitment Scale (OCS) is proposed and related to Teaching Practices Questionarie.

Summary of work: OCS and Teaching Practices Questionarie were answered by 319 university teachers from 13 chilean regions, who were selected through a non-probabilistic volunteer sampling. An exploratory factor analysis was performed. Internal consistency of each factor was calculated with Cronbach’s Alpha. Spearman correlations were used to explore relationship between the two measures.

Summary of results: Two factors were identified in OCS: Teacher Commitment and Ethical-Professional Commitment. Cronbach’s Alpha was 0.85 for both factors. Moderate direct relationship between teacher commitment, ethical-professional commitment and Teaching Practices Questionarie were found.

Discussion: A more committed teacher is related with better teacher’s practices, which confirm the importance of teacher’s believes and perceptions over their own practices. Further research is needed to assess the construct validity of the scale and its predictive value in the quality of teaching practices in healthcare programs.

Conclusion: OCS Showed an adequate internal consistency. Its factorial structure showed two different types of commitment. Teacher commitment is directly related to Teaching Practices.

Take-home message: Both the Teacher commitment and the Ethical-Professional Commitment are relevant for teacher practices.
#10K7 (2993)
How can a teacher help himself? Teaching challenges, dilemmas and models to deal with them

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Fay Turetsky

Background: It is common knowledge that clinical tutors have many challenges: teaching non-motivated students, teaching heterogeneous groups, dealing with smart-phone use during tutorials, etc. A lot has been written concerning these challenges, but do we really need to read the literature? Have we one applicable solution? How can we acquire it?

Summary of work: We approached this challenge in a creative way: during one-day seminars dedicated to improve bedside teaching and pedagogical skills, we have asked the participants to recall challenges, to name at least one success dealing with challenges in the past, and then to remember one outstanding teacher and define his attributes.

Summary of results: We learnt from the data gathered during 3 years, from 120 participants from different medical specialties and assorted ages, that everyone can deal with his teaching challenges by learning from the “success” model and/or “role model”, when the first is a preferred one.

Discussion: To succeed in dealing with our challenges it is important to take a “break”, and to apply the success model in a systematic way: to apply each stage of the model, to verbalize it either orally or by writing, to draw the relevant conclusions, and really commit to apply it.

Conclusion: We have found a good practical potential solution in the described method for dealing with teaching challenges and dilemmas. There still remain open questions. Is there a possibility to apply the models at faculty level?

Take-home message: We will demonstrate intuitive, available and applicable models to deal with teaching challenges and dilemmas.
#10L Short Communications: CPD 3
Location: Room 102

#10L1 (68)
It’s more than just travel CME: An embedded ethnography of a unique Emergency Medicine conference
Katie Dainty
Rick Penciner, University of Toronto, Toronto, Canada

Background: Travel-based CME is a popular format for physicians looking to combine education with travel. However, these programs do not usually include shared group physical activities. Emergency Medicine Update (EMU) Europe is a unique and biennial accredited CME program which combines education with organized group physical and social activities in European locales.

Summary of work: We undertook a participant observation-based ethnographic study of the EMU Europe program in Provence, France in 2015. Participant interviews and in-depth observation methods were used to understand (1) the impact of shared group activities on learning and (2) the ethos that is created during this type of program.

Summary of results: We describe three phenomena from the data that we feel are highly influential in the success of the program and impact on learning. The first is “social engagement and a sense of community”. The second is provision of “a stimulating escape”. The third is “the flat faculty-learner relationships”.

Discussion: Elements that contribute to the educational success of this model include; building a sense of community, providing a stimulating escape and choosing faculty with specific teaching styles. We will discuss how this relates to medical education theory and how it is generalizable to other groups considering this type of program.

Conclusion: To our knowledge this is the first empirical research in this area and improves our understanding of how to leverage this approach for more effective continuing medical education.

Take-home message: The combination of traditional continuing medical education events with shared group physical activities (often with inherent challenges) in unique locales appears to be synergistic with each other. These activities appear to impact learning and create a unique ethos and engagement amongst participants.

#10L2 (118)
Situational analysis of continuing professional development practices and capacity in Ethiopia: a national cross-sectional study
Tegbar Yigzaw, Jhpiego, Addis Ababa, Ethiopia
Muluneh Mossie, Jhpiego, Addis Ababa, Ethiopia
Manuel Sibhatu, Jhpiego, Addis Ababa, Ethiopia
Firew Ayalew, Jhpiego, Addis Ababa, Ethiopia
Damtew Woldemariam, Jhpiego, Addis Ababa, Ethiopia
Samuel Mengistu, Jhpiego, Addis Ababa, Ethiopia

Background: Recognizing that continuing professional development (CPD) is key to improve performance of healthcare providers and quality of healthcare, the Government of Ethiopia is in the process of establishing a mandatory CPD system. This study aimed to assess experiences of health professionals and country readiness to establish a sustainable CPD system.

Summary of work: A national cross-sectional study was conducted in March 2015. Structured interviews were conducted with a nationally representative sample of health professionals to determine their CPD practice and views. Professionals associations (PAs), in-service training (IST) centers, and regulators were also interviewed to assess their institutional capacity to provide and manage CPD.

Summary of results: 59.2% of the 554 health professionals reported CPD participation in the past year largely with support from international NGOs. 93% of the 58 PAs and IST centers reported conducting CPD; however, less than half did needs assessment, post-training follow-up and evaluation. Majority of regulators did not have a CPD unit.

Discussion: Our findings suggest a substantial proportion of health professionals are not keeping up-to-date revealing gaps in access to CPD. Local capacity to provide, evaluate, finance, and enforce CPD was also found wanting. These gaps warrant raising awareness of professionals and employers and building the capacity of local CPD providers and regulators.

Conclusion: We conclude that the level of CPD participation among health professionals in Ethiopia is modest and institutional capacity of key local actors for effective provision and accreditation of CPD is underdeveloped. Finding feasible and sustainable financing mechanisms for CPD programs is also a necessity to ensure universal access to CPD.

Take-home message: While it is good that the Ministry of Health of Ethiopia is establishing a mandatory CPD system, investment is needed to increase health workers’ access to CPD and build capacity of local CPD providers and regulators. Consensus regarding feasible and sustainable financing for CPD is also critical.
Innovative, multifaceted CPD intervention driven by healthcare providers’ unperceived needs in Myeloproliferative Neoplasms (MPN) and Myelodysplastic Syndromes (MDS): an exploratory case-study

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Background: Chronic myeloproliferative neoplasms (MPN) and myelodysplastic syndromes (MDS) are probably unknown by many healthcare providers. We developed a multifaceted continuing professional development (CPD) intervention on MPN/MDS (MPN-MDS-CPDI) to address this unperceived need. The study’s purpose is to develop and implement a theory-driven intervention and determine its impact on practice.

Summary of work: Participants selected from 3 synchronous/asynchronous modules. Theoretical Framework: Knowledge-to-Action Cycle, Expanded Outcome-based Evaluation, “push” CPD model. Sample: purposeful convenience, mostly Canadian healthcare providers. Length: 9 months (March-December 2016). Data: responses from registration, evaluation forms, pre posttests, Information Assessment Method (IAM), My MPN/MDS Portfolio (MMMP). Analysis: descriptive statistics, triangulation of sources. Summary of results: Outcome-based preliminary findings: • Participation: 124 registrants (60% family physicians). • Satisfaction (evaluation form respondents): MPN-MDS-CPDI met expectations (94%). • Knowledge (pre-posttests): significant difference (t(38) = 5.134, p < .001). • Reported impact on practice: knowledge acquisition (86%), application (81%)/confirmation (75%) of practice. • Reported patient outcomes: IAM results will be triangulated with the MMMP. Discussion: Preliminary results indicate that the MPN-MDS-CPDI fills a gap by providing an innovative format to deliver an educational intervention driven by healthcare professionals’ unperceived needs. Limitations of the study include the use of self-reported measures, research design (one-time intervention without control group) and relatively low rate of evaluation measures completion. Conclusion: Keeping abreast of the latest research developments is crucial for health professionals. Multifaceted CPD is an effective KT strategy to keep up-to-date. This study demonstrates the feasibility of implementing the CPD “push” model combined with online follow up. It contributes to the literature on the effectiveness of theory-driven, spaced CPD. Take-home message: • Theoretical frameworks are valuable in designing and implementing effective CPD educational interventions. • The CPD “push” model combined with online follow up is an effective Knowledge Translation (K-T) strategy.
#10L5 (1071)
Do continuing professional development events capture the practice-based questions asked by primary care providers through eConsultation?

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Christopher Johnson, University of Ottawa, Ottawa, Canada
Christine Prudhoe, University of Ottawa, Ottawa, Canada
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Background: The purpose of this study is to assess whether local annual refresher session offerings for primary care providers (PCPs) match their needs by coding and comparing session syllabi to clinical questions collected electronically through the Champlain BASE (Building Access to Specialists through eConsultation) eConsult service.

Summary of work: Syllabi from 521 refresher continuing professional development (CPD) sessions offered to PCPs in the eastern region of Ontario, Canada over a three year period (2012-2014) were analyzed. Percent differences between CPD content, expressed in minutes, and eConsult clinical question content, expressed in eConsult cases, were reported.

Summary of results: Of the 22,670 total CPD minutes 12,215 corresponded to the content offered through 12 eConsult specialty services. Syllabi content were compared to 3283 previously categorized clinical questions asked by PCPs through the Champlain BASE eConsult service over the same time period.

Discussion: Differences between questions asked by PCPs through eConsults and the content of contemporaneous CPD refresher courses can be analyzed to identify gaps in CPD offerings. In the future we hope to incorporate these classification schemes into the eConsult workflow so these data can be captured real time.

Conclusion: Congruence and dissonance between CPD content and clinical questions posed through eConsult varied across the 12 specialty services. This knowledge if shared with CPD program offices and providers could be used to develop CPD curricula and highlight areas of need for inclusion in primary care update activities.

Take-home message: eConsults have educational value; in particular their ability to enrich practice-based learning and inform CPD activities.

#10L6 (3292)
Improving chronic kidney disease management and detection in primary care

Karen Tu, ICES/University of Toronto, Toronto, Canada

Background: At an estimated prevalence of 10-16% of the adult population, chronic kidney disease (CKD) is common. CKD confers similar risk for cardiovascular events as diabetes yet receives far less attention in terms of quality improvement. Family physician detection and management of CKD has been shown to be lacking.

Summary of work: We performed a pragmatic cluster randomized trial of family physicians in the Electronic Medical Record Administrative data Linked Database (EMRALD) in Ontario, Canada. 194 physicians in 34 clinics were randomized to receive point of care tools and audit and feedback on CKD quality indicators.

Summary of results: Uptake of tools was negligible. Physicians were performing blood pressure measures, and ordering eGFRs in their CKD patients. They were not documenting CKD in problem lists or performing screening tests in high risk patients. Qualitative study analysis found that family physicians do not identify CKD to be a priority condition.

Discussion: This was a failed attempt to educate and incite change in family physicians with respect to the optimal detection and management of CKD. Overcoming family physician perception of the importance of CKD should be a priority for organizations looking to improve the management and detection of CKD in primary care.

Conclusion: CKD is not a priority condition for family physicians. Using electronic medical records to perform continuing medical education also has several barriers. Requiring physicians additional time to receive feedback or use a tool will likely result in lack of use of developed tools.

Take-home message: Electronic medical record tools should come from a reliable resource, be imbedded in electronic medical records and not require much effort for physicians to use. Future continuing medical education studies should learn from the barriers we’ve identified in our study should they want to be successful in inciting change.
The effect of a post-graduate training activity on burnout

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Background: Available data in the USA indicate that burnout is at crisis levels among practitioners. Burnout has been identified as a potential threat to patient safety. Numerous methods of addressing burnout have been reported. This report summarized the effect of a small group educational activity targeting interpersonal and communication skills.

Summary of work: Participants were involved in one of two educational formats: six-day live activity delivered over six-months, or an online activity delivered over 12 months. The activity included didactic materials, group discussion, practice and feedback. Pretest and post-test data on burnout were collected. Results on these items were analyzed across activity sessions.

Summary of results: The data set includes 82 surveys (60 in live activity, 22 Web-based). Participants rated burnout immediately and historically, that were combined into two indicators. The indicator of immediate burnout demonstrated improvement across the period of the activity (F = 8.32, 1/73 df, p < 0.0051, R² = 0.10).

Discussion: These data indicate a CPD activity targeting interpersonal and communication skills can be efficacious in reducing burnout. The results are consistent with previous findings suggesting the efficacy of interventions that foster discussion and interaction. This can facilitate an increased sense of social support and cohesion.

Conclusion: CPD activities can prove efficacious in reducing burnout among practicing physicians. Whether this occurs as a general effect of interactions and perceived support among activity participants, or was a function of the content being taught (interpersonal and communication skills) remains to be determined.

Take-home message: CPD whether delivered live or via the internet can play a role in reducing burnout among practicing physicians. Educational providers in delivery settings such as hospitals and clinics might serve as a resource for organizations seeking to stem what has become an epidemic of burnout among the physician cadre.
#10M Short Communications: Curriculum - Competency Based Education
Location: Room 103 a

#10M1 (1523)
Contextual variation in the success and adoption of CBME

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Background: Canada’s Triple-C initiative was one of the first national approaches to competency-based medical education (CBME). All family medicine residency programs schools have been required to adopt Triple-C. This provides an opportunity to consider system-wide successes and challenges.

Summary of work: We conducted a realist audit of the different approaches to the implementation of Triple C. We interviewed program directors, department chairs, administrators, preceptors, and residents at all of Canada’s 17 medical schools. Realist transcript analysis identified different challenges and responses in implementing Triple-C according to local context.

Summary of results: Alignment with provincial initiatives was critical. Established sites had to overcome the inertia of existing practice, whereas new sites had little history to overcome but also had fewer service opportunities. Those schools who were directly involved in the development of Triple-C faced fewer challenges than those that were not.

Discussion: Implementing CBME is not just a matter of compliance with a set of standards and principles. There is often significant variance between schools and between different sites in a single school. Program reforms need to be more contextually sensitive.

Conclusion: Although Canada has moved to a competency-based model of family medicine residency training, there is significance variance in how this has been done, both between schools and within schools.

Take-home message: Training programs are intrinsically contextually situated. National program reforms, such as those associated with CBME, need to account for contextual barriers and opportunities.

#10M2 (524)
Modernising our expectations of newly qualified doctors in the UK

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Background: The GMC sets out what newly qualified doctors from UK medical schools must know and do in the Outcomes for Graduates which provide: • guidance for students on what they should learn. • a framework for medical schools to develop curricula and assessments. • a framework for the GMC to regulate medical schools.

Summary of work: The review of the Outcomes for Graduates considered recent developments in medicine, modernised the language to reflect contemporary practice, and ensured that the outcomes reflected the needs of both primary and secondary care in a changing UK health service. We carried out a public consultation in the summer of 2017.

Summary of results: The outcomes are better aligned to our Generic Professional Capabilities for postgraduate training, the Foundation Programme Curriculum, and the needs of the modern and future healthcare system in the UK.

Discussion: We had to balance what tomorrow’s doctors need to know about things like big data, new technologies in healthcare, and genomics with what can be taught at undergraduate level.

We needed to prepare graduates for: • an increasingly challenging workplace. • treating more patients in primary care environments. • working in shortage specialties.

Conclusion: The response to the review has been positive. Stakeholders have been actively engaged. We will shortly publish revised outcomes that we think are appropriate for the next generation of doctors and can be used as the basis for our developing Medical Licensing Assessment, which we expect will launch in 2022.

Take-home message: The GMC have reviewed our outcomes for newly qualified doctors to ensure they are fit for purpose, reflect contemporary medical practice and support medical schools to train the next generation of doctors who are able to work in the changing healthcare system in the UK.
**#10M3 (3126)**

**Competence Profile in Medicine: challenges in accreditation and assessment according to guidelines for Brazilian medical education**

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**Background:** In 2014, the Ministry of Education updated the National Curricular Guidelines - DCN for Brazilian medical schools. The current guidelines better define competency areas in medical practice, as well as the key actions and performances that shape three competency areas: health care, health management, and health education.

**Summary of work:** These areas start to be developed during the first year of the course, progressively increasing student's levels of mastery and autonomy in competence-based curricula. In the health care area, performances predominantly focused clinical-epidemiological reasoning; in the management area, the strategic reasoning; and in the education area, the critical-reflexive reasoning.

**Summary of results:** Experience accumulated during the 10 years we managed these curricula served to identify challenges to assess competence. In curricular development a tendency was found to subsume that competency assessment in the health care area would be enough for professional accreditation, even though capacities belonging to the three areas were developed.

**Discussion:** Assessment practices in the three competency areas require an integrated work between professors and professionals in the context of different scenarios of the health care system. Training of professors according to competency-based curricula requires capacities to problematize all areas of competency and to recognize their importance to assessment.

**Conclusion:** Entrustable Professional Activities (EPAs), originally directed more towards the clinical dimension need to be broadened. Findings underscore the need to review medical curricula in order to assess the development of cognitive, psychomotor, and attitudinal capacities in the three areas of competency.

**Take-home message:** The curriculum development must fit the context of the situations students and professors face, and must agree with the expected level of mastery and autonomy. In the competency profile for undergraduates, it is necessary to define EPA in the management and education areas that shape the professional competency profile.

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**#10M4 (1963)**

**Differences of National-Competence Based Examination Results between students with Competence-based Medical Curriculum and Non-Competence based Medical Curriculum at Faculty of Medicine Universitas Gadjah Mada**

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**Background:** In 2006, a new Standards of Competence was approved by the Indonesian Medical Council. Faculty of Medicine UGM responded by reforming its curriculum into a competence-based curriculum (CBC) using PBL strategy. This new curriculum was applied in the Academic Year of 2007/2008. The first batch graduated in 2013.

**Summary of work:** We designed a new competence-based curriculum, from macro to meso and to micro level. We prepared the implementation by buying new skills lab equipment, training teachers, strengthening affiliated teaching hospitals, adjusting the education management system, installing a quality assurance unit, developing an internal QA system and establishing medical education department.

**Summary of results:** The National examinations results between Non-CBC (batches 2005 ad 2006) and CBC (batches 2007, 2008 and 2009) were compared. Average total score of CBC students is 76.17±7.57, higher than the Non-CBC students - (70.88±9.18) and (p<0.01). Passing rate of CBC students is 94.91% higher than the Non-CBC students (91.53%) (p<0.01)

**Discussion:** There are many factors affecting the performance of medical students in national competence-based examination. By applying CBC, the curriculum content and the assessment are more controlled to align with the Standards of Competence, backed up by better equipment, more competent teachers, better education management and more conducive teaching hospitals.

**Conclusion:** The results of National competence-based examination for CBC students are higher than the Non-CBC students at Faculty of Medicine UGM. Competence-based curriculum produces medical graduates that are more aligned with the Standards of Competences.

**Take-home message:** Reforming a curriculum is a daunting task. It starts from designing the macro, meso to micro level of curriculum, then preparing the implementation which involves many aspects. The success of a new curriculum is reflected in the constructive alignment between the written, the implemented and the assessed curriculum.
#10M5 (1089)
Faculty Engagement with an Institutional CBME Initiative

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Background: Queen’s University is on an accelerated path to transition all specialty residency programs from time-based to competency-based medical education (CBME). We know that faculty development is key to success. Therefore, a workshop series for program leaders was developed to facilitate the operationalization of CBME at the departmental level.

Summary of work: The workshops were provided every 3 months over 18 months. The initial workshops introduced the fundamentals of CBME and the rationale for its adoption. Subsequent workshops provided opportunities for collaboratively planning departmental programs of assessment and research initiatives. Over time, workshops have evolved from a leadership to participant driven model.

Summary of results: Early workshop feedback highlighted participants’ apprehension about the transition to CBME. More recent feedback reflects a sense of excitement, pride, and feelings of ownership, with participants implementing faculty development initiatives at the program level. Workshops have been successful in promoting buy-in and sustaining engagement by championing emergent successes.

Discussion: These workshops have developed into opportunities for program leaders across multiple programs to collaboratively identify needs and to develop and share resources. The workshops provided an entry point into CBME, and encouraged participants from the outset to be active agents in our exciting process of institutional transformation.

Conclusion: These workshops have allowed us to engage stakeholders at the program level, locally and across our distributed sites. They provide a space for stakeholders’ voice suggested changes to our processes, and opportunities to work collaboratively towards change. Ultimately, they have facilitated program level buy-in for the transition to CBME.

Take-home message: Early workshops were initially designed by the CBME Leadership team and evolved as faculty became more fully engaged and took ownership of the transition. Faculty development is an essential component of the successful institutional transition to CBME, but it requires time, careful planning, and the input of all stakeholders.

#10M6 (2506)
A realist audit of a national CBME initiative in family medicine

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Background: Canada’s Triple-C initiative was one of the first national approaches to competency-based medical education (CBME). All family medicine residency programs schools have been required to adopt Triple-C. This provides an opportunity to consider system-wide successes and challenges.

Summary of work: We conducted a realist audit of the different approaches to the implementation of Triple C. We interviewed program directors, department chairs, administrators, preceptors, and residents at all of Canada’s 17 medical schools. An analysis of the results identified a number of recurring context-mechanism-outcomes triads associated with the implementation of Triple-C.

Summary of results: Despite all residency programs having implemented some part of Triple C, none had implemented all of it, primarily because of the different opportunities and barriers encountered in different contexts. Some challenges in implementing Triple C were common to all schools, others were more localized.

Discussion: Triple C has been broadly successful, with earlier and more specific identification of struggling students being of particularly value. Some programs struggled with renegotiating the role and presence of specialist physicians in the training of family doctors. Implementing Triple C involved a substantial administrative and resource cost.

Conclusion: Despite many challenges, Triple C has been a driver for much quality improvement in programs and it has catalyzed the Canadian family medicine community to be much more engaged in and attentive to educational matters.

Take-home message: This study provides valuable insights to the implementation of top-down medical education reforms such as CBME.
#10M7 (1526)
The Inaugural Competency Based Curriculum Graduates: Where are they now?

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**Background:** The University of Toronto Division of Orthopaedic Surgery adopted the Competency Based Medical Education model for its residency program in 2009. With several cohorts of residents having graduated the Competency Based Curriculum (CBC) pilot program, we can now share our experiences and comment on the early results of this intervention.

**Summary of work:** In this report, we analyze the methods for evaluating the competency of the residents in Competency Based stream; we assess advantages and limitations of the evaluations; and we relate resident performance and length of training to their completion of the RCPSC Fellowship examination, and to their employment status upon graduation.

**Summary of results:** The CBC program was successful as all nine inaugural graduates passed their Fellowship Examinations on their first attempt. Seven residents graduated in four years while two finished in the usual five-year span. Three of the graduates are now in academic practice, and six are in clinical practice in community hospitals.

**Discussion:** Detailed curriculum maps as well as significantly increased numbers and methods of evaluations were useful for the learning processes. The evaluation set included multiple choice and short answer questions; Objective Structured Clinical Evaluations (OSCE); Objective Structured Assessment of Technical Skills (OSATS); numerous evaluations of procedures; and CanMEDS exams.

**Conclusion:** Based on the results on the inaugural cohorts, and the feedback from external program reviews, Competency Based Medical Education has been adopted as the primary model of orthopaedic residency at the University of Toronto. As early adopters, we aim to share our experiences with other programs.

**Take-home message:** All residency programs in Canada are required to adopt competency based framework by 2022. We believe that a gradual shift toward this model can help ensure a smooth transition. Developing detailed curriculum maps, as well as creating and validating meaningful evaluation tools are the first major steps in this process.
Using dual-task methodology, we and navigate educational technology. Educators wish to avoid blindly accepting e-learning tools perceptions are sparse. Such studies are necessary if methods of learning anatomy, beyond student ability and anatomy post-tests. We hypothesized that knowledge tests, Stroop task response times, spatial software program. Students were assessed using baseline studied joints using skeletons and a simple commercial program. We hypothesized that learning would be superior when associated with a physical specimen.

Summary of results: Results show student performance was significantly higher when joints were studied using a skeleton compared to an e-learning tool (p<0.001). Results also demonstrate that low spatial ability students are significantly disadvantaged when they learn the anatomy of a joint and are tested on images of the contralateral joint (p=0.046, R=0.326).

Discussion: Our study determined that e-learning tools do not deliver the same learning experience as traditional methods of teaching anatomy. Furthermore, our novel results imply that students with low spatial ability may need to study both sides of the human body to apply their anatomical knowledge effectively.

Conclusion: Technologies are often adopted because of a perceived ‘coolness’ factor, but satisfying learners on a technological level can devalue traditional teaching methods that are more effective. Furthermore, recognizing obstacles that impede low spatial ability learners from applying anatomical concepts (i.e. lack of contralateral images) is critical to support all learners.

Take-home message: New learning methods must be continually assessed against existing standards; while e-learning tools may elicit excitement, they are not necessarily as effective as traditional methods. Furthermore, we must be critical of the anatomical assumption that ‘one side fits all’, to ensure all individuals are anatomically competent when they enter clinics.
#10N3 (1825)
Veterinary Learning Nuggets – digital signposting for veterinary anatomy

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**Background:** Students find it challenging to identify appropriate open educational resources which address their learning needs. Trawling the web can be a time-consuming, inefficient and frustrating process. Students may also rely on poor or inappropriate web content. Therefore, faculty engagement with better signposting and integration of these educational resources is important.

**Summary of work:** This model was designed to provide digital learning nuggets for students seeking educational resources on the web. It provides a framework for collaboration between institutions both in their development and their application. The student experience of pilot nuggets was evaluated via an anonymous online survey and individual student’s reviews.

**Summary of results:** Student impressions of the value of nuggets was positive, the key benefits identified as: useful for preparing for lectures and practical classes, bringing diverse quality resources together in a single location, focusing attention on key information, breaking information into digestible portions and providing immediate feedback via self-assessment activities.

**Discussion:** Veterinary learning nuggets represent a refinement of the Reusable Learning Object (RLO) model which address the increased dependence on external web resources. They have the advantage that they are designed to interlink and plug and play in any VLE. Importantly they can be created by both staff and students.

**Conclusion:** Students are increasingly seeking information on the internet to supplement their formal taught courses. They need assistance in searching efficiently and selecting the most relevant resources. This project has helped address this need and provides a transferable model which can be used in other institutions.

**Take-home message:** Veterinary learning nuggets have considerable potential to serve as a versatile and scalable digital signposting tool for enhancing student learning in multiple disciplines.

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#10N4 (2605)
Cognitive biases and other factors that contribute to errors in identifying surgical anatomy

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**Background:** Laparoscopic surgery relies on visual identification of the surgical anatomy. Failure to correctly identify anatomy is one of the causes of surgical errors. This study measures the accuracy of students and Obstetrics and Gynaecology (O&G) trainees in identifying pelvic anatomy and explores reasons for these errors.

**Summary of work:** A video recording of a diagnostic laparoscopy of a female pelvis was shown to students and trainees. The subjects were asked to name three structures (round ligament, external iliac artery (EIA) and psoas) and identify the gonadal vessels. Group discussion explored underlying reasons that resulted in incorrect identification.

**Summary of results:** Overall 78% correctly named the round ligament; 50% the EIA; 10% the psoas; 21% identified the gonadal vessels. Differences between trainees and non-trainees naming the EIA, and between faculty and trainees naming the psoas were significant (p<0.05). The errors were due to lack of knowledge, framing, and cognitive error.

**Discussion:** It is concerning 32% of trainees could not correctly identify the EIA and 87% the psoas. 80% of trainees could not correctly identify the gonadal vessels. Non-trainees generally lacked knowledge. Trainees reported that cognitive error or confirmation bias was a major factor but framing was not.

**Conclusion:** The anatomy curriculum for medical students may need review as the medical students generally lacked knowledge. The error rate in O&G trainees also indicates the need for a review on how we teach surgical anatomy. There is a need to develop strategies to teach trainees how to address confirmation bias.

**Take-home message:** O&G trainees experienced some difficulties in identifying pelvic anatomy at laparoscopy. The underlying cause of the error in many trainees is confirmation bias. Our challenge is to help O&G surgeons develop strategies to address confirmation bias as the surgeons have with the critical view of safety in laparoscopic cholecystectomy.
#10N5 (1797)
Anatomy of the Head E-tutorial

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Background: With the plethora of learning resources available online to students, it can be daunting and confusing for students to learn anatomy. Therefore, we have created an anatomy e-tutorial targeted at medical students at early-mid years in training on anatomy of the head.

Summary of work: We reviewed the Glasgow medical curriculum intended learning objectives related to the complex field of head and neck anatomy, with a view to simplifying, and improving access to alternative learning resources. Using Adobe Captivate 9, we designed a fully interactive e-tutorial designed by students, for students.

Summary of results: Pre and post-test questionnaires will be conducted to evaluate the e-tutorial by Year 1 and 2 medical students at the University of Glasgow, which ongoing analysis will be presented at the conference. As this is a pilot study, we shall present the methodologies in the creation of an e-tutorial.

Discussion: The anatomy of the head is a complex area to learn about, and information online can be overwhelming. Therefore, we tailored our tutorial to the intended learning outcomes of the Glasgow medical curriculum. Therefore, the e-tutorial has been developed responsively to current curricular needs.

Conclusion: This e-tutorial includes several topics of the anatomy of the head including bones, muscles, blood supply, organs of the head and cranial nerves. It is a responsive project and can be used over multiple mobile platforms, including smartphone, laptop and desktop computers.

Take-home message: This tutorial will make learning anatomy easier and engaging for our colleagues as it made by students, and can be accessed over multiple platforms. This constructivist approach in medical education is innovative, and enhances group work performance and integration, as health care practitioners in training.

#10N6 (871)
Highlighted Misconceptions among Medical Students in the International Anatomy Quiz

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Background: The 3rd Chiang Mai University International Medical Challenge was an international Anatomy quiz attended by talented medical students. Misconceptions in this event may provide valuable information to Anatomy instructor for organizing an effective Anatomy courses. This study aimed to identify the common misconceptions by these international contestants in Anatomy.

Summary of work: A cross-sectional study was performed with 120 independently selected international medical students from 27 medical schools from six Asian countries who participated in the 2016 International Anatomy Quiz. The Quiz consisted of competition style preclinical and clinical Anatomy Multiple Choice Questions (MCQ) and Timed-based Station Examinations (TSE).

Summary of results: The mean MCQ score of the participants was 38.9% (SD12.7). No difference between the domestic and international good performance students occurred. The mean Neuroanatomy and Gross Anatomy scores were significantly lower in the average and the poor performance groups (P<0.001) with a positive correlation between the MCQ and TSE (R2=0.645).

Discussion: The low mean score reflected the competitive purpose of the quiz. Neuroanatomy and Gross Anatomy encompassed the most common misconceptions. The association between the MCQ and TSE scores may imply that a medical student who has sufficient Anatomy knowledge is more likely to apply their knowledge into practices.

Conclusion: The questions in the International Anatomy quiz helped reveal the common areas where most of talented international medical students misconceive in Anatomy. Our findings also provided some insights into the pitfall in both preclinical and clinical parts of Anatomy among medical students and require more focus in medical school curriculum.

Take-home message: International Anatomy quizzes can be a tool to reflect the misconceptions that enhance medical students' motivation to improve themselves in Anatomy. The most common areas of misconception were Gross Anatomy and Neuroanatomy, which are considered as important areas of anatomy and needed more focused in the Anatomy learning process.
#10O1 (3248)
Can social cognitive career theory constructs predict practice location preferences?

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Background: Studies about career choices of future medical doctors frequently lack a theoretical framework. Social cognitive career theory (SCCT), with self-efficacy, outcome expectations and goals as its main constructs, has been seldom explored in such studies. This study explores the relations between SCCT constructs and practice location preferences.

Summary of work: This study had 282 participants from a Brazilian medical school. A hybrid structural equation-multidimensional item response theory model was created to combine the information of an instrument based on SCCT about the process of selecting a practice location with a survey about the practice location preferences.

Summary of results: The hybrid model had adequate goodness-of-fit (CFI = 0.948, RMSEA = 0.064). While professional expectations were significantly associated with a preference for larger cities, lifestyle expectations were associated with preference for smaller cities and rural areas. Lower levels of self-efficacy and goals were significantly associated with preference for remote areas.

Discussion: Many countries have policies to increase the presence of doctors in rural and remote areas, including temporary, compulsory service after graduation. Such policies are met with mixed reactions and skepticism over their long-term efficiency and sustainability as they do not take into account the wishes and motivations of the professionals.

Conclusion: SCCT can provide useful insight about the underlying reasons of future medical doctors for their career choices. The hybrid structural equation-multidimensional item response theory model was able to demonstrate the magnitude of the relations between SCCT theoretical constructs and practice location preferences with a high degree of validity.

Take-home message: The viewpoints of the professionals must be better taken into account if their long-term stay in rural and remote areas is a desired outcome. Combining structural equation modeling with multidimensional item response theory modeling may be an interesting method to explore the relations of multiple theoretical constructs with multiple variables.

#10O2 (29)
Surgeon, Anesthesiologist, or Pediatrician: Using Big Data to Capitalize on Individual Specialties for Medical Students

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Background: One of the biggest challenges in education is preparing learners for an unknown future. Students are confronted with this challenge amidst the rising cost of advanced degrees, leading many to question the return on investment of their education. Education must be revolutionized to become more efficient, dynamic, and individualized.

Summary of work: We are combining big data, data visualization, and education to help establish the field of precision education. Using precision education, we aim to improve student outcomes by characterizing student attributes and, through the use of predictive analytics, suggest the prospective academic and career options that best align with the individual.

Summary of results: Our approach to personalized education features a multi-dimensional curricular web and an attribute map that reflects a student’s academic and personal growth. These attributes are multivariate so that enough data is generated to make accurate predictions. Representative attributes include measurements of persistence, curiosity, and motivation.

Discussion: Previous studies have suggested that medical students desire increased support from faculty in making career decisions. In our study, predictive analytics are being used with data visualizing to enable cross-comparison between students. Trends and patterns in student behavior will be used to make predictions about student outcomes.

Conclusion: By collecting data such as the pathway taken through a curriculum, the amount of content examined, quiz and test scores, and student perseverance through the material, we can create a library of attributes to characterize students. This information serves the central purpose of our design: to improve student outcomes.

Take-home message: Through the appropriate use of big data and predictive analytics, precision education can be used to help inform and support student decision making, potentially making their educational experience more valuable and efficient.
#10O3 (2019)
Why do student preferences for generalist specialties change throughout medical school? A mixed methods study on a longitudinal dataset

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Background: A recent systematic review pleaded for research on the determinants of specialty preference at multiple stages of medical school. This mixed methods study investigated the dynamics of preference for careers in generalist specialties in one medical school in Portugal, using retrospective longitudinal data for 3 student cohorts.

Summary of work: We used records of 168 recent graduates (56.8% of the population). Multilevel logistic regressions were used to test associations of demographic, personality, performance variables and specialty preferences at entrance (M1) and at start of clerkships (M2), with preference at graduation (M3). Students who gained interest in generalist specialties were interviewed.

Summary of results: Conscientiousness (p<0.05; OR=1.07) and a generalist preference in M2 (p<0.001; OR=4.49) were positively associated with generalist preference in M3. There was no association with demographic variables or performance. Interviews revealed positive impact of institutional factors (eg. clinical role models), personal expectations (quality of life) and specialty characteristics (more patient contact).

Discussion: In our 6 year curriculum, students who preferred generalist specialties upon graduation tended to express that preference at start of clerkships, but not at admission. Student preferences changed in the initial years of medical school, even before clerkships begun. Later changes in preference were sensitive to experiences with clinical faculty.

Conclusion: Student preferences before entering the clinical years were the strongest predictor of student preferences at graduation. It was positively influenced by conscientiousness but did not seem to be influenced by demographic or performance variables. Preference changes may be stimulated by faculty, personal aspirations and institutional culture.

Take-home message: Generalist specialty preferences stated at entry of medical school seem not to be associated with preference for generalist specialties at graduation.

#10O4 (2297)
Learning to walk the bridge over the ‘Valley of Death’. The long-term impact of a one week course in the field of Translational Medicine

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Background: Too much biomedical research ends in the so called ‘Valley of Death’. Healthcare needs translational scientists to bridge the science-clinic gap, requiring educational pathways integrating clinical and research skills in interdisciplinary contexts. The focus of current translational medicine is on single disciplines, not addressing the need to cross interdisciplinary boundaries.

Summary of work: The Eureka Institute [http://www.eurekainstitute.org/] organises an annual one-week international certificate course to educate professionals in all domains of translational medicine. This mixed-methods study, consisting of a questionnaire study after which semi-structured qualitative interviews were conducted, aimed to evaluate the long-term impact of this course on future careers of its alumni.

Summary of results: Aspects of the course that most influenced alumni on the long-term were an understanding of the full spectrum of translational medicine, recognising one’s own position within that spectrum, discussing barriers encountered in the home environment, and consulting expert faculty regarding career planning during mentoring sessions.

Discussion: The results of our study show a high impact of course participation on the careers and professional identity of its alumni. The Eureka certificate course seems to be successful in developing the skills and attitude for a career that is focused on improving human health.

Conclusion: One week of intensive training can have a high impact on professionals aiming for a career as translational scientist. The personal teaching approach of expert faculty, mentoring sessions and the feeling of belonging to a community of translational scientists show to have long lasting influence on attitude and identity.

Take-home message: A structured career pathway for translational scientists is currently lacking. Dedicated programs producing interdisciplinary professionals that are prepared for a wide range of careers are a necessary and successful addition to current mono-disciplined clinical and research training, and call for the creation of formal educational pathways for translational scientists.
Does an undergraduate surgical skills course affect career intentions of medical students?

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Background: Reduction in undergraduate anatomy and surgery teaching has led to reduced applications to postgraduate surgical training. This study aims to determine whether the Royal College of Surgeons one-day surgical skills course run by St George's University of London (for all P-year medical students) results in improved attraction to surgical training.

Summary of work: A survey was undertaken at the beginning of the day asking students ‘Are you considering a career in surgery’. The question was asked again at the end of the day. In addition, all students completed an online feedback questionnaire. Students were surveyed from 12th September 2013 – 30th June 2016.

Summary of results: 828 students were surveyed; 55.9% were female and 44.1% were male. At the beginning of the skills day 47.0% of students answered ‘yes’ to the question regarding considering a career in surgery. At the end of the day this increased to 60.7%, which was statistically significant p<0.001.

Discussion: Not all students considering a surgical career end up pursuing it. It would be interesting to follow up these students and determine which ones did in the end pursue a career in surgery and what the role of the surgical skills course was in relation to this.

Conclusion: The Royal College of Surgeons one-day surgical skills course not only serves as an educational learning tool covering requirements of the undergraduate curriculum but also results in improved insight into knowledge and skills required of a surgeon and hence leads to increased desirability of a surgical career.

Take-home message: Reduced exposure to basic surgical training has led to reduced graduates coveting a surgical career. A one day basic surgical skills course can lead to improved insight into knowledge and skills required of a surgeon, allowing students to make an informed choice when pursuing their career.

The Career Wheel - A tool to improve career choice and considerations on life as a doctor

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Background: In 2008 the Danish government adopted a law ruling that junior doctors has to begin their medical specialization within 5 years after their medical internship. To facilitate future career counseling the Career Wheel was developed by the employee organization (Junior Doctors Denmark) and the employer’s organization (Danish Regions) in collaboration.

Summary of work: The Career Wheel addresses the junior doctor as well as the supervisor since both parties experience uncertainty in how to approach career development interviews. The tool provides guidance on preparation, the reflecting interview and future actions. The tool works with medical life, the seven roles of physicians, personality and life.

Summary of results: Junior doctors as well as specialists can use it for individual reflection on future specialization or sub-specialization. It is also a tool to reflect on and discuss values in general life. The tool contains readily applicable proposals to cover substantial areas of career development and career decisions.

Discussion: The Career Wheel has existed for 2 years and it has proven to be useful. The Career Wheel has been introduced in Denmark on compulsory courses for junior doctors and supervisors. At AMEE 2017 we will present the Career Wheel and the participant’s thoughts on the utility of the tool.

Conclusion: The Career Wheel has been found to be effective beyond simple career counseling on future specialization - it is a tool to reflect on life in general as well.

Take-home message: It is an advantage that the career counseling follows the same principles all over the country. Standardized career counseling is important and gives reflections on several aspects of both working life and on life in general.
#10O7 (704)
Influence of Family Medicine module in preclinical setting to students’ career choice as doctor in primary care service

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Background: Doctor in primary care service is the gatekeeper in healthcare system. However, graduates would prefer having specialization than practice in primary care, especially when they can afford their study. The aim of this study is to identify whether by the introduction of family medicine module will influence students career choice.

Summary of work: Data was collected from 88 students after completing the family medicine module in 7th semester of pre-clinical year. Questionnaires were distributed in September 2016. Learning satisfaction and career choice whether to be doctor in primary care service or specialist were asked, including their reasons. It was analyzed with Chi-square test.

Summary of results: There were 70.5% students interested as primary care doctors, 29.5% students as specialists. From students choice of primary care, 77.4% were satisfied with the module. It showed significant influence to students’ choice (p = 0.001). Reasons were because interested in holistic-comprehensive management (35.5%), gatekeeper (30.6%), doctor-patient relationship (22.6%), others (11.3%).

Discussion: Introduction to primary healthcare since pre-clinical year affected students’ career choice. In several developing countries (Srilangka (1), Bangladesh (2), Nigeria (3)) showed higher preferences in specialist than primary care doctors. Strategy to increase preference for primary care choice can be achieved by giving students prior experiences of primary healthcare (4).

Conclusion: Introducing family medicine module in the pre-clinical year can influence students’ career choice to be doctor in primary care setting. The reason showed the module target has been understood by the students. Further research should be done at the end of clinical year to identify the sustainability of the choice.

Take-home message: Indonesia needs many doctors that have great motivation to work in primary care services as gatekeeper. The motivation can be built since the medical school by giving the students experience of how and why primary care doctor has an important role in health care system.
#10P Short Communications: Postgraduate Education - Education in Practice
Location: Hall Room 208

#10P1 (3219)
Supervision is highly substantial in all phases of postgraduate medical education

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Fehim Esen, Turkish Young Doctors Association, Istanbul, Turkey
Yasin Yilmaz, Istanbul Medical Faculty, Istanbul, Turkey
Deniz Eyice, Cerrahpasa Medical Faculty, Istanbul, Turkey

Background: Supervision is one of the key concepts in post-graduate medical education and it is deeply rooted in traditional concepts of the education of physicians. It is critical in ensuring safe and effective patient care.

Summary of work: We have longitudinally followed up a group of 68 residents for 2 years in an internal medicine clinic whose unsupervised activities gradually increased in this period. Knowledge and skills levels of residents were compared between the first and second year of this follow up.

Summary of results: Residents’ improvement in the first year were significantly higher than the second year. Grades of trainees after first year were moderately correlated with the hours of supervision they received. (r=0.21). There was no significant difference between grades of trainees at the end of first and second years.

Discussion: Although residents were expected to be more proficient practitioners in the second year of follow up, their higher improvement in the first year can be because of more intense supervision in this period. The periods of independent practice during training may negatively affect the continuity of improvement.

Conclusion: While independence and authority increases gradually during the years of training, different supervision strategies should be implemented. Direct supervision, which is quite important in the first phase of training may not be possible in other phases. However; indirect supervision strategies and/or close oversight methods might be used.

Take-home message: Supervision is important in allowing residents to receive guidance for giving and coordinating care, even as they progress toward independent practice. Different supervision strategies can be used in different phases of training.

#10P2 (403)
Hospital-wide educational committees supporting high quality postgraduate medical education

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Irene Slootweg, AMC, Amsterdam, Netherlands
Albert Scherbier, Maastricht University, Maastricht, Netherlands
Maas Jan Heineman, AMC, Amsterdam, Netherlands
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Background: In postgraduate medical education (PGME) quality improvement (QI) practices has been introduced to improve quality of education. To govern and support QI throughout (academic) teaching hospitals, several healthcare systems have adopted hospital-wide educational committees (HECs). This study examines how HECs support QI to understand their importance for educational quality.

Summary of work: We performed a focus group study using a constructivist grounded theory approach. A purposeful sample of HECs in Netherlands lead to seven focus groups between May 2014 and August 2016. Transcripts were open-coded and subsequently axial and selective coding were used to identify overarching themes and theory.

Summary of results: Our data showed that HECs need to (i) strategically position themselves in the organization, so they can support QI of PGME by (ii) creating an organization-wide culture, (iii) an organization-wide structure and by (iv) collaborating with external stakeholders. All activities are ongoing and interdependent.

Discussion: HECs in Netherlands govern PGME uniquely by contributing to institutional accountability for PGME. When implementing HECs, shared responsibility of the HEC and the departments that actually provide residency training should be addressed. HECs vary in their strategies for CQI, but can increasingly undertake supporting actions to impact PGME.

Conclusion: Our theory shows that HECs’ activities for QI strengthen each other in a positive way, creating a virtuous cycle towards high quality PGME. Since medical education is often overshadowed by patient care and research, the HEC can be a driving force necessary to put education on the agenda.

Take-home message: HECs increasingly have the ability to undertake supporting actions for QI in PGME and work step by step towards achieving high quality postgraduate medical education.
Clinical Learning Environments for Postgraduate Medical Education: A Realist Synthesis

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Caroline Kilty, University College Cork, Cork, Ireland
Bridget Maher, University College Cork, Cork, Ireland
Mary Horgan, University College Cork, Cork, Ireland
Colm Bergin, University College Cork, Cork, Ireland
Deirdre Bennett, University College Cork, Cork, Ireland

Background: Workplace learning is recognised as being at the heart of postgraduate medical training. The aim of this study was to synthesise the evidence relating to workplace learning in postgraduate medical education to address the question "What works, under what circumstances and for whom?"

Summary of work: A realist synthesis/review of the literature was conducted in line with the RAMESES guidelines. A realist review is an interpretive, theory-driven, narrative summary of the literature and aims to develop a theoretical framework describing Context-Mechanism-Outcome (CMO) configurations of how, why and when postgraduate medical training is effective.

Summary of results: Findings involve mechanisms that generate learning within the framework of the trainee-supervisor relationship such as observation, modelling, dialogue, feedback and entrustment. Constraints in the clinical setting modifies how mechanisms generate learning outcomes and include organisational culture, trainee-, supervisor- and patient-related factors, EWTD, the structure of training programs, and work load.

Discussion: This study utilised published literature, programme and substantive theories of workplace learning to describe context, mechanism and outcome configurations. These causal mechanisms in postgraduate medical education can direct the design of high quality learning environments that are effective for learning and create satisfactory working conditions for doctors in training.

Conclusion: Clinical learning environments, the context, shapes the development of the doctors who learn and work within it. Those tasked with the design and delivery of postgraduate medical education need to understand the relationship between the processes of medical workplace learning and these contextual elements to optimise conditions for learning.

Take-home message: This information will be useful to policy-makers and practitioners in postgraduate medical education, who will be able to apply our findings within their own contexts. Improving the quality of clinical learning environments can improve the performance, humanism and wellbeing of learners and improve the quality and safety of patient care.

Development of an assessment tool for medical trainees' professional identities

Masami Tagawa, Kagoshima University, Kagoshima, Japan

Background: In medical education, professional identities have become increasingly important. Medical student's professional development has been qualitatively evaluated based on interviews and reflective writings in accordance with Kegan’s human developmental stages. This study aimed to develop an assessment tool for the developmental status of medical students and young doctors.

Summary of work: Based on the conceptual framework of human development proposed by Kegan, a self-administrated questionnaire composed of items on a 7-point scale was administrated to sixth-year medical students and experienced doctors participating in community medicine education for medical students in private clinics or teaching hospitals.

Summary of results: The questionnaires were completed by 55 sixth-year medical students and 36 doctors. Eighteen of 31 items were found to be reliable (alpha = 0.781), and five factors were revealed by exploratory factor analysis. The mean total scores and four subscale scores were significantly higher for doctors than for medical students.

Discussion: Doctors had a mean of 29 years of clinical experience, tended to have a leadership role, and were expected to be at a higher Kegan stage than students; thus, total scores may be closely related to individual developmental stage, and subscale scores might indicate different aspects of professional identity development.

Conclusion: Although this scale requires further elaboration and needs to be confirmed in different groups of medical students and physicians, the total and subscale scores might be useful indicators for estimating the professional identity status of individuals and groups.

Take-home message: An assessment tool for the professional identity status of medical trainees is currently under development. The use of my new self-administrated scale could be expected to help evaluate the developmental status of medical trainees.
#10P5 (2370)
Broad-Based Training for a different type of doctor? A two-group two-cohort analysis of questionnaire data

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Lynne Allery, Post Graduate Medical and Dental Education - Wales Deanery, Cardiff, UK
Janet MacDonald, Post Graduate Medical and Dental Education - Wales Deanery, Cardiff, UK
Esther Muddiman, Cardiff University, Cardiff, UK
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Background: Medical practitioners need increasingly broad knowledge and skills (1, 2) Broad-based training (BBT) ran in England between 2013-2017 (3), providing 6-month placements in General Practice, Core Medical, Paediatrics and Psychiatry. BBT aims to develop: practitioners adept at managing complex cases, patient-focused care; specialty integration; and career conviction.

Summary of work: To explore whether BBT better prepares trainees for the future, we collected questionnaire data (online/paper-based) at two time-points from two cohorts of BBT trainees (BBT2013 n=38; BBT2014 n=24) and comparator trainees following traditional training routes (n=42; 48). Quantitative data from closed questions were analyzed using SPSS; open-comments underwent thematic analysis.

Summary of results: Differences between BBT-trainees and comparators were apparent. Variation was found in general outlook, career-pathway decisions and career-conviction, views on wider specialty experience and confidence in managing complex-presentations. Some commonality in experience and opinion were also evident. The picture is quite complex, particularly views to NHS needs and own specialty-v-generalist training.

Discussion: Theory on decision–making and approaches to uncertainty are useful in understanding these findings (4). There are implications here for both traditional training (better equipping trainees for managing patients with complex needs) and for BBT (in helping trainees to feel equipped for successful progression).

Conclusion: BBT provides an avenue for trainees with more generalist priorities (5) and may facilitate immediate and longer term retention within the NHS by enhancing confidence and capabilities through pragmatic knowledge mobilization and cross-specialty working.

Take-home message: Findings show BBT is well-suited to a particular group of trainees, without this option some doctors will seek out-of-training experience. Evidence suggests BBT supports development of doctors with a more generalist outlook that may better suit future needs of the health service, with potential to offset human and monetary cost.
**#10Q1 (884)**

*Fly on the wall: Evidence for using peers to enhance teaching in the workplace*

*Narelle Campbell, Flinders University, Darwin, Australia*

**Background:** Workplaces are commonly used as teaching and learning environments for students and early career healthcare professionals. Supervisors typically have a diverse range of training and experience in teaching. Workshop style faculty development for clinical supervisors creates a practice-theory gap limiting application of new knowledge to the complex healthcare environments.

**Summary of work:** This presentation describes a systematic literature review that examined the role of workplace peers in supporting the development of teaching expertise for clinical supervisors. It aimed to assess the evidence for using a peer review process in the workplace; its key features, and the factors influencing its effectiveness.

**Summary of results:** Following a comprehensive search of the literature (database and manual searching of key journals, 2004-2015, n=3881) 29 manuscripts (medicine 72%) met the inclusion criteria (peer review process aiming to improve teaching and situated in a healthcare setting). Key features included preparation for the review, peer selection, observation, feedback and reflection.

**Discussion:** Despite the variability in the peer review processes reported, the advantages of workplace-based faculty development outweighed the barriers to implementation. Positives included reciprocity of learning for both reviewers and reviewees, with barriers being logistics and workplace culture. There was limited evaluation of the impact of peer review on teaching outcomes.

**Conclusion:** This systematic review demonstrated the value of a peer review process. As an outcome of this work we developed an evidence-based peer review process resource, freely downloadable from the web. Further research is needed on the contextual workplace factors impacting the outcomes of this type of faculty development.

**Take-home message:** Peers are a valuable and untapped resource for faculty involved in workplace-based teaching. A structured and agreed peer review process can reduce the impact of barriers and deliver positive benefits for all participants. Excellent outcomes for participants can be achieved by adopting a collegial and collaborative process.

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**#10Q2 (1016)**

*Capable but cautious: Medical students are highly capable of creating and critiquing sophisticated MCQs but did not trust the reliability of peer learning*

*Rebecca Grainger, University of Otago, Wellington, New Zealand*

*Anya Dai, University of Otago, Wellington, New Zealand*

*Emma Osborne, University of Otago, Wellington, New Zealand*

*Diane Kenwright, University of Otago, Wellington, New Zealand*

**Background:** Writing, answering and commenting on multiple-choice questions (MCQs) requires higher-order thinking and is an application of the Contributing Student Pedagogy (CSP) whereby students value learning contents contributed by each other. This study investigated if students create high quality MCQs that facilitate their own learning and valued by their peers.

**Summary of work:** 106 fourth year medical students used web-based software (PeerWise) to write, answer and critique MCQs on Pathology topics. Three external raters assessed MCQ cognitive complexity and quality of peer comments using three-level rubrics. A mixed-methods survey assessed perceived educational value and the value of a peer learning environment.

**Summary of results:** Most (74%) MCQs scored highly for cognitive complexity. The number of peer comments was low and few were of the highest quality (34%). Students reported MCQ writing encouraged active knowledge construction but the process was challenging. Students doubted the reliability of peer-generated MCQs and feedback.

**Discussion:** Student-generated MCQs engaged medical students in an active learning process. However, the high-quality MCQs created predominantly contributed to self-learning without being valued or trusted by peers. Although a peer learning community was created, most students did not provide educationally useful feedback.

**Conclusion:** Because medical students generated sophisticated MCQs but did not trust the reliability of peer learning, only one part of the CSP was fulfilled. Further scaffolding by instructors may be required to increase students’ confidence in the quality of peer-generated MCQs and to facilitate a more active peer learning environment.

**Take-home message:** Medical students are highly capable at the active knowledge construction required to produce high quality MCQs that can contribute to peers’ learning. Higher trust in the educational value of student-generated MCQs may be gained if instructors provided some oversight in the learning environment.
#10Q3 (713)
Teaching surgical skills to healthcare undergraduates: The benefits of peer-assisted learning

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Simon Morris, University of Birmingham, Birmingham, UK
Salman Mirza, Walsall Healthcare NHS Trust, Walsall, UK

**Background:** Teaching surgical skills is a labour intensive process, requiring a high tutor to student ratio for optimal success and teaching for undergraduate students by Consultant surgeons is not always feasible. A surgical skills course was developed, with the aim of assessing the effectiveness of surgical peer-assisted learning.

**Summary of work:** Five surgical skills courses were conducted looking at eight domains in surgery, led by junior doctors and senior medical students, with a tutor to student ratio of 1:4. Pre and post-course questionnaires (Likert scales 1-10) were completed. Mean improvement scores were compared pre and post course.

**Summary of results:** Seventy students participated. There was an overall increase in mean scores across all eight domains. Mean improvement score pre and post course in WHO Surgical Safety Checklist (+3.94), Scrubbing (+2.99), Gowning/Gloving (+3.34), Knot Tying (+5.53), Interrupted Sutures (+5.89), Continuous Sutures (+6.53), Vertical Mattress Sutures (+6.46) and Local Anaesthesia (+3.73).

**Discussion:** Prior to the course, students felt unprepared for their surgical placements (2.66, Likert scales 1-5). Furthermore, the mean likelihood that students would recommend this course to a colleague was 4.86 and the impact this course had upon strengthening their desire to pursue a surgical career was 4.17.

**Conclusion:** Peer-assisted learning is an effective and feasible method for teaching surgical skills in a controlled environment, subsequently improving confidence amongst health care undergraduates.

**Take-home message:** Peer-assisted learning is a valuable method in undergraduate learning and should be considered for use in curriculum.

#10Q4 (1061)
Why medical students should learn how to teach: a qualitative analysis of peer-assisted teaching in skillslab voluntary OSCE preparation courses

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**Background:** Peer-assisted learning (PAL) is associated with cognitive, pedagogical, attitudinal and social benefits for both tutors and tutees. In the PAL framework (Ross and Cameron, 2007), 24 questions are compiled as a basis for successful PAL projects, of which several address the aims and objectives of the project for PAL Tutors.

**Summary of work:** For an OSCE in emergency care medicine for students in their 4th year, n=8 different voluntary preparation skills courses were offered in the Medical Faculty’s Skillslab for each student (n=321) in small-group teaching courses. n=36 peer tutors’ attitudes towards these courses were assessed by questionnaires and considered for qualitative analysis.

**Summary of results:** Peer-assisted teaching (PAT) courses were offered by all n=36 skillslab tutors over 3 weeks prior to the emergency care OSCE. Questionnaires assessing tutors’ attitudes towards the voluntary OSCE preparation courses were sent to all tutors. Definition of 3 categories resulting from tutor quotations was performed, revealing several themes and subthemes.

**Discussion:** Three categories were derived from the transcripts: these were 1) course leadership, 2) PAT tutor competence, and 3) acquisition of professional PAT tutor behaviour. All PAT tutors filling out the questionnaire emphasized the importance of self-reflection after PAT tutor experiences and valued this exercise for their future development.

**Conclusion:** This study supports the reported benefits and stated aims for PAT tutors that pedagogic objectives, such as learning and developing knowledge, skills and attitudes of a competent teacher widely enhance the professional development of medical students.

**Take-home message:** Medical students undergoing a formal training to become PAT tutors profit immensely from reflecting on their peer-teaching. Peer-tutor training should include formal steps on self-reflection and analysis of PAT progress on a regular basis.
#10Q5 (3081)
**Peer Debriefing as an Instructional Tool**

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Afrose Liaquat, Shifa Tameer-e-Millat University, Islamabad, Pakistan
Sumreena Mansoor, Shifa Tameer-e-Millat University, Islamabad, Pakistan
Hanaa Fatima, Shifa Tameer-e-Millat University, Islamabad, Pakistan

**Background:** Debriefing has been given immense importance by many educationists. It is labeled as the most significant factor in any simulation exercise. Debriefing provides useful criticism and opportunities for reflection, these form supporting pillars for professional progress. Debriefing given to students stays longer in memory and helps in better learning.

**Summary of work:** Students of medical Year 2 were divided into two groups. One group was delivered skill sessions of one module through the conventional demonstration while other group were delivered through peer debriefing. All students were assessed in IPE for the same skills. A focus group was arranged for the perceptions.

**Summary of results:** The independent t test was applied to compare the scores of two groups, results were statistically significant, p value <0.05. The thematic analysis was done about the perceptions of students regarding the new technique. Students found this technique more interactive, fun, organized and effective for learning skill sessions.

**Discussion:** Debriefing provides a direction to help improve thinking and clarify thought process. It is a reflective practice and a critical element in learning process. It is debated that simulation alone does not carry any importance in promoting learning; rather it promotes learning if debriefing is done skillfully.

**Conclusion:** Peer debriefing approach for delivering skill sessions can be a useful in promoting effective learning. Through peer debriefing students participation in the skill sessions is increased. Debriefing by peers on the performance stays longer in the memory of the learner and helps him to perform better in the exam.

**Take-home message:** For delivering skill sessions, faculty at medical institutes should develop strategies to promote students participation in these sessions. If a student participates in the performance as well as in the debriefing of the fellow student, the effective learning of both the learners (performer and debriefer) can be made possible.

#10Q6 (3236)
**Students teaching others students: how can we develop capacity building strategies in order to create junior educators?**

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José Diniz Junior, Federal University of Rio Grande do Norte, Natal, Brazil
Rosiane Diniz, Federal University of Rio Grande do Norte, Natal, Brazil

**Background:** Peer assisted learning is a strategy employed by many medical schools and supported by a robust body of literature aiming to foster students’ educational skills and increase students’ ways to learn. However, students-as-a-teacher projects need to address an essential capacity building phase which provides peer tutors with basic educational skills.

**Summary of work:** Through a workshop on feedback, students initiating their experiences as peer tutors were capacitated both by a teacher and a senior peer tutor using the One-Minute Preceptor (OMP) strategy as a framework. This strategy was role-modeled by the teacher and the senior peer tutor, followed by a group discussion.

**Summary of results:** Two situations involving feedback were role-modeled: the first one involving a poor feedback technique, and the second one representing the OMP model. After the dramatizations, peer tutors in training discussed the key elements of each strategy, and reflected on why using a structured model can positively impact their peers.

**Discussion:** Students recognised that there are many ways of providing feedback, and there is no such perfect formula in order to effectively communicate. However, they have identified key elements that can improve the experience of feedback, and acknowledged the OMP strategy as a framework they can use as peer tutors.

**Conclusion:** Most peer assisted learning programs focus on capacitating their tutors only regarding clinical skills, putting aside the training on educational competencies. By offering students the opportunity to reflect on their communication skills, medical schools support a culture of feedback and improve their students’ competencies in order to become junior educators.

**Take-home message:** Peer assisted learning programs must provide their students with training on pedagogic methods, such as feedback techniques, in order to improve students’ educational skills and reinforce the culture of providing feedback in medical schools.
An inter-professional Peer Teacher Training (PTT) program for senior health professional students

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Christie van Diggele
Chris Roberts
Craig Mellis

**Background:** In 2016 we developed a new blended learning, inter-professional Peer Teacher Training (PTT) program for health professional students. The PTT program is designed to provide opportunities for students to develop skills in teaching, assessment and feedback, in preparation for peer assisted learning activities, and future health professional practice.

**Summary of work:** The purpose of this study was to evaluate the new PTT program, and consider its strengths, and needs for improvement. In total, 80/90 (89%) of participants completed pre- and post-course questionnaires, and 35/90 (35%) attended focus groups. Descriptive statistics and thematic analysis were used to analyse data.

**Summary of results:** Students felt online resources, including pre-reading, discussion boards, videos, and activities enhanced their face-to-face learning experience. In class, students valued opportunities to practice teaching skills in small-groups, and receive feedback. Students reported increased confidence to plan and deliver teaching activities, and an increased understanding of roles of other health professionals.

**Discussion:** Two unique aspects of this program are that it is inter-professional, and delivered via blended learning. Students perceived both of these aspects could be further developed. Students indicated a preference for less large group teaching, with more theory delivered online, and requested wider participation across the health care disciplines.

**Conclusion:** The PTT program provided students with a useful basis for developing and implementing peer teaching strategies. Development of teaching skills, and inter-professional communication skills were enhanced by small group, inter-professional activities with provision of feedback.

**Take-home message:** Both the inter-professional and blended learning aspects of the program were innovative, and well received by students, and should be enhanced. The PTT program has helped to shape students' professional values as they move towards healthcare practice, where teaching, assessment and feedback skills are required across the health disciplines.
Background: The application of digital educational games in health professions education is an expansion and game-based education usage is increasing. Considering this growing popularity, to focus on advantages, disadvantages, and engagement factors of educational digital games used for health professions education is pivotal and focus of attention in this paper.

Summary of results: Advantages of digital educational games as a teaching tool can be categorized as learning process enhancer, learning and performance improver, individualized learning provider and learner motivator; While, disadvantages of digital educational games can be categorized as teaching-learning process barriers and logistics of educational games.

Discussion: Games are feasible for adult learning and provide an opportunity for experiential repetitive learning; while their competitive nature, production expensiveness, interdisciplinary expert dependency, time-consuming nature, and learning style dependency are mentioned are among their disadvantages.

Conclusion: Advantages of digital educational games and their engagement factors make them suitable vehicles to provide unique learning experiences in health professions education. These games can be customized according to the pace and mode of learning in each individual.

Take-home message: Providing a safe educational environment is a promise of educational games used for health professions education. It permits practice of what is really impossible or undesirable in real time, in a virtual world. Therefore, to consider educational games advantages, disadvantages and engagement factors is pivotal.
Introducing the virtual A&E department EMERGE to undergraduate medical education: a prospective trial

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Tobias Raupach, University Medical Centre Goettingen, Goettingen, Germany

Background: Numerous serious games have been designed for undergraduate medical education, but few studies have assessed their effectiveness with regard to clinical reasoning. This study compared student learning outcome as a function of exposure to a virtual A&E department (EMERGE) versus problem-based learning (PBL).

Summary of work: Final-year medical students self-selected to participate in eleven 90-minute sessions of either small-group problem-based learning (with a tutor) or playing EMERGE (self-directed learning). Within the EMERGE group, students were randomised to three groups with different exposure to clinical cases. Clinical reasoning was assessed in a final key feature (KF) examination.

Summary of results: Overall, students in the EMERGE group scored higher in the final KF exam than students in the PBL group (61.8 ± 14.5% vs. 54.4 ± 14.4%; p = 0.015). Within the EMERGE group, exam performance was more favourable for items with higher exposure during the training phase.

Discussion: Results indicate that self-directed learning with a serious game is more effective than interactive small-group learning. In addition, EMERGE facilitates exposure to a higher number of cases in short time. Owing to the fact that PBL aims at enhancing deep learning, the number of cases in PBL is limited.

Conclusion: Depending on the intended learning outcome, a well-designed serious game can be as effective as resource-intense small-group teaching. Using flexible exposure to clinical content allows teachers (and, potentially, learners) to align instruction to students’ specific needs. Further work is needed to establish exactly how serious games enhance clinical reasoning.

Take-home message: A complex computer-based simulation of an A&E department can effectively be used in undergraduate medical education. It is more flexible, requires less input from expert teachers and, in our self-selected sample, produced even higher learning outcomes than small-group problem-based learning.

Clinical decision making game

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Background: Skills and knowledge attained in undergraduate education need to be transformed into clinical skills during early postgraduate phase. Clinical decision making has been demonstrated to be a difficult task for trainees. Tactic decision making games have been successfully used in teaching decision making, mainly outside medicine.

Summary of work: Participants listen to the same audiotaped phone call. Each have a different written scenario based on which the decision has to be made. Decisions are articulated and followed by self-assessment and peer assessment concerning the decision making. Time limit for each step is 60 sec. The game has four rounds.

Summary of results: In the three pilot games, participants considered the limited time and the evaluation most challenging. However, participants gained new perspectives on reasoning. The trainers indicated that familiar group evokes a safe and confidential atmosphere.

Discussion: The observers’ notion was that the game requires cognitive and meta-cognitive skills related to self-critique and self-regulation. It favors verbally talented players. The piloting pointed out the demands and the pitfalls of the audiotaped calls, other material, timing as well as group dynamics.

Conclusion: The decision making game proved to be acceptable and applicable. It’s essential to develop a game iteratively with users.

Take-home message: Teaching non medical skills should be one part of postgraduate teaching. Clinical decision making game seems to be a practical tool in training decision making.
Video games and medical students' playing habits, attitudes and perceived benefits and harms: A Saudi Arabian perspective

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Soheib Mohammed
Ismail Shakir
Yusuf Sattar
Ahmed Ibrahim
Akef Obeidat

Background: Video games are often debated. Minimal research has been done looking into medical students’ attitudes and experiences towards video games. Considering Saudi Arabia’s unique social and cultural standpoint, this study aims to investigate medical student attitudes and experiences with video games and perceptions of possible benefits of video games.

Summary of work: An anonymous, 34-item survey was distributed online using Google forms and on paper at Alfaaisal University, Riyadh amongst year 1 to 6 medical students. The survey included questions on video gaming experience and habits, and self-perceived negative and positive effects of video games.

Summary of results: 80% of the 124 respondents played video games. 25% were females. Most respondents accepted that video games could have benefits, “helping decrease stress and depression” being the most popular. 76% considered video games teaching medical concepts and skills useful. Most disagreed with all the negative effects of video games mentioned.

Discussion: Almost all medical students, including those who do not play video games, had favorable views about use of video games in medical education. The most popular genres were in stark contrast to those found by a similar study done in the US, highlighting cultural differences.

Conclusion: No relationship was found between time spent video gaming and academic performance, and self-perceived impact on social and personal behavior. Most of the students were optimistic about their academic and non-academic benefits.

Take-home message: Video games serve as a popular mode of entertainment for medical students. Newer developments in medical education should explore the prospects of delivering medical concepts and skills through video games.
#10S Workshop: Happy App (How to Avoid Problems & Pitfalls with Your App)
(3266)
Location: Room 203a

Ian MacPhee, Sunnybrook Health Sciences Centre, Department of Family and Community Medicine, University of Toronto, Toronto, Canada
Jeremy Rezmovitz, Sunnybrook Health Sciences Centre, Department of Family and Community Medicine, University of Toronto, Toronto, Canada
Jerry Maniate, St. Joseph’s Health Centre, University of Toronto, Toronto, Canada

Background: "Let’s make an app!” The landscape in medical education is shifting to develop a more personalized education experience. Most clinical teachers and educators lack the expertise to develop educational technology for their learners. Developing educational apps may seem daunting, overwhelming and frustrating as navigating this arena can be difficult. We felt if we had attended this workshop when we started on this journey, we wouldn’t have the content to give this workshop.

Who Should Attend: Anyone interested in app development for medical education (i.e. meducational apps) who want to know the many types of barriers that exist in developing meducational apps. Participants will be asked to come to the workshop with an idea for an app and journey through the obstacles of app development from design to release of their product.

Structure of Workshop:
1) Introductions of facilitators and participants.
2) Participant small group discussions to create a case scenario around a potential app to be developed.
3) Brief presentations by the facilitators to demonstrate approaches that have been utilized to develop our medical education apps and then identify obstacles to app development.
4) Use interactive large group and small group discussions to identify strategies to overcome identified obstacles.
5) Wrap up and take home messages / lessons learned

Intended Outcomes: At the end of the workshop, participants will be able to: 1) Discover common problems & pitfalls in app development for medical education. 2) Identify resources to support app development for medical education. 3) Understand what human resources and skill sets are required to create a functional app development team.

Level: Introductory

#10T Workshop: The Small Group Experience: Strategies to Improve Your Performance as Facilitator (2053)
Location: Room 203b

Carol F. Capello, Weill Cornell Medical College, New York, USA
Elza Mylona, Eastern Virginia Medical School, Norfolk, USA
Norma S. Saks, Rutgers Robert Wood Johnson Medical School, Piscataway, USA
Thanakorn Jirasevijinda, Weill Cornell Medical College, New York, USA

Background: Schools are increasingly moving from large classroom lectures to small group discussions (instructor-centered to learner-centered approach). Small groups encourage students to self-reflect, compare ideas with peers, and polish communication skills. This venue promotes self-directed and collaborative learning and immediate feedback. To shift from “information giver” to facilitator, faculty need practical, effective strategies for managing small groups, dealing with particular stresses, and anticipating how a group’s development stages influences other group processes (e.g., cohesiveness, conformity, production).

Who Should Attend: This workshop is geared for those medical educators across the continuum who are responsible for facilitating small group sessions (e.g., seminars, classroom discussions, PBL, labs, journal clubs, patient rounds, morning report). Those who are novices in this venue may most benefit from this workshop; however, those more experienced with small group teaching may also likely benefit.

Structure of Workshop:
After a brief introduction, participants self-reflect on challenges/successes in small group teaching. After viewing a video, they discuss whether the facilitator established a positive learning climate, moved the group forward, and addressed problematic behavior. After discussing small groups development over time, “buzz groups” are given various case vignettes of a dysfunctional group and asked to consider strategies to resolve the pressing issues. We end by asking participants to share one take-home strategy they will implement.

Intended Outcomes: By the end of this highly interactive workshop, participants will be able to: 1) self-reflect on teaching styles and issues; 2) establish and maintain a comfortable learning climate; 3) employ strategies to move a small group forward to accomplish its goals; 4) assess group dynamics and utilize tools to identify and address problematic behaviors; and 5) develop strategies for different stages of group development to help the group perform effectively.

“Workshop offered”

Level: Introductory/Intermediate
#10U Workshop: How to give “negative” feedback in health professions education – Conceptual issues & best practices

Location: Room 204

Claudia Kiessling, Medizinische Hochschule Brandenburg
Theodor Fontane, Neuruppin, Germany
Monica van de Ridder, College of Human Medicine Michigan State University, Grand Rapids, USA
Anja Härtl, Ludwig-Maximilians-Universität, Faculty of Medicine, Munich, Germany
Götz Fabry, Albert-Ludwigs-Universität, Faculty of Medicine, Freiburg, Germany

Background: There is growing awareness in health professions education that feedback is a central element of competency development. Despite a wealth of experience and practice, the conceptual basis and empirical evidence on how to give feedback is still sketchy. Giving "negative" feedback, i.e. specific feedback that addresses shortcomings in learners' performance is challenging as it might threaten self-concept or self-confidence. This might weaken the constructive and conducive potential that feedback has for personal and professional development.

Who Should Attend: Everybody who is interested in deepening his or her feedback competencies. Participants should have some experience in giving feedback in an educational setting e.g. undergraduate or graduate health professions education.

Structure of Workshop: We will discuss different models and frameworks for feedback and focus on guidelines for giving negative feedback in particular, such as: how to establish trust, how to avoid ambiguity, and how avoid the right-wrong discussion. We will also reflect the perspective of the feedback-recipient by providing opportunities for some self-experience in role-plays.

Intended Outcomes: Participants will 1) share and reflect their feedback experience, 2) give feedback, observe and reflect on feedback in a controlled setting, 3) discuss models and conceptual frameworks related to feedback in medical education, 4) Share and discuss best practices especially with regard to giving negative feedback.

Level: Intermediate/Advanced

#10V Workshop: Culture matters when implementing experiential learning: An experiential workshop

Location: Room 205

Peter Dieckmann, Copenhagen Academy for Medical Education and Simulation (CAMES), Herlev, Denmark
Augusto Scalabrini, University of Sao Paulo, Sao Paulo, Brasil
Rana Sharara-Chami, American University of Beirut Medical Center, Beirut, Lebanon
Hyun Soo Chung, Yonsei University College of Medicine, Seoul, Korea

Background: Reflection after a simulation is key to learning. What counts as safe learning environment is different in different cultures. During the workshop, participants will reflect on the Globe model of cultural dimensions, including collectivism, uncertainty avoidance, future orientation, performance orientation, assertiveness, power distance, gender egalitarism, human orientation. Participants will have the opportunity to work in a hands-on and interactive fashion to improve their understanding of how culture experiential learning are related.

Who Should Attend: Educators who work with experiential learning settings and with learners from different cultural (national, organizational, professional) backgrounds. Participants ideally have some background in running experiential learning settings. 15 min intro to workshop and the cultural dimensions; 05 min explanation of the concept; 05 min demonstration of the scene; 20 min preparation time in small groups; 30 min presentations of changed scenes (5 min each, six groups); 15 min concluding discussion.

Structure of Workshop: The workshop will include a short role-play scenario, depicting interactions between facilitator and learners (6 in each group) in a certain culture. The scenario will cover implementation of an algorithm in a team (e.g. systematic ABCDE checkup). The situation will change to a different cultural background. By rotating through the different cultural backgrounds, participants will have the opportunity to understand different dimensions and hence learn how to effectively implement them in experiential learning settings.

Intended Outcomes: 1) Knowledge of the GLOBE model and its dimensions to describe culture. 2) Improved sensibility to cultural influences on the conduct of experiential learning settings.

Level: Intermediate
#10W  Workshop: Making sense of research and evaluation on using technology to enhance teaching and learning (288)
Location: Room 209

John Sandars, Edge Hill University, Ormskirk, UK

Background: The use of technology to enhance teaching and learning is a complex educational intervention, with factors in the learner, the content, the instructional approach, the technology, usability and the context. Understanding how these factors interact requires a variety of methods, from the use of program theories to learning analytics to user-centred approaches. Making an appropriate choice of methods is essential for making sense of research and evaluation on using technology to enhance teaching and learning.

Who Should Attend: All who are interested in obtaining a greater understanding of why some educational interventions that use technology are more effective than others. This has implications for both designing, implementing and researching or evaluating educational interventions that use technology.

Structure of Workshop: The workshop will be a mix of short presentations on key topics and interactive practical exercises using case studies to apply the key topics, including applying a framework to identify the key factors and making appropriate choices from a range of methods (program theories, learning analytics and user-centred approaches).

Intended Outcomes: By the end of the workshop, participants will be able to:
- appreciate that using technology to enhance teaching and learning is a complex intervention
- apply a framework to identify the key factors that influence the use of technology to enhance teaching and learning
- make appropriate choices from a range of different methods to make sense of how research and evaluation on using technology is being used to enhance teaching and learning

Level: Introductory/Intermediate

#10X  Workshop: Simulation Scenario Design: Contextualized, Integrated and Innovative (1108)
Location: Room 215

Che-Wei Lin, Taipei Medical University Center for Education in Medical Simulation, Taipei, Taiwan
Geoffrey Tobias Miller, Research Scientist at Medical Modeling and Simulation Innovation Center, Norfolk, USA
Paul Phrampus, Pittsburgh University WISER, Pittsburgh, USA
Jen-Chieh Wu, Taipei Medical University Center for Education in Medical Simulation, Taipei, Taiwan
Wen-Cheng Huang, Taipei Medical University Center for Education in Medical Simulation, Taipei, Taiwan
John O’Donnel, Pittsburgh University WISER, Pittsburgh, USA

Background: The scenario is one of the main components of successful simulation, and should be designed according to the learning objectives rather than the simulation modality. When faculty members begin using simulation for training, they limit their planning to the individual features of the simulation modality that have strengths and limitations. By integrating various simulation modalities, these limitations can be reduced resulting in using solutions using well-designed scenarios that achieve expected learning objectives.


Structure of Workshop: 1. Introduction of faculty and participants. 2. Defining the major simulation modalities. 3. Small group discussion I: emphasizing the strengths and limitations of all modalities. 4. Groups presentation. 5. Small group discussion II: practising design objective-based integrated simulation scenario. 6. Group presentation. 7. Demonstrating our integration solution. 8. Wrap up and Q&A

Intended Outcomes: 1. Understand the core value of a simulation scenario. 2. Become familiar with the advantages and limitations of all simulation modalities. 3. Select appropriate simulation modalities for a particular scenario. 4. Design a suitable scenario that can achieve learning objectives through integration.

Level: Introductory/Intermediate
#10Y  Workshop: Preparing students for High stakes examinations (172)
Location: Room 216

Dujeepa Samarasekera, National University Singapore, Singapore
Danielle Verstegen, Maastricht University, Netherlands
Ashokka Balakrishnan, National University Singapore, Singapore
Chen Fun Gee, National University Singapore, Singapore

Background: High-stakes examinations worldwide have a significant impact in career progress for health professionals. Understanding what makes students successful in examinations involves academic and psychosocial aspects. The process of preparing students for examinations requires systematic organization of required cognitive and content skills and developing effective student's regulation of learning. Exit interviews at completion of the medical programs shed important insights into what students went through and what they wished were in place to optimize their learning.

Who Should Attend: The workshop will be suitable for: teachers, academic heads, curricular leads of undergraduate and post graduate medical and health professions education, program directors and mentors who support and guide students to overcome the ordeal of high stakes examinations.

Structure of Workshop: The workshop includes 3 group activities on: exam preparedness, practice readiness assessment, paradigms of post graduate learners.
Themes: Students perspectives: exit interviews of undergraduates; Concept of exam-smartness: understanding predictability of exam success (group work); Assessment for medical practice readiness in Singapore; Lessons from quality assurance in medical education and assessments; Post graduate learners and mentoring candidates with difficulty (group work); Operationalizing support system that accommodates diversity, context, task intensity, socio-politics, work-study and work-life balance (Group-discussions)

Intended Outcomes: By the end of this workshop, attendees will be able to:
- Describe key elements of innovations in competency based medical education across multiple U.S. medical schools
- Develop and apply strategies for CBME implementation within their local context
- Provide early feedback on developing initiatives including the CBME common language project

Level: Intermediate

#10AA Workshop: Early Findings from the AAMC’s Competency Based Medical Education Initiatives: Re-Envisioning Models and Methods (1978)
Location: Room 218

Alison Whelan, AAMC, Washington, DC, USA
Kate McOwen, AAMC, Washington, DC, USA
Kim Lomis, AAMC, Washington, DC, USA
Carrie Chen, Georgetown University, Washington, DC, USA
Lyndsey Lane, University of Colorado, Arora, Colorado, USA

Background: Changes in the health care delivery system require innovative approaches to the design and delivery of medical education. The AAMC is working collaboratively to design, test, and evaluate several new models and approaches. This interactive session will highlight and provide an opportunity to apply lessons from several areas of competency based medical education: Core Entrustable Professional Activity Pilot; Education in Pediatrics Across the Continuum Pilot; and the Competency Based Medical Education Common Language Project.

Who Should Attend: This session will attract a diverse group of participants from across the continuum of medical education. We anticipate and prefer a diverse group of attendees regardless of specialty, profession, and continuum focus.

Structure of Workshop: This session will provide a brief summary of these efforts, lessons learned, and resources to further explore. Each attendee will choose 1 of 3 small group facilitated activities designed to stimulate discussion and discovery in each area: 1) Fostering Readiness for Residency; 2) Variable Progression in Medical Education; 3) The Language of CBME. Each activity will provide opportunity for guided discussion and will be followed by a large group reflection of all three topics.

Intended Outcomes: By the end of this workshop, attendees will be able to:
- Describe key elements of innovations in competency based medical education across multiple U.S. medical schools
- Develop and apply strategies for CBME implementation within their local context
- Provide early feedback on developing initiatives including the CBME common language project

Level: All
#10BB Workshop: Improving the learning environment on postgraduate training – An AMEE Postgraduate Committee workshop (2036)

Location: Room 306

Juliana Sa, University of Beira Interior, Covilha, Portugal
Paul de Roos, Akademiska Sjukhuset, Uppsala, Sweden
Arnoldo Riquelme, Pontificia Universidad Catolica de Chile, Santiago, Chile

Background: An appropriate and invitational learning environment is a fundamental condition to successful training. Postgraduate education takes place in a unique setting where service and learning compete frequently. The specific characteristics of workplace based training are a challenge to both trainers and trainees. However, it is well documented in that a positive learning environment is related with better training and better care for patients.

Who Should Attend: Trainers and trainees that want to further develop their learning environment. This workshop is space reflection on challenges and to develop strategies to promote a stimulating learning environment.

Structure of Workshop: 120 minutes, accommodating 30 participants in five small groups. The workshop will open with a presentation of the workshop structure followed by a group discussion on the challenges and opportunities to develop a stimulating learning environment. The second part of the workshop will be a reflection on how to promote a positive learning environment in postgraduate training. The session will close with participants’ formulating personalized strategies to apply in their own reality.

Intended Outcomes: Identify particular challenges and opportunities for learning environment development in the postgraduate training; Reflect on influence of learning environment on trainees’ performance and health results; Be able to use environment measurement quantitative and qualitative methods to improve educational environments; Develop strategies to promote a positive learning environment on postgraduate training involving trainers and trainees.

Level: Introductory/Intermediate
#10CC ePosters: Learning Environment
Location: Room 206

#10CC01 (650)
E-learning integrated with face-to-face teaching for central venous catheter insertion increased learning efficacy

Ming Yew, Chi-Mei Medical Center, Tainan, Taiwan
Chun-Ning Ho, Chi-Mei Medical Center, Tainan, Taiwan
Kuo-Mao Lan, Chi-Mei Medical Center, Tainan, Taiwan
Kuei-Fen Wang, Chi-Mei Medical Center, Tainan, Taiwan
Wei-Cheng Liu, Chi-Mei Medical Center, Tainan, Taiwan

Background: Online video e-learning has become popular in the field of medical education recently. We aimed to integrate the online video e-learning with face-to-face teaching for ultrasound-guided central venous catheter (CVC) insertion to help undergraduate medical students (UGY) learn faster and better.

Summary of Work: We developed an integrated curriculum to help UGYs achieve competency of ultrasound-guided CVC insertion. The integrated curriculum included (1) online video instructions of background knowledge and technique demonstration, (2) face-to-face discussion, (3) demonstration before practice on simulator, (4) technique evaluation, and (5) online assessment of the integrated curriculum, by questionnaires.

Summary of Results: The questionnaire result revealed that 21 (87.5%) of 24 UGYs were very satisfied or satisfied with the integrated curriculum. Online background knowledge teaching was graded 54.2% of very useful, 41.7% of useful, and 4.1% of average. Online technique demonstration was rated as 83.3% of very helpful and 16.7% of helpful.

Discussion: Online video teaching provided an unlimited access and repeated learning for medical students. It is better than traditional tutorial of CVC insertion because of standardization of teaching contents. The integrated curriculum increased the interaction between the lecturers and the students, as well as discussion time because of the media.

Conclusion: The integration of e-learning into clinical skill curriculum is a trend in medical education nowadays. High rates of UGY’s satisfaction with an integrated curriculum supported online e-learning based on our questionnaire findings. While attending the online class, the unlimited learning time and to learn anywhere fit each student better.

Take-home Message: Online video e-learning combined with face-to-face teaching for ultrasound-guided CVC insertion may increase the efficacy of learning.

#10CC02 (846)
Ultrasonography-Guided Leopold’s Maneuver Teaching for Medical Student

Manasicha Mekjarasnapha, Khon Kaen Hospital, Khon Kaen, Thailand

Background: Leopold’s maneuver is a basic physical examination of antenatal care which requires skill and experience. The obstacle of conventional teaching is the unimaginable actual fetal part and lie which uncorrelated to the palpated sensation. The innovative ultrasonography-guided teaching of Leopold’s maneuver was introduced for enhancing this competency of medical students.

Summary of Work: Twenty of fourth-year medical students, who completely attended a conventional Leopold’s maneuver teaching, were enrolled and applied the add-on bedside ultrasonography-guided teaching. A Wilcoxon signed rank test was used to compare the median of the pre- and post-course scores. The satisfactory score was also evaluated.

Summary of Results: All medical students completed the test. Post-course score was statistically significantly higher than pre-course (median [interquartile range]) (8 [7-10] vs. 6 [2-8]; P=0.004). The most improvement score after teaching were fetal lie and part assessment. Most students (85%) had the highest satisfaction score. The average teaching time was 24 minutes.

Discussion: The students’ Leopold’s maneuver skill was improved after applied the ultrasonography-guided teaching technique. The score of fetal lie and part assessment were improved because they were able to imagine the actual fetal part while palpate on maternal abdominal wall. The time consuming was a disadvantage of this technique.

Conclusion: This ultrasonography-guided Leopold’s maneuver teaching technique clearly improves the student’s perception of actual fetal part and lie with high satisfactory score.

Take-home Message: The clearly perception of fetal part and lie in Leopold’s maneuver can improve the student’s physical examination skill in pregnant women. The basic ultrasonography introduction may facilitate the effective of this teaching.
#10CC03 (1060)
**How to Moodle at the Faculty of Medicine at the University of Helsinki?**

*Lena Selänne, University of Helsinki, Educational Technology Services, Helsinki, Finland*

**Background:** The University of Helsinki offers a worldwide known open source e-learning platform Moodle for its teachers and students. Moodle is widely used also at the Faculty of Medicine by its ca. 350 course areas. They are mainly used for courses, but also as an information platform.

**Summary of Work:** It has been discussed at the faculty meetings that Moodle areas are not user-friendly and that the structures are complex. To see how the areas are built, they were studied quantitatively for the layout, the use of media, the number of activities and materials, etc.

**Summary of Results:** Results show that Moodle is mostly used as storage of written material. The use of exams, feedback, etc. is seldom, but some courses use them successfully. The front pages are often long and don’t have visual illustration. The majority of the courses use announcements actively, but other interactivity is scarce.

**Discussion:** Moodle is a versatile platform and could be used more effectively. Often default settings are kept and no attention is paid to the layout. Small improvements, like adding media, building a compact structure and using interactive aims, would make Moodle courses more approachable. Activities could also be used more widely.

**Conclusion:** The strategy 2017 of the Faculty of Medicine focuses on digitalisation: the use of iPads, educational videos and electronic examinations are planned. Moodle gives possibilities for all of that, but the current use of Moodle does not correspond with these demands. More knowledge of Moodles possibilities should be available.

**Take-home Message:** Moodle is a powerful e-learning platform, but its capacity is often not fully used. Attention should be paid to the user- and mobile-friendly layouts as well as the meaningful use of interactive activities.

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#10CC04 (1219)
**Measuring the educational environment**

*Abigail Dreyer, University of Witwatersrand, Faculty of Health Sciences, Johannesburg, South Africa*

*Motlatso Mlambo, University of Witwatersrand, Johannesburg, South Africa*

**Background:** The educational environment has been increasingly acknowledged as vital for high-quality medical education. Student’s behaviour and performance are influenced by the teaching and learning environment. Evidence supports how learning environments impact on academic performance and can lead to increased success in both the academic and professional domains.

**Summary of Work:** The first objective was to explore the medical, educational environment instruments previously developed and used to evaluate the educational environment. The second objective was to review the scales in these instruments to explore possible indicators for future evaluations in our educational environment.

**Summary of Results:** A systematic search plan with criteria was applied to the search of instruments. The search was performed using the EBSCOhost databases: Academic Search Premier, CINAHL, ERIC, MEDLINE databases. The scales used in each tool was investigated for its context specific relevance.

**Discussion:** The primary search yielded 11 instruments for investigation. The number of item ranged from 24 items-65 items across the different instruments. Adequate supervision, teaching and learning, social support and workload are the most frequent indicators across the instruments. Few instruments explored the peer collaboration for teaching and learning.

**Conclusion:** The presentation explores the critical scales that can be used as indicators for the educational environment. The critical scales offer indicators to use to improve the curriculum and learning environment in the subsequent delivery of programmes. The physical environment is explored minimally and should be included as a integral indicator.

**Take-home Message:** Our diverse contexts for teaching require evaluation and monitoring indicators that are equally diverse to understand our learning environments. In order to address the transformations required in our curriculum our indicators need to evolve. Consensus on the scales we use as indicators allow for expansion of teaching sites.
Use of “Doctors’ Lounge” Podcast to Teach Clinical Reasoning to First-Year Medical Students

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Daniel McCollum, MCG, Augusta, USA
Shilpa Brown, MCG, Augusta, USA
Allen Pelletier, MCG, Augusta, USA
Jennifer Rose, MCG, Augusta, USA

Background: In first year our students have a comprehensive course in history taking, physical examination, clinical reasoning, and patient-centered care. We observe that first year students struggle to conduct focused history taking and physical examination based on a specific chief complaint. We developed an innovative program to address it.

Summary of Work: The outline of the history of present illness, review of systems, other histories findings, and a focused physical examination of a patient with specific complaint followed by discussion of work-up and possible treatments was developed. This provided a base for podcast recordings with faculty from Internal, Family, and Emergency Medicine.

Summary of Results: Students and preceptors completed a brief pre-and post-session surveys to assess students’ and preceptors’ perception of utilization, content and delivery, and impact on students’ ability to conduct a patient encounter and discuss their assessment and plan. We also asked for feedback on how these resources might be improved.

Discussion: The resource was highly effective for first-year medical students’ preparation for focused history taking and physical examination with specific chief complaint. Students and faculty felt they can employ critical thinking in the discussion of case assessment and plan. Rich feedback from comments provided great ideas to improve this resource.

Conclusion: We believe this model we called “Doctors’ Lounge” developed for sore throat, chest pain, and abdominal pain can be replicated at any medical school desiring to introduce or enhance teaching of clinical reasoning skills to their students. When such resource developed the preferences of digital natives should keep in mind.

Take-home Message: The introduction in clinical medicine to clinical reasoning might be enhance by developing chief complain specific podcasts with multi-specialty physicians approaches in focused histories taking, physical examination, assessment and management plan.

Application of 3D—printed model to enhance operative teaching in craniofacial surgery

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Background: Limited surgical field and complicated anatomical structures makes training in craniofacial surgery a challenge. We introduce the application of 3D models in craniofacial surgical skills training to enhance the learning and teaching experience, so surgical complications can be minimized whilst easing the steep learning curve.

Summary of Work: Plastic surgical trainees were split randomly to control and intervention groups. All trainees received briefing, intraoperative teaching and debriefing (The BID method). In the intervention group, the teaching surgeon set the learning objectives and discusses the surgical plan preoperatively with the assistance of 3D-printed models. The learners were scored with procedure-specific content checklist.

Summary of Results: The trainees scored higher in the checklist, and also reported higher self-perceived confidence in anatomy identification and surgical skills with model-assisted teaching.

Discussion: The learners were encouraged to participate in the operative procedure under direct supervision. Postoperatively, the teacher and learner debriefed with particular focus on the effect of model-assisted teaching on the trainee’s procedural performance. 3D-printed model assisted teaching model shortens the learning curve and supplements resident training in craniofacial surgery.

Conclusion: Recently, many reports have demonstrated the use of 3D imaging and models to improve surgical planning and operative outcomes. We instruct this new designed teaching curriculum to improve skill learning outcome. Both trainees and teachers were satisfied with positive communication.

Take-home Message: 3D-printed model assisted teaching enhances operative educational experience. This new innovative teaching technique would influence the quality in the operating theater teaching.
Student perceptions and utilization of academic resources including video-recorded lectures

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Elizabeth Capt, Ross University School of Medicine, Picard, Dominica
Silvanna Esposito, Ross University School of Medicine, Picard, Dominica
Davendra Sharma, Ross University School of Medicine, Picard, Dominica

Background: Despite a paradigm shift in medical education that has increasingly emphasized independent and technology-assisted learning, there are divergent perspectives regarding video-recorded lectures. Some studies suggest knowledge gains and positive subjective opinions. However, other studies have found video-recorded lectures less engaging, adversely affecting attendance, and inversely associated with grades.

Summary of Work: This study polled students about how they use video-recorded lectures and other academic resources using a prospective, cross-sectional, descriptive study design. 149 respondents completed the survey, representing students in both standard and accelerated tracks, across all 4 semesters of a basic sciences, foundations of medicine and clinical skills curriculum.

Summary of Results: 85% of students reportedly prefer video-recorded lectures. Students who attend class in-person appear more likely to access academic support resources (p=0.026). Multiple-choice question-based activities are the most popular, followed by peer-tutoring, and one-on-one academic support. There was a significant shift towards attending class less frequently after semester one (p=0.045).

Discussion: Medical students are clearly inundated with a tremendous volume of factual information during their preclinical curricula and video-recorded lectures are appealing to many students. Despite the popularity of video-recorded lectures, students who attend class in-person are also more likely to take advantage of other academic support services.

Conclusion: Video-recorded lectures provide an ability to pause, repeat, or watch lectures at an accelerated pace, which most students report as being helpful. However, there is still a need to better understand students’ perspective and what factors they consider when making decisions about how to engage in didactic lecture materials.

Take-home Message: Although video-recorded lectures offer flexibility and are preferred by many students, perceptions about such lectures appear to shift over time and a variety of motives appear to be driving student’s behaviors.

Technical update to ENT teaching policlinic using multimedia screens and mobile video endoscopy

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Background: The clinical examination in ear, nose and throat diseases (ENT) is still largely based on the traditional equipment that was invented in the 19th century. We decided to take the advantage of the modern era technology providing the easiness to transmit computer and endoscope image to a wide screen.

Summary of Work: The modern camera and tv-screen technology is advanced and easily available with moderate costs. Even normal mobile phones provide high definition cameras we could not dream of a decade ago. We compared different mobile endoscopic cameras serving the purpose to visualize and teach the ENT anatomy and clinical examination.

Summary of Results: The ENT teaching policlinic was updated with a 55’ wide screen connected through a switcher to three different image sources: a) computer connected to electronic medical charge including physicians referrals, b) rigid or flexible endoscope connected to a smartphone and c) a stereomicroscope.

Discussion: We ended up with an easy to learn equipment that permits incredible visibility with less effort. In ENT the findings are often hard to visualize. This equipment enables the digital imaging and teaching upon the case including consultations and explaining to the patient.

Conclusion: The students and the patients have given their unreserved approval to our new teaching policlinic. The investment including a smart phone, with adaptor, cover and cordless TV connector and 55’ wide screen is approximately 10% - 20% of the investment of a standard video endoscope set with a small screen.

Take-home Message: A technically updated teaching policlinic in ENT was easy to build up with limited costs. Care must be taken to prevent the unauthorized use and sharing of the images.
A comparison of two teaching methods of basic ventilator management in medical students: Combined case-based conference and lecture versus simulated bedside teaching

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Suraphan Charoenthanyaluck, Khon Kaen Hospital, Khon Kaen, Thailand
Seksun Chaisuksant, Khon Kaen Hospital, Khon Kaen, Thailand

Background: Medical students are taught to manage basic ventilator management in a block of Internal Medicine within 12 weeks of period. Two teaching methods are compared between combined case-based conference and lecture (method A), and simulated bedside teaching (method B). We aimed to determine a suitable teaching method under limited conditions.

Summary of Work: Ten MCQs were given for evaluation pre-test and post-test of the level of knowledge in 62 sixth-year medical students. The scores were analyzed according to two teaching techniques: case-based conference and lecture versus simulated bedside teaching. The MCQs were standardized and had no significant difference in Minimum Passing Levels (MPLs).

Summary of Results: Mean scores of the post-test MCQs in teaching method A and B were 8.1±1.41 and 8.7±1.2; respectively (p = 0.06). The percentages of medical students who passed the exam were 93.5% and 96.8%; respectively (p = 0.05). Overall satisfied class evaluation from students were 8.9 and 9.8 of 10; respectively.

Discussion: When we combined case-based conference and the traditional lecture into the method A, we found that this method A is not statistically different to simulated bedside teaching (method B). Hence, in limited situation of method B about accessible patients and opportunistic learning, method A is another substitute choice.

Conclusion: Students from combined case-based conference and lecture group and simulated bedside teaching group had no significant difference in post examination and in overall satisfied class evaluation. Therefore, both of learning methods could be substituted each other depend on availability of resources and various situation.

Take-home Message: Although both method A and B are a part of innovative curriculum with the SPICES model (student-centered, problem-based, integrated and systematic approach), method A is easier than method B in lecture preparation and accessibility of students.
Practical tool to teach clinical research designs in first year medical school

Enri Bobsin da Silva
Lucia Campos Pellanda, UFCSPA, Canoas, Brazil

Background: Evidence based medicine is an essential tool for critical medical reasoning, that demands the use of innovative forms of teaching, especially in the first year of medical school, when the students may not yet be motivated to learn this skills or lack the background to understand them.

Summary of Work: We present a practical activity to teach clinical research designs. The teacher proposes simulated research questions, for example, “Do people that wear black drink more coffee in the University cafeteria than people with colorful clothes?” to the class of first-year medical students, who collect data and summarize results.

Summary of Results: During presentation of results by the students, each research question is analyzed and associated to a specific research design, with discussion of its strengths and possibilities of bias. Clinical uses of each design are discussed, as other research issues, such as the importance of a good hypothesis.

Discussion: The students were excited to collect data for themselves and to be able to practice what they were learning. When the teacher explained what design each Group was working on, students reported to understand better some abstract concepts, such as research designs and the characteristics of a good hypothesis.

Conclusion: Clinical research designs are an important background to understand the strength of evidence. Active methodologies, with creative practical activities that contextualize each design, may be useful tools in teaching this topic for first-year medical students, helping to build critical thinking.

Take-home Message: Active methodologies can be used to teach clinical research designs to first-year medical students. Better than the traditional method, active learning unites practice and theory as it focus the learning process in the student.

If You Build It, They Will Come; an approach to creation of a dedicated Team-Based Learning (TBL) space, from design to use

Lindsey S. Pershern, University of Texas Southwestern Medical Center, Dallas TX, USA
Christopher Faulkner, University of Texas Southwestern Medical Center, Dallas TX, USA

Background: Shifting from a traditional lecture-based learning environment to a team-based learning environment can offer many different challenges. Often space considerations prove to be the ultimate challenge when attempting a group activity in a lecture hall. Institutions may approach this challenge by considering the creation of an ideal TBL learning space.

Summary of Work: At our institution, we endeavored to use the core principles of TBL to create such a space. This TBL Classroom spans over 17,000 square feet and is designed to meet the active learning goals and objectives of our reformed curriculum. Since the room opened, adoption of active learning has increased.

Summary of Results: We have created a space that truly exemplifies the needs of a group-based learning environment. With sophisticated and dynamic technological design, individual group conversations can become class-wide conversations in mere seconds. Through flexibility with evolving technology, we have maximized the use of the room for many group learning activities.

Discussion: We will present our process from start to finish, including initial planning and modifications to design in response to evolving needs of our learners and teachers. Additionally, due to the technology requirements in the room, its development and completion required institutional and cross-departmental support to effectively meet our lofty goals.

Conclusion: Many participants that utilize the room, particularly students, have given overwhelmingly positive feedback. As a result, the TBL classroom now features state-of-the-art technology in a modern-style learning environment with the flexibility to meet a variety of group-based needs. Learners and educators have been inspired and engaged by active learning.

Take-home Message: The creation of a state-of-the-art active learning space requires assessment of learner and educator needs, institutional support and a flexible approach to design and renovation. The outcome of our process has yielded the successful integration of active learning to an existing curriculum and an enhanced experience for learners and educators.
#10DD Posters: Patient Safety

Location: Hall 6

#10DD01 (1615)
Learning from medical errors: A retrospective study of senior surgeons, surgical nurses, and physical therapists

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Yu-Ching Lin
Hung-Chi Chen

Background: Previous studies provide little insight into the learning curves related to the wide range of profession-specific errors over time. It is unclear if and how the rate of reduction in medical errors changes along with experience among physicians and other medical care personnel across three career stages.

Summary of Work: Using questionnaires with items based on existing literature and expert panels of senior personnel, we retrospectively collected error commission data from 521 senior clinicians (135 surgeons, 50 surgical nurses, and 336 physical therapists).

Summary of Results: In all three groups, errors decreased as experience was accrued (all p < .001). Compared with paramedical professionals, physicians make a wider range of errors, including diagnostic, prescribing, treatment, communication errors and etc. Medical errors made by nurses and physical therapists are often procedural, communication or systemic.

Discussion: This study identified types of errors committed by surgeons, surgical nurses, and physical therapist and followed rates of error reduction in these professions early-career, mid-career, and late-career. Understanding how the reduction in medical errors differs by profession over time may help in planning well-targeted and well-timed observational learning programs.

Conclusion: Medical errors are reduced with experience, though rates and learning curves differ by profession. Performance of procedures improved more easily than medical reasoning, decision-making, and communication skills.

Take-home Message: This study enrolled late-career medical care personnel, allowing us to follow changes from early- to mid- and to late-career. Progress in communication occurred more slowly than the more technical errors, in all groups. Team effectiveness should be studied with regard to relative learning curves and complementary learning among members.

#10DD02 (1707)
Designing in situ simulation in the emergency department: Evaluating safety attitudes amongst physicians and nurses

Charlotte Paltved, Corporate HR MidtSim, Aarhus, Denmark
Anders Bjerregaard
Kristian Krogh
Jonas Juul Pedersen
Peter Musaeus

Background: In situ simulation is an effective strategy for training handover communication. Research is lacking, however, on how to use patient safety data and a needs analysis to design of in situ simulation. This study aimed to enhance patient safety attitudes through in situ simulation in an Emergency Department in Denmark.

Summary of Work: The design of this in situ simulation program was based on a thematic analysis of patient safety data and a needs analysis using short-term ethnography. In particular handover communication was observed and analysed as a contributing factor for critical incidents and adverse events in the ED.

Summary of Results: Sixteen healthcare teams participated (n=39). In the Safety Attitudes Questionnaire staff scored their safety attitudes in six categories. In the categories Safety Climate and Teamwork Climate, scores were significantly higher for the post-SAQ than for the pre-SAQ (p < 0.001, p < 0.05).

Discussion: We learned about the complexity of the ED from seeing how a phenomenon like handovers emerged. The duration of ethnographic fieldwork should depend on the intensity and not per se time. The approach was strategic and triangulated (interactive observations, interviews, theoretical perspectives) which made it a feasible research strategy.

Conclusion: Research on in situ simulation is burgeoning as a method for delivering continuing education to health care providers. The argument for simulation-based education is that it provides a safe place to learn from mistakes, in contrast to the workplace. However in this study, staff trained in their own clinical environment.

Take-home Message: This study designed a feasible strategy for implementing a simulation program based on an analysis of critical incidents and adverse events and a needs analysis. The results showed a significant increase in staff’s safety attitudes. Research has shown a positive relationship between safety climate and patient safety.
A collaborative and sustainable model of teaching patient safety in low and middle income countries (LAMICs)

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Chrisanthi Rajasooriyar, St George’s University Hospital NHS Foundation Trust, Jaffna, Sri Lanka
Ashwini Rajan, Nawaloka Hospital, Colombo, Sri Lanka
Vijay Sivalpalan, Lewisham General Practice VTS, London, UK
Kobika Sritharan, North Middlesex Hospital NHS Trust, London, UK
Rekha De Silva, South London and Maudsley NHS Foundation Trust, London, UK

Background: Sri Lankan Doctors from a UK based voluntary organization worked in partnership with Doctors from healthcare institutions across Sri Lanka to develop, implement and evaluate a series of train the trainer style, interprofessional, patient safety workshops in Sri Lanka, in response to unmet need as advocated in the literature.

Summary of Work: Train the trainer style, workshops on six themes central to patient safety were held in three institutions across Sri Lanka. Participants completed Likert scale pre and post-course questionnaires with qualitative feedback. The post-course questionnaire also assessed participants’ pre-course perceptions of understanding. Paired T test statistical analysis methodology was used.

Summary of Results: N=196. Comparison of pre and post intervention scores demonstrated a statistically significant improvement in understanding in all 6 themes covered by the workshop, and statistically significant improvements in knowledge in 4 out of 5 subject areas. The workshops also effectively addressed learning needs, with a high level of learner satisfaction.

Discussion: The interprofessional participants (Doctors, nurses, allied healthcare professionals) significantly improved their understanding of empowerment, patient safety, communication, leadership, collaborative healthcare (team working and interprofessional education) and feedback, and knowledge in all but two of these subject areas, whilst demonstrating a high level of learner engagement throughout the Jaffna and Colombo based workshops.

Conclusion: This demonstrates the utility of collaborative working to implement innovative ‘train the trainer’ style workshops on patient safety and interprofessional education across Sri Lankan healthcare institutions. The authors believe that this effective, learner centred model can be adopted elsewhere and encourage a collaborative approach to improving interprofessional education in LAMICs.

Take-home Message: We believe these workshops were the first interprofessional ‘human factors’ workshops in Sri Lanka. The workshops were effective, enjoyable, and relevant to improving patient safety across Sri Lanka. This demonstrates that interprofessional education in LAMICs can be implemented in a cost-effective manner, collaborative manner, ensuring effectiveness, cultural acceptability and sustainability.
Human factors training for medical students: Exploring student perception and how best to promote a better understanding

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Suveer Singh, Chelsea and Westminster Hospital, London, UK

Background: Human factors training assesses the interaction between humans and the system in which they work. It is increasingly used to enhance patient safety, reduce the risk of error and has a direct benefit to patients. The role of human factors training in undergraduate medical education is still developing.

Summary of Work: This study aims to identify the attitudes of medical students towards human factors training and how a training programme can affect the student’s preparedness and approach to clinical situations. Several teaching sessions to multiple year groups were delivered with questionnaire and semi-structured interviews before and after the course of sessions.

Summary of Results: The initial questionnaire and semi-structured interview has shown that student’s perception of human factors training is limited, particularly in terms of how it is relevant to their own practice. Following the teaching sessions, the results from the repeat questionnaire and semi-structured interview will also be presented.

Discussion: Using an approach with a variety of teaching methods and allowing students from different year groups to attend will enable a better understanding the importance human factors plays in the careers of the medical students and making these sessions a regular part of the curriculum with better prepare the students.

Conclusion: By ensuring the students have an appreciation for human factors and how they can apply this knowledge to their practice is key to the success of this training programme and in reducing risk to patients. By involving different year groups, the students are better able to learn from their peers.

Take-home Message: Using an approach to human factors training with a variety of teaching methods and allowing students from different year groups to attend will enable a better understanding of the importance human factors plays in the careers of the medical students and improve patient safety.

Investigate the efficacy of nurse dispensing medication standard operation procedure by e-Learning intervention

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Yi-Kung Lee, Dalin Tzu Chi Hospital, Taiwan

Background: Dispensing of medications by nurse is an important part of patient safety and quality of care. Execution of the “3 reads; 5 rights” by the nurse become more important. We applied e-Learning training program to ensure their competency. We aim to reduce dispensing errors and increase patient safety.

Summary of Work: We design an e-Learning course which demonstrate the standard operating procedure of dispensing medication. It provide advantage for the nurses who work under shift system. We conducted a study to investigate the number of dispensing errors from 2014 to 2016 in our hospital.

Summary of Results: A total of 55 dispensing errors were reported from 2014 to 2016. There were 19 cases (34.6%) were err by the nurses who has already attended the e-Learning course. The rest of the cases (65.4%) were err by those who didn’t attended the course.

Discussion: Among the reported cases, those nurse who didn't attended the e-Learning course were found to err dispensing errors 1.89 times than those who has attended the course. Obviously, e-Learning intervention can significantly reduce the errors and increase quality of care.

Conclusion: This investigation only review the number of errors err between those who has attend the course and those who hasn't. In the future, we aim to conduct a qualitative study, in order to optimize the course design.

Take-home Message: The e-Learning has become a learning platform with easy accessible in any time. This is a user friendly design for those who work under shift system. Indeed, this convenient encourage more staff take part of the course. Patient safety increase as a result.
#10DD07 (1093)
Educational interventions to improve handover in healthcare: an updated systematic review

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Background: Standards of patient handover are often inadequate, resulting in errors and threats to patient safety. However, students and qualified healthcare staff are rarely trained in the required skills. A 2011 systematic review (1) found little research describing educational interventions to improve handover, how they were designed or their effectiveness.

Summary of Work: An updated systematic review was undertaken to determine how the handover education literature has progressed since the 2011(1) publication. The target population comprised medical and nursing staff, midwives and operating department practitioners, both qualified and undergraduates, and the setting was in-patient medical establishments.

Summary of Results: From 4399 citations, 27 potential studies were fully screened, with 17 papers included in addition to the previous 10 studies from 2011. The majority involved postgraduate doctors and before/after designs. Most study results achieved levels 1-2 on Kirkpatrick’s hierarchy(2) and the strength of the evidence for supporting the conclusions varied.

Discussion: Despite this increase, their quality generally remained poor and findings were similar to the previous review with a paucity of information on content, pedagogy or underpinning theory. As such, curriculum planners and teachers will still struggle to produce educationally high quality evidence based interventions.

Conclusion: Handover education research is limited by a focus on justification studies, with minimal descriptive or clarification works.

Take-home Message: Despite growing published works, the evidence base is of poor quality with a focus on justification. Future handover education research is required with increasing focus on describing content, learning.

#10DD08 (2467)
Implementation WHO Patient Safety Curriculum Guide in Undergraduate Medical Curriculum, a Way Forward

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Varavudh Sumawong
Rajin Arora
Chairat Chayakul
Piyawan Limpanyalert

Background: Number of patients are harmed resulting in permanent injury, increase length of stays and even death from complexity of health care systems. Not only from substandard facilities but education and training of health care professionals is urgently needed.

Summary of Work: WHO Patient Safety Curriculum Guide was developed in 2011, since then Collaborative Project to Increase Production of Rural Doctors had started workshop for 37 Medical Education Centers (MEC) in 2012. In 2013, only 18% of MECs started to use these guide due to lacking of competent staff.

Summary of Results: Most MECs agree that patient safety topics should integrate into medical curriculum. Another two workshops for lesson plan was done by collaboration with Consortium of Thai Medical Schools. Further training for trainer "workshop from collaboration with The Healthcare Accreditation Institute, Thailand will start this year for teacher preparation.

Discussion: At the start of implementing WHO Patient Safety Curriculum, both Faculty of Medicine and Medical Education Center which responsible for teaching clinical years agree that it should integrate into existing curriculum and Thai Medical Council should emphasize in both undergraduate and postgraduate training to achieve professional standard.

Conclusion: It is challenging to implement another topic even though it is not new but how can we integrate and teach despite every institutions agree that it is important topic but "how to teach". Many approaches were done with strong support from three collaborations in order to support each institution.

Take-home Message: Many strategies were used to implement patient safety curriculum to every healthcare professional discipline. Further effort should be stress on short and long term impact in knowledge, skill and attitude of both undergraduate and postgraduate medical students. A long term evaluation in reduction of healthcare harm should be done.
**#10DD09 (2420)
Applying basic Facilitation for patient safety education**

**Wanna Angkasuvan, Hatyai Hospital, Songkla, Thailand**

**Background:** We conducted patient safety teaching, using WHO patient safety curriculum guide, with variety of teaching methods. Applying basic facilitation to guide medical students sharing ideas or experiences in order to get attitude and knowledge of patient safety concepts. Our aim was to identify what we had learned from their activities.

**Summary of Work:** We designed learning activities for 4th year of medical students after working for 6 months. We implemented interactive exercises to assessed self-rating unsafe care, attitudes, knowledge and skills of safety practice. We facilitated five separated groups to collect adverse events and brainstorm using three key words for improvement patient safety.

**Summary of Results:** Forty medical students had self-rating of unsafe care, attitudes, knowledge and skills were 2-3, 3-4 and 1-3 respectively. They collected 30 adverse events, mainly medication errors, and three key words such as “See it, Say it, Fix it”, “Alert Aware Careful”, “Sati Step Strong”. Satisfaction was good to excellent.

**Discussion:** Facilitation focused on group processes of discussion, participate and successful consequences. It helped medical students to discover for themselves what is effective, in their own experience of patient safety. They can gain their own understanding by engaging in activities. Facilitator skill of teacher should to prepare and guide this session.

**Conclusion:** Applying basic facilitation is effective teaching method that promote us to know positive thinking of medical care with safety attitudes and not enough competency in safety practice as they were first clinical year. They could recognize unsafe conditions and had smart ideas for improvement patient safety.

**Take-home Message:** How to change their attitudes and knowledge of medical students to be safety behaviors in the workplace? Next step in patient safety impact is developing necessary skills to reduce medical errors.

**#10DD10 (2102)
Development and Evaluation of an Inter-professional Patient Safety Workshop**

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Candy Lim, Yong Loo Lin School of Medicine, Dean’s Office National University of Singapore, Singapore**

**Christina Mohan
Sophia Ang**

**Background:** Patient safety errors affect all areas of health care. Hence it is important to train healthcare students early and regularly to identify and to prevent and correct such errors. As healthcare professionals are now expected to work in teams, early team based training to prevent such errors from occurring.

**Summary of Work:** As part of longitudinal patient safety curriculum, 5 workshops were conducted over a year. All year 3 students from medicine, pharmacy and nursing faculties were required to attend one. Students were taught the 6 international patient safety goals (IPSG) through role play, simulated ward rounds, table top discussions and games.

**Summary of Results:** A total of 550 students took part. 93% felt that they had benefited from the workshop. Learning about IPSGs 1, 2, 3 and 6 were rated as the areas they gained the most from. 97% of students agreed that all medicine/nursing and pharmacy would benefit from the workshops.

**Discussion:** Introducing the importance of patient safety can be successfully done for undergraduates. They are able to realize the importance of team work and following safety measures to reduce harm to patients. Coordination of time tables and ensuring content is relevant to all are important issues that need to be considered.

**Conclusion:** We would recommend that patient safety workshops focusing on the 6 IPSGs be introduced in all curriculum. To maintain student interest it should be taught using interactive activities rather than purely lecture based. IPSGs need to reinforced throughout the whole course to drive home the message.

**Take-home Message:** Patient safety needs to be taught and regularly reinforced. Inter-professional workshops are effective. Content needs to be relevant and taught interactively. If executed properly, students will benefit and enjoy the program.
#10DD11 (2231)
Improvement of the patient-centered medicine portion of IPE program by adding patients' lectures
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Mina Nakagawa, Tokyo Medical and Dental University, Tokyo, Japan
Chiharu Kawakami, Tokyo Medical and Dental University / St. Luke's International University, Tokyo, Japan
Yoko Yoshihashi, Tokyo Medical and Dental University, Tokyo, Japan
Ayako Ichikawa, Tokyo Medical and Dental University, Tokyo, Japan
Kazuki Takada, Tokyo Medical and Dental University, Tokyo, Japan

**Background:** In our university, the importance of coordinated and collaborative care between medical, dental and other healthcare professionals is recognized through the IPE program. However, the program contents were not sufficient for teaching patient-centered medicine. In this study, we modified the program to include patients and evaluated the effect.

**Summary of Work:** A total of 330 final-year students from eight health professions, including 101 medical students participated in a two-day IPE program which included mixed-small-group discussions and lectures. Post-program, participants submitted reports on areas they should keep in mind when working as medical professionals. Medical students' reports were analyzed qualitatively.

**Summary of Results:** Most students realized that they should have sympathy and respect patients' values for their care plans. Some students proposed the importance of interprofessional care that includes patients and family as team members. Others mentioned a high level of medical knowledge and skills would be required to become reliable doctors.

**Discussion:** In the previous study, our IPE program helped the students to understand about other healthcare professionals work (Yamaguchi et al., AMEE2014). This time, the viewpoint of patient-centered care was added to the program through patient lectures.

**Conclusion:** These lectures created a greater sense of students' awareness of medical doctors' responsibilities.

**Take-home Message:** Mixed-small-group discussions among multiple healthcare professionals are useful to realize the importance of coordinated and collaborative care. In addition, the IPE program could be improved toward patient-centered medicine through incorporating patient's lectures.

#10DD12 (2327)
Impact of team resource management training on the maintenance of patient safety act
Jiun-Yi Li, MacKay Memorial Hospital, Taipei, Taiwan
Yu-Pei Fan
Hui-Yun Chang

**Background:** Teamwork is highly important in current medical care. However, team training in the medical curriculum or postgraduate training usually focuses on the preformed working process. A team skill is necessary to facilitate multidisciplinary cooperation in the hospital to improve medical quality and patient safety.

**Summary of Work:** Since 2012, we conducted team training with the team resource management (TRM) skills to help teams in our hospital figuring out some way to solve the patient safety and medical quality problems encountered during daily work. The skills include leadership, effective communication, situation monitoring and mutual support.

**Summary of Results:** Since 2012, 150 members in 19 teams participated in the training. The topics included communication (6 teams), quality improvement (7 teams), process modification (5 teams) and hospital violence prevention (1 team). Satisfaction score after the training was 3.8/5. Team effectiveness was 7.4/10, maintained for an average of 2.5 yeas.

**Discussion:** The attitude to teamwork has the highest impact on team effectiveness and performance (p < 0.001). It also influences the skills the members learned during the training. The knowledge and skill of TRM highly impacted on the team effectiveness immediately after the training and during the maintenance period (p< 0.01).

**Conclusion:** The majority of patient safety issues included the medication safety, line management, patient falls, and care process. Team training helps clinical teams solving problems cooperatively and systematically. The key method to maintain effectiveness and performance of team act is to incorporate into the hospital index system and check up regularly.

**Take-home Message:** TRM training can help clinical teams form applicable patient safety actions and incorporation into hospital index system help effective maintenance of clinical performance.
**#10DD13 (2527)**
An IPE activity implemented in Medicine, Psychology, Nursing and Pharmacy

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Juan José Beunza
Juan Luis González
Olga Greciano
Eva Icarán
Gema Santiago

**Background:** Health care is not as safe as it should be. Patients die in hospitals as a result of errors that could have been prevented. Often, these errors are related to problems of communication in inter-professional teams. Solutions to solve this issue must be provided with training in Interprofessional Education (IPE).

**Summary of Work:** We have designed and implemented an activity called Foundations of Interprofessional Education with students from Medicine, Psychology, Nursing and Pharmacy at Universidad Europea de Madrid. The objective of this Program is to help students become aware of the difficulties and new models of work that are necessary in inter-professional teams.

**Summary of Results:** This Program of Interprofessional Education has been implemented for 2 years. Students of Medicine, Psychology, Nursing and Pharmacy have worked in teams for the resolution of a clinical case. At the end of the activity, students reported their levels of satisfaction with the task. Different parameters analyzed provided good results.

**Discussion:** The implications shown by the data collected at Universidad Europea de Madrid will be discussed in detail. It will be shown that training in Interprofessional Education is complex and involves the understanding of different competences (communication, authority, and knowledge about different roles).

**Conclusion:** Due to the fact that healthcare professionals work together in hospitals, their training in Interprofessional Education is essential in health schools. Programs promoting collaborative practice should be enhanced. Results obtained in these two years show that students do value this training practices.

**Take-home Message:** Curricula in health schools must include IPE activities in order to promote collaborative health care and shared decision making.

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**#10DD14 (3143)**
Lessons Learned in Lothian: Developing a trainee-centred patient safety incident analysis programme

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**Background:** Trainee doctors are often exposed to, and aware of, patient safety incidents (PSIs) experienced in the workplace, and are well-placed to propose possible system improvements. Based on the work of Maria Ahmed (2012), ‘Lessons Learned in Lothian’ is a well-established programme providing patient safety learning opportunities to junior doctors.

**Summary of Work:** This study focussed on the foundation doctors’ experiences of the ‘Lessons Learned’ programme - whether they found it a useful addition to their learning, and whether the sessions were sufficiently ‘trainee-centred’. Trainee feedback from the past four years of the ‘Lessons Learned’ programme was collated and analysed.

**Summary of Results:** Feedback forms from 100 foundation doctors attending ‘Lesson Learned’ sessions were collated and analysed. Overall satisfaction with the session was high (‘excellent’ n=48 (48%), ‘good’ n=43 (43%)’. When attendees were asked for areas of improvement, free-text comment analysis included ‘briefer summary of cases’, ‘more time for own examples’.

**Discussion:** Each ‘Lessons Learned’ session is based around a pre-determined PSI, analysis of which should act as a springboard to further discussion. Feedback suggests that the balance between prescribed elements of the session, and discussion of trainees’ own experiences can, from time to time, sit in favour of the central case.

**Conclusion:** Overall, the programme is felt to useful and is well received by trainees, but that the sessions may focus too heavily on the pre-selected PSI. Further programme development work would aim to redress this balance, while maintaining the consistently high level of delivery from faculty and trainees’ satisfaction.

**Take-home Message:** A region-wide patient safety programme for junior doctors can be delivered consistently and effectively, and is most effective when trainees are given ample opportunity to discuss and reflect on their own experiences.
The Safety Thermometer and Risk Response (STARR) Project: shining a light on the path to patient safety

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Chris Broom, St George’s Advanced Patient Simulator, London, UK
Nicholas Gosling, St George’s Advanced Patient Simulator, London, UK
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Background: The aim of the STARR project was to use a theory-driven, participatory action research approach to examine the complex human, situational and resource-related factors affecting patient safety practices in a safety ‘hot spot’ ward and to engage staff in creating a tailor-made, sustainable programme of safety improvement strategies.

Summary of Work: Needs analysis employed a mixed-method approach: observation of practice, staff questionnaires and in-situ MDT simulation. Application of Activity Theory allowed break-down of the needs analysis into system-related safety themes. Researchers engaged staff in iterative cycles of feedback workshops, facilitating discussion, identification of potential areas of improvement and changes to practice.

Summary of Results: Ward rounds and recognition/escalation of deteriorating patients were considered priority. Gaps in resources were addressed. Regular educational sessions, ward round tools and pro formas and monthly progress meetings were implemented. Hospital management was involved to generate ongoing support. Staff reported improved perceptions of safety.

Discussion: Activity Theory provided a tool for system analysis and direction for safety discussion and interventions. Challenges included staff engagement due to high workload. Iterative cycles of feedback and discussion were labour intensive but lead to the emergence of key figures directing change.

Conclusion: A researcher-lead, theory-based evaluation of ward practices is useful in directing discussion around patient safety. Repeated feedback workshops engaged ground-floor staff to lead in change and improved perceptions of safety. Further analysis is required to evaluate whether this approach successfully transforms patient safety.

Take-home Message: Application of educational theory is valuable in understanding patient safety climate in specific clinical areas, whilst using the researcher as both observer and interventionist can provide a useful catalyst for change. Opening streams of discourse on the shop floor can help to engage staff in the change process.
On-line Rater-training Program Might Help with Inter-rater Reliability of Objective Structured Clinical Examination (OSCE)

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Background: Many well-constructed and validated evaluation tools have been used for clinical performance assessment (ex. OSCE) in medical education for years. Rater training of OSCE has long been discussed with inter-rater reliability. However, the best way to achieve rating consensus remains controversial. The most obvious barrier is faculty time.

Summary of Work: An internet rater-training program was developed for physician raters who were enrolled in graduation OSCE of medical student. Before OSCE, 20 participants complete a four-hour internet class including on-line lecture and practicing rating with piloting film, and would be introduced into an on-line discussion forum after submitting rating results.

Summary of Results: 7 trained raters and 7 un-trained raters constitutes with Group A and the other 13 trained raters belongs to Group B during graduation OSCE. The inter-rater reliability of Group A: 0.623 (Z=0.803); Group B: 0.755 (Z=1.298). Levene test showed a significant difference (p=0.002) of Z scores of two groups.

Discussion: On-line Rater-training Program is convenient to the participants that they could complete the course without concern of time and place. The discussion forum might be the key to success because it provide a friendly way to communicate with each other. Limitation is that the small number of the participants.

Conclusion: On-line Rater-training Program Might Help with Inter-rater Reliability of graduation OSCE of medical student. Internet technology helps to make rater-training program a more friendly way for physicians to participate in.

Take-home Message: Internet technology makes learning more convenient and effective. Convenience could help raters to make commitment to rating scores. Practicing rating with piloting film and then on-line discussion forum help to achieve rater consensus effectively.

Influence of Assessor Expertise on Ratings and Outcomes in a National Objective Structured Performance Examination (OSPE)

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Lila QueroMunoz

Background: In a national OSPE, pharmacist assessors reliably assess pharmacy technicians’ competence using criterion-referenced rating scales for communications, problem-solving and overall performance. In preliminary research with 2 OSPE stations in 7 locations, pharmacist and pharmacy technician assessors’ ratings resulted in similar pass-fail decisions. Differences in rating communications were compensatory.

Summary of Work: To further study and confirm preliminary findings, pharmacist and pharmacy technician assessors in 8 locations received enhanced training to assess pharmacy technicians’ performance. Paired assessors’ ratings in 5 OSPE stations were analyzed for agreement, quantitatively and qualitatively, to determine if enhanced training would reduce differences among raters with different expertise.

Summary of Results: With enhanced training, inter-rater agreement between pharmacists and pharmacy technicians improved when rating communication and problem solving skills; remaining differences appeared to be random. Further quantitative and qualitative analysis are underway to study differences within and between pharmacists’ and pharmacy technicians’ global ratings of overall performance.

Discussion: In developmental research, the generalizability and defensibility of OSPE scores, using 10 stations and one pharmacist assessor per station was acceptable for credentialing decisions. Enhanced training of assessors produced improved inter-rater agreement for communications and problem solving. Further analysis of ratings and documented comments will inform assessor selection and training.

Conclusion: This study confirms that scores provided by pharmacist and pharmacy technician assessors ra similar, lending confidence in pharmacy technicians as assessors. Rater variations may indicate a need for further training or that differential, compensatory values are attributed to competencies assessed, or both. Variations and the underlying construct require further study.

Take-home Message: When using raters with different expertise or values, including different professionals or lay assessors, the underlying construct and impact on scores needs to be examined in researching the validity of the assessment outcomes.
Modified Feedback Orientated Observed Teaching (FOOT) scheme: A Student-led Near-Peer Teaching Approach - effective tool for OSCE preparation?

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Background: In an attempt to formalise ad-hoc clinical teaching, the FOOT scheme was introduced in 2015. FOOT is a “near-peer” approach to clinical skills teaching aimed at preparing students for success in OSCEs. Following experiential and feedback analysis, the scheme was modified to adopt a student-led approach.

Summary of Work: At outset, the FOOT scheme linked junior doctors with paired students. However, we adapted this based on feedback to reduce variability caused by clashes with clinical commitments. 30 paired 3rd year students were assigned to 5th year students as “FOOT tutor” for bedside and clinical examination teaching over 10 weeks.

Summary of Results: Anonymous feedback was obtained using Likert scales and white-space comments. 100% students participated. This contrasts from previous experience when only 42% 5th years participated in the scheme. The mean positive response rate was 81%, with highlights including improved knowledge, examination and communication skills, confidence, and preparedness for OSCE (100%).

Discussion: By adopting a student-led approach, we were able to increase participation from 5th year students. Students also found it easier to arrange session resulting in an increased number of sessions undertaken. This led to a better sense of OSCE preparedness for all participating students.

Conclusion: Near-peer education is an effective supplementary approach to teaching and engaging medical students. It improves exam preparedness for 3rd and 5th year students. Our modified FOOT scheme offers a formal avenue for more senior medical students to develop interest and invaluable skills in medical education.

Take-home Message: • Student-led near-peer teaching is an effective approach for teaching clinical examination to 3rd year students. • 5th years should be encouraged to take on peer tutor roles to increase interest and participation in medical education. • Near-peer education encourages early participation in professional training of junior colleagues with benefits for all students.

Effects of Physician Stigma on Interaction with Depressed Patients

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Background: Perceived stigmatizing responses from health care providers have contributed to poorer medical outcomes in depressed cardiac patients. Our study aimed to measure residents’ bias toward depression, and determine to what extent such bias might affect residents’ clinical skills and patient interactions during an OSCE cardiac case.

Summary of Work: Internal medicine residents from 3 different training programs in 2 states participated in an OSCE featuring a middle-aged woman with chest pain. Residents were randomized and blinded to treatment (depressed vs non-depressed standardized patient). Measures: Medical Condition Regard scale (MCRS), history, physical exam, patient interaction, diagnostic and management skill.

Summary of Results: 185 out of 186 residents participated. Residents encountering the depressed SP scored significantly lower on history taking and diagnostic skill, but significantly higher on patient interaction. No significant differences in extrinsic bias scores (MCRS) related to program, gender, or OSCE station. Residents meeting non-depressed SPs had slightly higher management skills.

Discussion: Results showed that with a depressed patient, residents were more likely to be less thorough when taking the history and making a diagnosis, but showed greater patient interaction skill (depressed SPs were more inclined to want to see the resident again). These attitudes may carry over to the clinical setting.

Conclusion: Residents performed differently on several parameters depending on whether they encountered a depressed woman or a non-depressed woman with the same cardiac problem. There was no significant difference in their management of the depressed patient versus the non-depressed patient although residents encountering the non-depressed patients demonstrated slightly better management skills.

Take-home Message: Residents on an OSCE with a depressed and non-depressed patient with the same cardiac problem performed differently. Lower performance on the history and diagnosis may lead to a “lesser” level of care. Internal medicine programs may need to educate their residents about the presentation of depression in cardiac disease.
#10EE05 (3016)
Development and evaluation of an objective structured practical examination (OSPE) for assessment of practical skills in the program of biomedical laboratory scientist students

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Background: The objective structured clinical examination (OSCE) is a well-established type of assessment of clinical skills. Assessment of individual laboratory skills is often neglected. The objective structured practical examination (OSPE) is adapted from OSCE to assess laboratory and preclinical skills and is a practical, reliable and valid alternative for assessment.

Summary of Work: This study aimed to develop and evaluate an OSPE in a group consisting of biomedical laboratory science students. The OSPE was divided into ten stations and were evaluated according to individual assessment protocols. Each assessment protocol consisted of different assessment criteria’s, which were linked to the course curriculum.

Summary of Results: Almost 66% of the students passed the initial OSPE. The influence of the order of the stations and the need of a refreshment station was also evaluated, and no correlation was seen. As a whole the students considered the examination to be both valid and fair.

Discussion: In order to assess the quality an independent observer was enrolled to observe the examiners. Student surveys showed that some stations were perceived to be more difficult and stressful than others, but the assessment protocols were considered a guarantee for the objectivity.

Conclusion: In conclusion, the introduction of OSPE in the education of biomedical laboratory scientist was considered as a practical, reliable and valid alternative for the examination of practical skills.

Take-home Message: This evaluation demonstrated the use of a structured approach to assess laboratory and preclinical skills and the implication of an modified OSCE.

#10EE06 (909)
Comparison of Objectively Structured Practical Exams (OSPEs) and Multiple-Choice Questions (MCQs) results in Basic Undergraduate Medical Disciplines in Tbilisi Medical Academy (TMA)

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Background: Assessment in Medical Education holds the crucial point to get the objective results of the learning process. Evaluation of general knowledge and practical skills in Basic Undergraduate Medical Disciplines (BUMDs) can be performed by Objectively Structured Practicle Exam (OSPE), still most of the Georgian Medical High Education Institutions prefer MCQs.

Summary of Work: We organized the trial OSPEs and ordinary MCQs for 1st and 2nd year 75 students in Anatomy, Microbiology, Histology and Systemic Pathology. Also, we did the questionnaire for students to reveal the characteristics of OSPE comparing to MCQs. Pearson’s Correlation coefficient and Cronbach’s Alpha value were calculated using SPSS Statistics.

Summary of Results: Pearson’s Correlation coefficient showed HIGH correlation between the OSPE “PASS” and MCQ “PASS” rates. The Questionaire showed that comparing to MCQ, OSPE is more difficult, more stressful but fairer, more objective and students show up more knowledge and skills. Internal Consistency for Cronbach’s alpha for the questionaire was defined as GOOD.

Discussion: The HIGH correlation between OSPE/MCQ “PASS” inidcates that starting OSPEs in BUMDs does NOT affect the students’ success rate to pass the exam, instead it will increase the motivation, focusing, concentration and depth of the students’ knowledge as well as the ability to use the theoretical knowledge in practicle tasks.

Conclusion: OSPE revealed to be the trustful and reliable method in Tbilisi Medical Academy to evaluate medical students’ real general knowledge and abilities. Such type of the evaluation starts making the medical student ready for clinical tasks and procedures from the initial level of medical education.

Take-home Message: Objectively Structured Exams are widely accepted and they present the choice of most leading Medical Schools to evaluate the students’ medical knowledge and abilities that are the basis of future clinical thinking. We do think that the one choice for the evaluation of Practicle Skills and General knowledge is OSPE.
#10EE07 (2792)
How to balance stress during OSCE examination

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Background: There are many objectives for an OSCE examination. Each exam station had only one objective but accumulated objectives in each exam segment induced more stress. Rest stations were designed for stress relief. How does arrangement of OSCE assessment objectives affect medical students' stress during the examination?

Summary of Work: We analyzed stress level scores in each rest station during OSCE examination (20 objectives, 5 rest). Classified objectives were in history taking, physical examination, interpretation, procedure and communication skill. We compared stress level score among similar objective sequence stations and multiple objective sequence stations before rest, then analysed with t-test (P = .05).

Summary of Results: Medical students had less stress level score in single objective sequence before rest (-2.0,SD=4.0) compared to multiple objective sequence before rest (2.9,SD=8.6) and significant in t-test (p=.029). Interpretation objective sequence affected the stress level less, and variation of results was found in three objective sequences.

Discussion: Objective sequence in the OSCE affected different levels of stress in medical students during the examination. The same objective sequence can reduce stress. For multiple, it needs more attention, skill and experience to adjustment and lead more stress. Two objective sequences in each OSCE station may be suitable before rest.

Conclusion: Single objective sequence reduced stress level in medical students during OSCE examination, but variation of stress was found in more than three objective sequences of OSCE examination.

Take-home Message: Two objective sequences of each OSCE examination station segment before rest station may suitable for setting OSCE examination stations in order to balance stress during the examination.

#10EE08 (837)
A Comparison of Physician Examiners and Postgraduate Assessors in OSCE Assessment

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Background: The assessment of an objective structured clinical examination (OSCE) often used many teachers. It is difficult to recruit physicians as examiners. Using postgraduates to act as examiners was considered as an advantageous alternative. There is concern that the postgraduates have insufficient competency to provide valid evaluation of student's competence.

Summary of Work: A cross-sectional study of twenty, fourth year medical students undergoing OSCE examinations including history taking, physical examination, procedural skill and communication skill was used. The non-trained postgraduate assessors simultaneously evaluated medical performance with physician examiners. Statistical analyses used intraclass correlation coefficient (ICC).

Summary of Results: Three out of four OSCE examinations had a low correlation (ICC < 0.50) between pairs of examiners, with the exception of the history taking setting. In the history taking setting there was a high level of agreement between examiners (ICC=0.98).

Discussion: The low correlation in most of OSCE scores between examiners suggested that the postgraduates had insufficient knowledge and experience in assessment giving the physical examination, procedural skill and communication skill sections of the assessment.

Conclusion: The results of this study demonstrated that non-trained postgraduate assessors could not be an alternative to physician examiners for scoring checklist in physical examination, procedural skill and communication skill sections of the undergraduate examinations. However, the postgraduates can be used in place of physicians to assess the history taking portion.

Take-home Message: The postgraduates can only be used in place of physicians to assess the history taking portion of the OSCE. Before using non-physicians to act as examiners, they should be trained and practice in the OSCE setting to qualify to be valid examiners.
#10EE09 (2491)
Are OSCE marks influenced by examiners’ fatigue?

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Background: The assessment of undergraduates’ clinical and other practical skills by the method of objective structured clinical examinations (OSCEs) is a demanding task for examiners. Exhaustion within examiners over the course of an examining session may introduce inaccuracy and unfair marking of students’ performance.

Summary of Work: Undergraduate third-year medical students (143) completing their 12-station OSCE 2 parts. Part 1 included 7 cycles (09:00 - 16:15), whilst part 2 included 8 cycles (08:45 -16:40). Analysis was conducted using SPSS v21. Analysis of variance (ANOVA) was used to examine differences between average scores on each station by cycle.

Summary of Results: No significant difference in the average scores of any of the 7 stations in part 1 of the OSCE between cycles was found. In part 2 OSCE there was a significant difference in the average scores of station 1 between rotations (F = 3.218, P = 0.003, df = 142)

Discussion: It will be discussed if duration of examining in practical OSCEs is influenced examiners and the marks they awarded due to fatigue.

Conclusion: No evidence could be found that duration of examining in practical OSCEs influenced examiners and the marks they awarded due to fatigue. Care has to be taken in interpretation of analysis to examine potential reasons for any specific result.

Take-home Message: We would recommended this analysis for routine inspection to confirm a lack of bias.

#10EE10 (340)
Assessing on record: an analysis of narrative evaluations for student communication skills during an OSCE

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Background: Narrative evaluations generate rich performance information. Research in workplace settings indicates that interpretation of assessor comments requires deciphering of linguistic codes (e.g. politeness strategies, including hedging), yet it remains unclear if these findings are generalizable across assessment settings. We aimed to explore assessors’ narrative in conveying performance judgments during OSCEs.

Summary of Work: Eighteen assessors were recruited to write narrative evaluations of communication skills for 14 graduating pharmacy students completing an exit-from-degree OSCE. Assessors also scored overall global performance on a 5-point scale. Narrative evaluations for top and bottom 2 performing students for each station were analyzed according to linguistic politeness theory.

Summary of Results: Most comments were bald on record (77%) and depersonalized (73%). Politeness strategies to address positive face were rarely used (<1%). Hedging and minimization were used to address negative face (17% and 5%, respectively), particularly in poor performers. Adapters such as “a little bit” or “some” were common hedges.

Discussion: Assessors provided mainly bald on record and depersonalized feedback regarding communication skills. Politeness strategies were used to address judgments regarding poor performance. Further study is needed to determine credibility of narratives as an assessment approach for OSCEs.

Conclusion: Use of politeness strategies in assessor narratives differs between assessment contexts. The bald on record and depersonalized nature of narrative comments can likely be attributed to the lack of student-assessor working relationships. Narrative comments obtained within OSCEs may be of value to enhance student learning, but further research is needed.

Take-home Message: Interpretation of narratives obtained from OSCEs requires some deciphering of linguistic codes yet the majority of comments provide direct student performance feedback. Assessors’ use of politeness strategies mainly occurs when addressing poor performers. This approach to performance evaluation within an OSCE generates rich data for both evaluation and feedback purposes.
#10EE11 (505)
Maybe checklists do capture increasing levels of competence: an exploratory study

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**Background:** It has become doctrine that OSCE checklists are not sensitive to increasing levels of competence whereas rating scales are. This often cited claim was based on a study using two psychiatry stations and it is not clear to what degree the finding generalizes to other clinical contexts.

**Summary of Work:** A 9-station OSCE was administered to 86 Internal Medicine residents (PGY 1 to 4). Scoring consisted of four measures: checklists; rating scales; a global rating scale and a training level rating. For each station, standard scores were analyzed with PGY-level as a between-subjects factor and measure as a repeated-measures factor.

**Summary of Results:** For 7 stations, there was no difference between any of the measures with scores increasing as a function of PGY-level for 4 stations. Only 1 of these stations showed a decrease in checklist scores compared to the rating scales and only for the most senior trainees.

**Discussion:** Contrary to popular belief, checklist scores were found to be as sensitive to increases in training level as rating scales.

**Conclusion:** These findings should be interpreted with caution given the relatively limited data set, and further studies aimed at replicating these results are planned. However, the findings do raise questions as to whether checklists can capture increasing levels of competence to the same degree as rating scales.

**Take-home Message:** The findings raise questions regarding the widely cited claim that checklists do not capture increases in examinee competence.

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#10EE12 (3057)
The Clinical Summary Exam - assessing information processing skills in medical school finals

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**Background:** Upon starting work as doctors, UK graduates can feel unprepared in specific practical areas such as managing paperwork and clinical prioritisation. In recognition that assessment drives learning, the Faculty of Medicine at Southampton University have developed a novel type of examination to be included in the final year exams.

**Summary of Work:** The Clinical Summary Exam features tasks that involve the more complex domains of Bloom’s taxonomy, such as documenting a Mental State Examination or a ward round entry, creating a handover list and completing investigation requests. For some tasks, candidates’ answers are based on a video of a simulated clinical interaction.

**Summary of Results:** In preparing the video tasks for the Clinical Summary Exam, the following steps were followed. 1) Production of an ‘ideal answer’. 2) Scripting for the simulated clinical scenarios based on ‘ideal answer’. 3) Cross-check that all items of ‘ideal answer’ are included in the script. 4) Video production.

**Discussion:** While the inclusion of such tasks in a summative assessment may help signpost students in their learning, the formative assessment preceding the summative one will encourage this learning process. In addition, Southampton University aims to provide the optimal environment for such learning by promoting supportive and inclusive clinical environments.

**Conclusion:** The Clinical Summary Exam assesses competencies, essential for Foundation years, that are difficult to examine through the usual assessments employed in medical school final year examinations, such as Multiple Choice or Objective Structured Clinical Examinations. This novel assessment is designed to be used in conjunction with other types of assessment.

**Take-home Message:** -This type of examination allows for the assessment of competencies included in both ‘doctor as a professional’ and ‘doctor as a practitioner’ (Tomorrow’s Doctors, General Medical Council).
- During the development of these exam tasks, careful scripting based on clear and pre-determined marking schemes is crucial to develop robust video vignettes.
Assessing the dependability of four assessment tools for central line insertion

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Background: Dependable assessment tools are essential for Competency Based Medical Education (CBME). Central line insertion is an important procedure to be learned by trainees. Tools to assess competency include checklists, critical error tools, Objective Structured Assessment for Technical Skills (OSATS) tools and the Ottawa Surgical Competency Operating Room Evaluation (O-SCORE) tool.

Summary of Work: Fifty-five residents completing their first ICU rotation were included. Competence in central line insertion was evaluated by 3 expert raters via review of a recorded procedure on a simulator, using four scoring tools. A two-facet, fully-crossed Generalizability study was conducted to compare the dependability of the scores derived from these tools.

Summary of Results: The OSATS tool (.88) and the O-SCORE tool (.85) demonstrated the highest dependability. The checklist (.64) and critical error tool (.59) performed less well. For both the OSATS and O-SCORE tools, the largest contributor of variance was derived from the measure of interest, the participants (OSAT = 42.82%; O-SCORE = 54.20%).

Discussion: It is essential that assessment tools to determine procedural competence in a CBME environment provide dependable data. A variety of instruments have been reported in the literature to assess performance of central line insertion; however, studies comparing the dependability of these tools are lacking.

Conclusion: Our study demonstrates that scores derived from global rating scales such as the OSATS or O-SCORE tools are more reliable than those derived from an itemized checklist or critical error tool, when assessing competence in central line insertion.

Take-home Message: Incorporation of assessment tools that provide reliable data is essential for determining competency in procedural skills during residency. Educators should integrate global rating scales such as the OSATS or O-SCORE tools, rather than checklists or critical error tools, to assess competency in central line insertion.
A competency-based undergraduate medical curriculum was not associated with improved workplace performance in the final year clerkship, at least in the self-evaluation of the medical trainee’s.

#10FF01 (108)
Development of Podiatric surgical training programme in Scotland

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Background: The development of new models of care is a necessity for many health systems in response to the challenges brought about by growing elderly population and prevailing co-morbidities. In Scotland, the response to these challenges is underpinned by the development of extended roles of AHPs and nurses.

Summary of Work: Within the context of orthopaedic, the demand for foot and ankle services across Scotland is increasing. Pilot work demonstrated that the introduction of extended scope podiatrists, practising forefoot surgery, can extend the capacity of the service to cope with increasing pressures.

Summary of Results: NHS Education Scotland and Queen Margaret University Edinburgh have developed an innovative doctorate level programme which combines academic & workplace base learning to train podiatrists in forefoot surgery. The programme has been developed in consultation with medical professional bodies and with support from the Scotland Deanery.

Discussion: The process undertaken to develop the programme, barriers and facilitators will be discussed. This competencies based programme was developed during a 4 years consultation period, based on the four pillars of the NES post registration career framework (clinical, leadership, research and facilitating learning). It combines WPBAs with academic work.

Conclusion: The introduction of extended scope AHP practitioners within orthopaedic teams is a safe and cost effective way to deliver forefoot surgical services. Involving the orthopaedic team, medial professional bodies and mangers in the development of the programme is paramount to its development and delivery.

Take-home Message: Collaboration between Higher educational institutes is essential for the development of leadership, teaching and research capabilities of extended scope AHPs. Co-production between AHP educators and medical educators, and a rigorous integrated academic and clinical modules are pivotal in securing support from professional bodies and medical professions.
Undergraduate Radiology Teaching - A Forgotten Field?

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Background: Radiology teaching is a challenging aspect of medical education. Anecdotal evidence from our third year medical students suggested a lack of confidence in basic image interpretation. This combined with evidence from the local radiography department led to the development of a local teaching initiative to address a variety of learners.

Summary of Work: An interactive regional multi-professional radiology teaching day for third year medical students, radiography students and nurses was organised and delivered at Walsall Manor Hospital. The sessions comprised of chest, abdominal and skeletal X-ray interpretation. Learning outcomes were sourced from an undergraduate curriculum outlined by The Royal College of Radiologists.

Summary of Results: Following the intervention: 88% of attendees (n=51) had a good understanding of how radiographs are produced, 82% understood indications for requesting imaging and 90% felt confident in structuring x-ray interpretation. Considering all results, mean positive response following intervention was 81%. Mean positive response prior to intervention was 37%.

Discussion: The results demonstrated a deficiency in the skills required for basic image interpretation on entering a clinical placement. Studies suggest that better educated students are more likely to request appropriate imaging when they transition to clinicians. Students are also more likely to choose radiology as a career when better informed.

Conclusion: There is room for improvement in undergraduate radiology teaching. A single educational intervention has significant scope to increase confidence and competence in basic image interpretation in a multi-professional setting. Improved confidence in multi-professional groups will lead to enhanced patient care.

Take-home Message: Medical students entering their clinical placements will benefit from organised and interactive teaching sessions in concordance with the undergraduate curriculum outlined by The Royal Society of Radiologists. Well informed medical students are more likely to request suitable imaging on becoming doctors.

Feedback of medical students about their motivation to study sciences

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Background: Attitudes of medical students regarding the study of sciences as a inevitable part of medical curriculum are often negative. Therefore it is necessary to find motivating approaches and strategies in teaching process and try to change these negative attitudes in a positive way improving motivation of medical students.

Summary of Work: We present results of the pedagogical investigation using anonymous questionnaire (131 respondents – 1st year students of Comenius University Faculty of Medicine in Bratislava) directed on current attitudes and level of students’ motivation concerning fundamental sciences (medical biophysics, medical chemistry, biology and human genetics).

Summary of Results: The analysis of respondents answers showed their motivation to study medicine: the main motivating factors were: aspiration to become a doctor (17,2%), help people (17,1%), interest in medicine (16,9%), scientific research (14,7%). The lowest level of motivation was found to study medical biophysics, the higher biology and human genetics.

Discussion: What main motivating and demotivating factors in sciences teaching and learning have been formulated by respondents? The motivating factors: positive approach and professionalism of teacher (28,4%) and better continuity with medical practice. As demotivating factors have been identified: lack of continuity with medical practice and big time and content demands.

Conclusion: Teaching and learning of sciences in medical faculties has to be optimized and thus should be improved educational level and international competitiveness of graduates. The fulfilment of this goal requires wider communication of university teachers of sciences with both clinicians and medical students.

Take-home Message: Medical study and practice has high demands on analytic and synthetic thinking of students and health professionals. These requirements could be developed during university study of sciences.

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#10FF05 (1492)
Develop and Implement Thai Traditional Medicine Course in Medical Student Education

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**Background:** Thai traditional medicine (TTM) has been integrated into healthcare system in Thailand. Two-week course of Thai Traditional Medicine (TTM) has been developed and implemented in medical student education. The objective of this study was to compare knowledge, and attitude of TTM among fifth year medical student before and after course of TTM.

**Summary of Work:** Two-week course was used TTM doctor was invited as guest lecture, classroom presentation, active learning including case-based learning, bedside teaching to increase knowledge of medical student of TTM. Knowledge, and attitude outcome were evaluated pre-and post-course by MCQ, and structural questionnaire, respectively.

**Summary of Results:** A total of 32 students enrolled in the study. Knowledge was significantly increased after course as determined by pre-, and post-knowledge assessment. (Mean±SD: 34.5±1.7 vs. 12.5±1.46; p =0.003). Student had more favorable attitude after TTM course.

**Discussion:** Thai Traditional Medicine course engage medical student through active learning method has proven effective in increasing knowledge outcomes.

**Conclusion:** Thai traditional medicine course promote the better knowledge, and had more favorable attitude after TTM course.

**Take-home Message:** Thai Traditional Medicine course should be integrated in medical student curriculum to promote better knowledge.

#10FF06 (2359)
Diagnosing student regulatory processes in the learning of ultrasonography at the point of care: an exploratory study with self-regulated learning microanalysis

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**Background:** Ultrasonography is increasingly used in health care. Students often struggle to acquire these techniques. This struggle may be caused by lower self-regulatory skills could cause performance issues. We evaluated the regulatory processes of students engaging in well-defined ultrasonography tasks using self-regulated learning microanalysis, an interview protocol grounded in social-cognitive theory.

**Summary of Work:** This pilot study used SRL microanalysis to assess the regulatory profiles of a purposive sample of eight 5th-year and seven 4th-year undergraduate medical students performing three point of care ultrasound tasks (lung, abdominal and cardiac) with a standardized patient in extracurricular voluntary training. Sessions were audio-recorded and analysed qualitatively.

**Summary of Results:** We identified 3 strugglers who clearly failed two tasks. Those students had high levels of strategic thinking before the tasks. However, in contrast with successful students, they consistently showed lack of procedural self-monitoring during the tasks as their focus was on the outcome of getting the images right.

**Discussion:** The self-monitoring phase was critical to differentiate performances. SRL microanalysis was essential to reveal the specific issues with the regulatory processes of struggling students in this extracurricular session of ultrasonography. This is preliminary evidence of the usefulness that SRL microanalysis to identify the feedback needs in the study's context.

**Conclusion:** It seems that training students to focus on strategic thinking while performing a task is a better strategy than to focus on outcomes. SRL microanalysis is a useful protocol to monitor the learning process of ultrasonography skills. Further research is required to ensure generalizability of our findings.

**Take-home Message:** The use of a self-regulated micro analytic protocol can provide information to the benefit of performance and learning of ultrasonography, by medical students as it can uncover specific deficits in student regulatory processes.
#10FF07 (1428)
Training for Uncertainty in Veterinary Education

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Background: Managing uncertainty is central to practice in the health professions; the ability to cope with uncertainty is a “day one competency” for veterinarians. There is a lack of clarity regarding what constitutes effective coping with uncertainty in veterinary practice or how this is taught and assessed in the veterinary curriculum.

Summary of Work: This study adopted a critical realist approach to address the central research question of how veterinary students learn to cope with uncertainty in an international elective placement. An existing framework was used to describe student and staff experiences of ‘uncertainty work’ relating to sources of uncertainty and coping tactics.

Discussion: Uncertainty work is a novel concept used to describe coping with uncertainty in practice. Access to uncertainty work is negotiated between participants in the uncertainty work of a community of practice. Gaining access to uncertainty work is critical, and trust is central to gaining access, which is reflected in increasing clinical responsibility.

Conclusion: Although the use of measures of ambiguity tolerance in selection is considered problematic, there is scope to support students in accessing uncertainty work through preparation for clinical placements. The educational value of encounters with uncertainty work is highlighted; these are important opportunities for personal and professional development through reflective practice.

Take-home Message: Encountering uncertainty work is an important element of professional training. Curricula in the health professions must embrace opportunities and support students as they access uncertainty work while recognising that learning to cope with uncertainty can be uncomfortable and may not always align with positive student evaluations in the short term.

#10FF08 (2333)
Peer tutors and content-expert tutors in PBL tutorials – perceptions of tutors

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Background: University of Helsinki has over 20 years of experience of problem-based learning and peer tutoring in the preclinical study years. The main role of a PBL tutor is to facilitate students’ collaborative learning. This study aims at discovering similarities and differences between the content-experts’ and peer tutors’ perceptions of tutoring.

Summary of Work: This study examines content-experts’ and peer tutors’ self-assessment as tutors. Tutors in anatomy, physiology and pharmacology answered a web-based survey. It included statements developed by Dolmans and Ginns for the student evaluation of PBL tutors and questions concerning the tutors’ motivation and ideas for the future development of tutoring.

Summary of Results: Six peer and ten content expert tutors completed the questionnaire, 50% had studied using PBL. Peer tutors assessed themselves lower in a Likert scale in items on constructive, self-directed, contextual and collaborative learning. Both groups were motivated. Peer tutors were more active in incorporating digital learning practices in their tutoring.

Discussion: Peer tutors scored lower than content experts in the self-assessment of basic PBL learning principles but their recent experiences as PBL tutees was a positive factor for them. Tutors require support in giving constructive feedback, evaluating group co-operation and using digital tools in instruction.

Conclusion: Peer tutors form an important teaching resource in PBL based studies. Their work is well received by content expert tutors. This project continues by involving more tutors in the study group, and collecting similar data from students to triangulate the tutor and student data.

Take-home Message: Peer and content expert tutors together formed a strong and motivated teaching and learning community. The content expert scored higher in commanding PBL learning principles, whereas peer tutors’ strength was their own recent experience as tutees and fluency in adopting digital learning practices in tutorials.
Factors Influencing Problem-Based Learning (PBL): Students’ and Educators’ perspectives, Phramongkutklao College of Medicine

Sakarn Charoensakulchai, Phramongkutklao College of Medicine, Bangkok, Thailand

Background: Problem-Based Learning (PBL) is a widely accepted education tool being used in most accredited medicals. The successfulness depends on perspectives on various factors influencing this type of education from both students and educators. The objective of this study was to evaluate students and educators’ perspectives on factors influencing PBL.

Summary of Work: A cross-sectional study was performed on 204 medical students and 25 medical educators. Demographic data and perceptions toward PBL using 5-Likert scale were obtained by electronic standardized questionnaire. The questions were divided into 6 topics. Average score and standard deviation were utilized in data interpretation.

Summary of Results: The perspectives toward PBL in this study included objectives and contents, stress and anxiety, teachers’ role, group work attitude, self-preparation and self-development. The results revealed that most students and educators give moderate to high scores (mean > 4) to aforementioned topics with lower SD value in topics with higher mean.

Discussion: Both students and educators had generally good attitude toward PBL. Though some argued that students were anxious about what they had learned using PBL, all passed exam. Both groups also concurred that lack of preparing time, resources, guidance and scope plus complaints from educators had negative impact on students’ performance.

Conclusion: We concluded that clearly objectives, appropriate contents, good attitude, minimized stress and well preparation in PBL session from both students and educators are essential for good quality and successfulness in implementation of PBL for medical students in pre-clinical year.

Take-home Message: These findings are supportive to the idea of applying PBL as a major teaching method parallel to traditional didactic lectures. It motivates self-studies and build up various skills vital to self development and academic performance of medical students.
Long-term positive effects of PBL Experience in Undergraduate Medical Education on Medical Residents’ Clinical Competence

Yumiko Okubo, Tokyo Women’s Medical University, Tokyo, Japan

**Background:** Problem-based learning (PBL) is popular in medical education. We wished to understand the influence of PBL on the clinical competence of medical residents, using self-assessment and observer assessment. Tokyo Women’s Medical University (TWMU) implemented PBL for four years, and we analyzed whether long-time PBL education is useful for clinical work.

**Summary of Work:** A self-assessment questionnaire was sent to residents who were alumni of several schools, and an observation-based assessment questionnaire to doctors instructing them. Respondents were asked if they had used the PBL process in daily clinical tasks. Senior doctors were asked whether TWMU graduates perform differently from graduates of other schools.

**Summary of Results:** TWMU graduates answered “used a lot” at significantly higher rates than other graduates with useful points as extracting & solving clinical problems, self-directed learning, positive attitude, collaboration, presentation, and doctor–patient relations. Observer assessments of TWMU graduates by doctors represented them as adaptive, good at presenting & listening, and practical.

**Discussion:** Both self-assessment and observer assessment indicates that TWMU graduates are good at listening to others and at presentation related to social aspects of group work. Many TWMU graduates assessed PBL as a memorable learning tool, indicating long-term PBL seems to be effective by repeating sessions and gradually changing contents more complicated.

**Conclusion:** Long-term PBL can be a good educational method to develop not only strong lifelong learning habits, but also clinical competencies in social aspects of medical work, such as self-directed learning ability, learning how to collaborate, passive listening, and explanation skills, especially for clinicians at the early stage.

**Take-home Message:** Long-term PBL experience in undergraduate medical education has positive effects on medical resident’s clinical competence.

Formative assessment keeps students active in mobile PBL

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**Background:** Four years ago University of Helsinki took a leap towards mobile learning when every medical and dental student were provided with an iPad. This opened up new vistas for PBL and assessment design. Aim of this project is to examine how formative assessment activates students in mobile learning environment.

**Summary of Work:** Day-to-day student activity profiles of two preclinical PBL modules were examined by material download activity, obtained from the system log (Moodle). Two types to formative assessment, paper-based and interactive web tests, were compared with other self-study materials. One-way ANOVA was used for statistical analysis.

**Summary of Results:** Student activity profiles were phased and wavelike, peaking in self-study phase. Interactive tests maintained student activity for longer periods and were more actively used. The way students downloaded paper-based tests did not differ from that of regular self-study materials, such as lecture notes or videos.

**Discussion:** An interactive approach to formative assessment clearly activated students in mobile learning environment. It is most likely that student activation, strongly driven by motivation, is one of the major mechanisms in improving learning by formative assessment.

**Conclusion:** Activation and self-direction are the very essence of PBL and continuous assessment seems to keep students active in the web. Further investigation is needed to identify the actual learning gains, both in the substance matter and in generic skills, attained by formative assessment.

**Take-home Message:** Formative assessment keeps students active during preclinical PBL in mobile learning environment. Students download and use interactive tests more actively than paper-based tests. Interactive tests prolong the phase of student activity in mobile PBL.
Effectiveness of Advanced Problem Based Learning in the Study of Pharmacy Under the Post Graduate Year Training Program

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Yi Ming Hua
Jia Syuan Wu

Background: PBL is during the teaching process, with practical issues as the core, encouraging student discussion to develop active learning, critical thinking and problem solving skills. This is the study of the effectiveness of advanced PBL in the study of pharmacist under the post graduate year training program.

Summary of Work: In the first year of training, the major teaching objectives were Health Insurance Provisions, EBM skills and medication databases searching. The second year's teaching focused on drug efficacy, counseling skills, and ethical issues. The effectiveness assessment items include the pharmacists' self-assessment, teacher assessment, journal writing and a satisfaction questionnaire.

Summary of Results: A total of 30 pharmacists entered this training course. The scorecard is divided into five oriented assessment. There was a significant difference in creativity (6.83 vs. 8.47, p = 0.022) and courage to speak (6.5 vs. 8.9, p = 0.018). 93.3% felt that learning was less likely to be forgotten.

Discussion: PBL stimulates the pharmacists' ability to explore and solve problems by peer discussion. Finally, by writing a journal, organizing and integrating the focus of lesson plans and self-learning experience, only acquiring knowledge from teachers' instructions in the past, now is changed to students completing their reports by self-learning.

Conclusion: Application of PBL in pharmacists' post graduate year training program can improve the attitude and motivations of learners.

Take-home Message: PBL is a great challenge for teachers, and it's very important that in the future more teachers are trained to implement this teaching model.

Effective PBL in large classes in undergraduate medical students

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Mei Han
Wen He

Background: PBL has been widely used in medical schools. But in China, lack of qualified tutors and large capacity of students in one class has been a major problem. We try to construct an effective module of PBL in large classes with one tutor for undergraduate students in Chinese medical school.

Summary of Work: 180 students in PBL group are randomized into 12-15 teams. PBL is performed in 3 major steps: group discussion, group presentation and mini-lectures. First session includes discussion and group presentation of the case and in the second session, students will give mini-lectures on the topic picked in the first session.

Summary of Results: We compared the scores of the questions related to the case in PBL and non-PBL class in final exams. Average score of the students in PBL class (8.095) is significantly higher than non-PBL class (7.306) (P<0.05). Survey results showed that 82.8% of the students are satisfied with the model.

Discussion: Several factors are crucial to the success of PBL in large classes, which include quality of the case, group settings, effective procedures and qualification of the tutor. With appropriately designed modules, success PBL can be achieved with both academical improvement and satisfaction of the students.

Conclusion: The module of group discussion/ group presentation/ mini-lectures is effective in performing PBL in large classes with one tutor and integrated PBL in traditional lectures can promote the achievement of learning objectives in medical classes.

Take-home Message: A successful module of PBL in large classes in medical school is designed. This includes a three-step class with group discussion, group presentation and mini-lecture given in two sequential sessions. Effectiveness of the module has been proved both by final exam performances and the survey of the students.
#10FF15 (1542)
Can the development of medical students' professional identities be made more explicit in the curriculum through PBL?

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**Background:** Medical schools have the responsibility of developing students’ professional identities, but is often held at the periphery of teaching, and assumed to be part of the implicit curriculum. Problem Based Learning (PBL) provides a platform for group discussions to bring professionalism forward into the explicit curriculum interlinking with biomedical knowledge.

**Summary of Work:** This study endeavours to integrate professionalism prompts to form enhanced PBL scenarios and then to evaluate students’ understanding. Qualitative methods were used including non-participant observations and focus groups with both pre and post-enhanced PBL students and facilitators to discover changes in their experiences and perspectives of professionalism.

**Summary of Results:** With the additional prompts and questions posed by facilitators, different dimensions of PBL scenarios were explored. Themes included the recognition of the patient as a whole person and enhanced understanding of ethical dilemmas in medical practice. These are explored in terms of what they mean for medical students’ professional identities.

**Discussion:** Early work indicates that PBL is a useful tool to provide context for discussions which lean themselves beyond the normal biomedical scope to include reflection of personal experiences, a holistic view of the patient and doctors’ wider role in society.

**Conclusion:** Preliminary data suggests that incorporating prompts in PBL relating to the broader parameters of the role of the doctor enhances medical students’ emerging understanding of professional identities.

**Take-home Message:** A vital goal of medical education is to facilitate students’ developments of professional identities. This study shows there are benefits in using PBL to explore professionalism more explicitly. From here, further research may be carried out to investigate the potential to develop other qualities of a good doctor.

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#10FF16 (2155)
Evaluation of Scenario Design for Problem-Based Learning (PBL): Focusing on Vertical Integration between Pre-clinical and Clinical Training

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Jeng-Yi Shieh, National Taiwan University College of Medicine, Taipei, Taiwan
Shyh-Jye Chen, National Taiwan University College of Medicine, Taipei, Taiwan
Fen-Yu Tseng, National Taiwan University College of Medicine, Taipei, Taiwan
Chiun Hsu, National Taiwan University College of Medicine, Taipei, Taiwan

**Background:** The PBL courses used to be designed and conducted by individual pre-clinical disciplines in medical schools. We aimed to improve the scenario design to facilitate transition from pre-clinical to clinical phases of medical education, especially relevant to the training for the Accreditation Council for Graduate Medical Education (ACGME) core competencies.

**Summary of Work:** A 21-item, 5-point questionnaire, developed by the directors of a pathology/ pharmacology PBL course, was evaluated by 10 PBL experts for its content validity. Eighteen physician tutors then used this questionnaire to evaluate 14 real-life clinical case scenarios at the beginning of the semester and after each group discussion session.

**Summary of Results:** The universal agreement and average of the scale content validity index was 0.57 and 0.91, respectively. Exploratory and confirmatory factor analysis identified a 4-factor measurement structure (learning goals, learner-centered design, medical/scientific contents, and learning outcome) with one secondary factor in both pre- and post-discussion evaluation scores.

**Discussion:** The PBL tutors agreed that the scenarios and the group discussion can improve the students’ medical knowledge, practice-based learning, and interpersonal and communication skills. Yet, it is more difficult to address the issues of patient care, professionalism, and systems-based practice.

**Conclusion:** The 21-item questionnaire for the evaluation of scenario designs had a high content validity and can help tutors evaluate the quality of PBL scenario designs. More efforts are needed to improve the clinical context of PBL scenarios to encompass all 6 ACGME core competencies.

**Take-home Message:** Good designs of scenarios for a PBL course can facilitate the integration of pre-clinical and clinical medical educations.
A Novel Approach to Case-Based Learning in Medical Immunology

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Elina Nektalova
Sheryl Shoham

Background: Case-based learning (CBL) is a well-established method for helping medical students learn effectively. CBL mandates a deeper understanding of medical principles, and assists students in acquiring tools for life-long, collaborative knowledge acquisition. However, there remains a need for establishing precise guidelines on how to optimally integrate CBL with lecture-based studies.

Summary of Work: A CBL curriculum was implemented at Sackler School of Medicine to teach first-year students immunology. Students received either a CBL, mixed, or fully lecture-based curriculum, and were evaluated based on exam grades and class evaluations. Comparability was established via mean MCAT scores. Statistical differences were calculated using two-tailed independent t-tests.

Summary of Results: Groups were comparable based on a non-significant difference in their MCAT scores (p=0.74). The intervention group performed significantly better than the control groups based on average course grades that each encompassed three written exams (p=0.03).

Discussion: Students showed improvement in immunology grades with case-based learning compared to partially or solely lecture-based classes. Research shows that students experience attention lapses 15-20 minutes into lectures [1]; therefore, lecture time was minimized to 15-minute discussions following case-based assignments completed in small groups and monitored by physicians.

Conclusion: Case-based learning was shown to positively impact the students’ immunology learning experience as well as their performance on class assessments. These findings are supported in the literature [1,2] because CBL is structured as a smaller, active group learning activity which can help combat students’ mental fatigue or inattention.

Take-home Message: Institutions of medical education must embrace a dynamic paradigm in order to effectively prepare students for the continuously evolving medical field. One parameter that needs to be modernized is the information delivery system in the classroom. Case-based learning offers students a robust educational model which better prepares them for success.

Fall prevention education with Simulation and case-based discussion: Does the sequence matter?

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Ashirdahwani Bte Asmawi
Ong Siew Chen
Zhou Bin Bin
Chee Pick Fong

Background: A novel fall prevention workshop was developed for pre-registration nursing students. It comprised of two teaching strategies—simulation with a simulated patient and case-based discussion. Its aim was to determine if the sequence of these two strategies affected effective communication, assertiveness and skills to escalate for support, to prevent patient falls.

Summary of Work: 82 nursing students were randomly assigned to Group A (n=41) and Group B (n=41) with different sequencing in teaching strategies. Group A completed simulation practice followed by case-based discussion whilst Group B did those in the reverse order. A pre and post workshop survey was administered to all participants.

Summary of Results: All the participants reported “Strongly agree” or “Agree” that the workshop reinforced their prior fall prevention education. >80% of the participants from Group A strongly agreed that they would be more assertive and adept at using effective communication in managing high fall risk patients compared to ≤50% from group B.

Discussion: The survey findings show that simulation with simulated patient followed by case-based discussion had greater impact on the student’s confident level, assertiveness, communication, and escalation skills in managing patient with high fall risk. However, most students from both groups had no objection to the order of teaching strategy.

Conclusion: The fall prevention workshop has achieved its objectives of improving effective communication, assertiveness and escalation skill to prevent patient fall. Participants in Group A perceived that Simulation practice allowed them to learn better from their mistakes in a safer environment, subsequently reinforced during the case-based discussion.

Take-home Message: 1) Diverse teaching strategies can be adopted to enhance students’ learning in fall prevention. 2) Different sequencing in teaching strategies may have different impact on students’ perceived learning outcomes.
Case Based Studies and Clinical Reasoning Development: Teaching Opportunities and Pitfalls

Mary Mauldin Pereira, Ross University School of Veterinary Medicine, Basseterre, Saint Kitts and Nevis
Elpida Artemiou
Luis Cruz Martinez
Anne Conan
Liza Köster

Background: Case Based Studies (CBS) is defined as a student centered approach that prepares students for clinical practice using real clinical cases in the pre-clinical curriculum. CBS supports development of students’ clinical reasoning skills which requires knowledge, understanding and integration of basic science and clinical information using a problem-solving approach.

Summary of Work: Study compared CBS in developing clinical reasoning skills between two cohorts of first year veterinary students. Thirty-one students enrolled in CBS, and 46 students served as the control. All students processed three clinical reasoning assignments guided by a seven-item rubric with a grading scale from 0-4 (maximum score of 28).

Summary of Results: Descriptive statistics with enrolled versus non-enrolled students in CBS were \[ m=13.3; \ SD=3.8 \], \[ m=14.6; \ SD=4.5 \] respectively. Higher scores in completing items relevant to prioritizing patient’s problems \( p=0.02 \), identifying differential diagnoses \( p=0.04 \) and ranking differential diagnoses \( p=0.04 \) were significantly associated only with time spent.

Discussion: First year veterinary students enrolled in CBS failed to demonstrate improvement of their clinical reasoning skills. Study results showed that only the students’ time commitment influenced their clinical reasoning scores. Limitations in the delivery of CBS included didactic teaching and inconsistency in the structure of the clinical reasoning process.

Conclusion: The performance of students enrolled in CBS reinforced the importance of faculty training in the delivery of CBS; following an authentic student-centered approach supported by a structured and deliberate format. Future consideration includes integrating the seven-item rubric to provide and delineate the various stages of the clinical reasoning process.

Take-home Message: Outcome-based education requires that CBS is assessed to meet the learning objectives supporting the clinical reasoning process. It merits to further emphasize the importance of faculty development programs that adopt consistent student-centered teaching approaches.
#10GG Posters: Flipped Classroom

Location: Hall 6

#10GG01 (844)
Effects of a Flipped Classroom-based Instructional Approach on Nurse Practitioners’ Learning Motivation and Attitude in Clinical Skills Courses

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Jiunn-Tay Lee, Tri-Service General Hospital National Defense Medical Center, Taipei, Taiwan
Tai-Lung Cha, Tri-Service General Hospital National Defense Medical Center, Taipei, Taiwan
Yaw-Don Hsu, Tri-Service General Hospital National Defense Medical Center, Taipei, Taiwan

Background: Previous study showed no significant difference of OSCE scores between flipped and traditional classroom in nurse practitioners learning. Following that, several learning activities and feedback were conducted in the class to encourage them to interact with peers and the instructor for discussing the treatments for clinical cases.

Summary of Work: The subjects were 34 nurse practitioners assigned to two groups: the experimental group learned with the flipped classroom approach, while the control group learned with the traditional instruction. Before and after the class, all of the subjects filled in the questionnaires of learning motivation and attitude for the evaluation purpose.

Summary of Results: The t-test results showed no significant difference between the learning motivation and attitude of the two groups. On the other hand, the intrinsic and extrinsic motivations of the experimental group were significantly increased after the learning activity. In addition, they had significantly higher satisfaction degree than the control group.

Discussion: It was found that the flipped classroom approach could improve the subjects’ intrinsic, extrinsic motivations, and learning attitude as well as their learning satisfactions. This implies that engaging students in applying knowledge and interacting with peers and teachers has great potential in improving their learning performances.

Conclusion: In this study, we demonstrated the potential of flipped classroom in clinical training. The findings can provide a reference for researchers and teachers of medical or nursing education. In the future, it is expected that follow-up studies can be conducted by leading in effective learning strategies in flipped classroom.

Take-home Message: The key a successful flipped classroom approach is to develop effective teaching materials and learning activities. Short videos with clear objectives enable learners to effectively acquire basic knowledge. Well-designed in-class activities encourage them to apply knowledge and interact with peers and teachers, and hence promoting their learning perceptions and performances.

#10GG02 (1184)
Is flipped classroom stimulating knowledge retention?

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Nantawan Soonklang, Department of Preclinical sciences, Faculty of Medicine, Thammasat University, Thailand
Pornrut Rabintossaporn, Department of Preclinical sciences, Faculty of Medicine, Thammasat University, Thailand
Suphaket Saenthaweesuk, Department of Preclinical sciences, Faculty of Medicine, Thammasat University, Thailand
Nuntiya Somporn, Department of Preclinical sciences, Faculty of Medicine, Thammasat University, Thailand

Background: Life-long learning is important skill that teachers wish to achieve for their students. The purpose of this study is to evaluate the effect of flipped classroom on knowledge retention of 2nd year dental students in anatomy of base of skull class at the Faculty of Medicine, Thammasat University.

Summary of Work: Thirty-two students who enrolled the neuroanatomy course were used flipped classroom model for anatomy of base of skull class. Students were provided with objective and lecture handouts before class. Evaluation was achieved by multiple-choice examination at the end of the class (post-test) and 6 month after the class (summative examination).

Summary of Results: Student’s learning performance on post-test (12.96) was significantly improved (p≤ 0.05) compare to summative examination (13.94) in anatomy of base of skull lesson.

Discussion: Flipped classroom is an efficient tool to stimulate student’s life-long learning and knowledge retention ability.

Conclusion: Flipped classroom model increased knowledge retention.

Take-home Message: Blending the new learning technologies with the interactive classroom may help to improve students’ performance including knowledge retention and creativity skill.
#10GG03 (1806)
Which Blended Flipped Curriculum of Clinical Skills is Better, Situated or Cooperative?

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Yi-No Kang, Taipei Medical University Hospital, Taipei, Taiwan
Yi-Le Jian, Taipei Medical University, Taipei, Taiwan
Che-Wei Lin, Taipei Medical University, Taipei, Taiwan
Hsin-Hui Chiu, Taipei Medical University Hospital, Taipei, Taiwan
Chien-Yu Jonathan Chen, Taipei Medical University Hospital, Taipei, Taiwan

Background: The purpose of this study is to develop a flipped curriculum of clinical skills for Year-5 medical students in Taipei Medical University (TMU) with consensual assessment. The interdisciplinary experts evaluated two curriculum models, situated-flipped model and cooperative-flipped model in this study.

Summary of Work: This study developed curriculum with interdisciplinary experts team composed of two clinical teachers and one professor of online learning, and followed analytic hierarchy process (AHP). The experts evaluated flipped curriculums with 9-point bipolar questionnaire set according to Bloom's taxonomy of learning domains including cognitive, affective, and psychomotor.

Summary of Results: The result was reliable with consensus .898, lambda 3.091, and consistency ratio .095. Weights of cognitive, affective, and psychomotor were .270, .077, and .653 in 1st layer. The weights in 2nd layer for situated-flipped curriculum were .045, .064, and .500; and .223, .013, and .153 for cooperative-flipped curriculum.

Discussion: AHP for curriculum development used was rarely seen in medical education, but other field education. For example: Tang developed curriculum of English as a second language by AHP in 2011. Moreover, AHP honored as suitable method in curriculum planning may help us to find a better curriculum of clinical skills.

Conclusion: The situated-flipped curriculum of clinical skills show a better determination score than cooperative-flipped curriculum based on the pilot expertise in this study. Situated-flipped model may have more benefits on clinical skills learning in affective and psychomotor domains than cooperative-flipped model have.

Take-home Message: Situated-flipped model is a potential way in teaching clinical skills. However, it needs to be modified to increase the learning effectiveness in cognitive domain, and needs further empirical study to prove its effect. This study also suggested that AHP is able to be used in medical curriculum development.

#10GG04 (1813)
The effectiveness of using flipped classroom method to teach “Professionalism” for PGY doctors—An experience of a teaching hospital in Taiwan

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Li-Lin Kuo
Oscar K. Lee

Background: “Professionalism” is one of the ACGME core competencies used to evaluate a resident’s performance. It’s usually very challenging for clinical mentors to teach “professionalism” by traditional lectures. We’ve tried to use flipped classroom method to teach PGY doctors the concept of professionalism by “learning at home and discussion/practice at classroom”

Summary of Work: Our hospital has started new courses of ACGME core competencies since July, 2016. As to “professionalism”, we’ve made films mimicking the clinical scenarios for PGY doctors to watch at home first. Then teachers discussed with PGY doctors about the films in the classroom later. Pre- & post-tests were also performed.

Summary of Results: We’ve recruited 20 PGY doctors to participate new courses. During the discussion, we encouraged PGY doctors to analyze and debate the ethical issues in the films. Their average test scores significantly improved from 69.0±4.5 to 99.0±1.0 (p=0.001). Compared to traditional lecture, their satisfaction rate also increased from 53.4% to 90.5%.

Discussion: Flipped classroom method has been used in medical education for many years. Teachers usually need to spend more time in preparing the teaching materials than traditional lectures. However, our experience revealed PGY doctors could learn better by flipped classroom method, also with higher satisfaction rate while compared to traditional lectures.

Conclusion: More PGY doctors preferred the flipped classroom method to learn “professionalism”. Our films demonstrated several ethic issues, such as end-stage medical cares. Besides providing suitable films for PGY doctors to watch at home first, how to design the classroom activity is more important for flipped classroom method to work successfully.

Take-home Message: Using flipped classroom method to teach “Professionalism” instead of traditional lectures improved the learning effectiveness and satisfaction rate of PGY doctors. Although preparing the teaching material is very time consuming, it’s still worthwhile to use flipped classroom method for teaching ACGME core competences in residency training.
Background: Southern Medical University (SMU) has begun to enrol international MBBS students with its rapid internationalization. Pharmacology is an important subject bridging basic medicine and clinical medicine. In order to ensure the quality of English-medium education, we has been endeavoring to develop a flipped-classroom intercalated curriculum of Pharmacology for overseas students.

Summary of Work: In our practice, the FC (20 hours) was carried out mainly by case-based discussion about drug mechanism, effects and application etc., while the others (160 hours) were still traditionally lecture-based. This mode was applied in three different batches of MBBS students (total 424) respectively, with follow-up surveys carried out.

Summary of Results: Totaling our 2 paper-based and 1 internet-based surveys, among the 306 respondents, some positive findings of FC include the improvement/enhancement of: learning interests (82.73%), knowledge of clinical medicine (84.20%), critical thinking (78.92%), etc. Also, embracing more student-centered teaching (78.76%), satisfactory with the overall curriculum (72.86%), etc.

Discussion: We initiated this FC featured course aiming to meet the world development. Evidence has shown quite satisfactory outcomes, which encouraged us to improve our English teaching ability greatly, and has facilitated the giant progress of this curriculum from a university excellent course to a national excellent course in 2016.

Conclusion: FC is quite effective for concerning improvement in MBBS students’ attitude, knowledge, and skills domains. It can also facilitate the overall development and implementation of English-medium Pharmacology course. More FC contend and measures could be intercalated into Pharmacology or other courses to further improve the quality of MBBS education.

Take-home Message: We should reinforce the website construction of this FC intercalated Pharmacology to facilitate more web-based interactive learning and teaching. Further strengthen faculty development under the international context to improve English-medium teaching competency. Adapt more advanced international experiences into our practice, implement even more student-centered teaching methods in our MBBS education.
Diversity in flipped classroom models by using clinical experience and mobile group-chat application to enhance team-based learning and application of knowledge in medical students

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Background: Recently, Flipped classroom (Fc) is a novel learning design for enhancing student engagement and inspiring self-inquiry learning. Clinical experience allow medical students to apply knowledge. Moreover, mobile group-chat application such as “Line App” can make interactive participation. Application of these in flipped classroom may enhance team-based learning and apply knowledge.

Summary of Work: Three Fc models were used in 43 of the 5th-year medical students in medicine. Each model contains 4 groups of 3-4 students. Model-A(Classical Fc), Model-B (Case-based Fc) and model-C (Case-based Fc facilitates with “LINE App”) were applied by assigned each group to create questions about laboratory investigations for classroom quiz.

Summary of Results: Model-C had significantly highest knowledge examination score (33.9±13.7, 39.0±13.5, 50±10.4 in model-A&B&C respectively, p=0.004) and facilitated students for peer tutorial. By rating scale questionnaire, Model B and C not only achieved higher self- inquiry and team-based learning level but also stimulated more participation and understanding learning contents during classroom attention.

Discussion: Case-based Fc models which assigned each group to create quiz from real patient, enhance student engagement for inquiry-learning owing to solve problems. Moreover, mobile group-chat application creates a continuous learning atmosphere such as peer tutorial, interaction between themselves and teacher in “every moment” leading to accelerate application of knowledge.

Conclusion: Clinical case based flipped classrooms enhance self-inquiry learning and promote team-based learning. Additionally, the facilitation with mobile group-chat application can create learning atmosphere of peer group and individual student for apply knowledge in clinical context.

Take-home Message: Appropriate use of mobile chat-group application technology facilitated with clinical case-based context in realized experience augmented powerful flipped classroom for team based learning and application of knowledge.

Medical students’ perceptions of a flipped classroom for a freshman professionalism course: A mixed-methods study

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Background: It has been reported that the introduction of a flipped classroom results in improved class attendance and grades. We conducted a mixed-methods study on the students’ perceptions of a flipped classroom. The subjects were 25 freshmen students of Kagawa University, who attended the professionalism course that employed flipped classroom.

Summary of Work: A questionnaire using the Likert scale (5: totally agree) was quantitatively analysed. This questionnaire was designed to assess (1) readiness to learn, (2) activate knowledge gained from preparatory videos in face-to-face classes, and (3) introduce self-directed learning. Qualitative data were obtained from a focus group consisting of five students.

Summary of Results: In the questionnaire, the mean scores for (1), (2), and (3) were 4.3 ± 0.5 (mean ± SD), 4.5 ± 0.6, and 4.3 ± 0.6, respectively. A qualitative analysis of transcripts of the focus group identified 12 topics in six domains, including readiness to learn, activated knowledge, and self-directed learning.

Discussion: The results of the questionnaire and the focus group included similar concepts: readiness to learn, activated knowledge, and self-directed learning. These concepts were important for active learning, and the flipped classroom model can serve as an active learning strategy.

Conclusion: From the students’ perceptions, the flipped classroom model leads to the introduction of readiness to learn, activated knowledge, and self-directed learning. These concepts were important for active learning, and the flipped classroom model can serve as an active learning strategy.

Take-home Message: The flipped classroom model can serve as an active learning strategy, introducing readiness to learn, activated knowledge, and self-directed learning.
Student behavior and feedback in undergraduate orthopaedic teaching using flipped classroom model in Thailand

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Background: The flipped classroom teaching model has recently gained more popularity due to its positive impact on student satisfaction and promoting active learning. There are a number of successful implementation of this model in medical education. However, data is lacking for this model in orthopedic class teaching.

Summary of Work: In 2015-6, a 3-week orthopaedic block in the fifth year was redesigned. All 18 lectures were delivered online prior to the class. The in-class sessions were case discussion guided by facilitator with approximately 24 students per group. Self-developed questionnaires were distributed and collected at the end of the studying year.

Summary of Results: The feedback from 203 students revealed diversity of learning nature of students. A part of them had passive and strategic nature in studying, which their behavior depended on character of facilitators in class sessions. There were some relevance of student gender and cumulative grades with their behavior.

Discussion: The implementation of flipped classroom model in orthopaedic teaching is still unfamiliar for Thai students requiring student adaptation. Consequently, the response are various, which may be affected from student background, such as gender and cumulative grade. Influence from in-class facilitators is also important on learning nature of students.

Conclusion: Even though the flipped classroom model has more benefit than traditional teaching format in theory, it can bring unfamiliarity and result in uncooperative behaviors that hinder the achievement of expected outcome. Character of facilitators as well as student background must be considered in implementation of this model.

Take-home Message: Variety of responses can be expected and uncooperative behaviors can occur in the flipped classroom model, partly related to character of facilitators and student background. Thorough consideration before implementation and continuous assessment are essential.

Integration of flipped classroom and high-fidelity simulation to improve ICU residents’ ability with respect to brain death evaluation and organ procurement

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Background: The organ donation rate in Taiwan is about 7.2 per 1 million populations, far lower than that in Spain (35.1) or the USA (25.8). The reasons for the low donation rate include the fact that doctors sometimes fail to recognize potential organ donors or explain brain death.

Summary of Work: We created a flipped-classroom with a high-fidelity simulation that included giving information about the donor candidate’s state, explaining the brain death, showing respect to the family’s point of view, and explaining the concept of organ donation and its related problems. Nine ICU-residents, two examiners, and one standardized patient were participated.

Summary of Results: The pre-assessment score revealed 50% residents were unfamiliar with brain death evaluation and organ procurement. The results of the simulation revealed a high-score in giving information about the donor candidate’s state and showing respect to the family’s point of view (3.95/5), and the lowest-score in explaining the brain death (3.48/5).

Discussion: One of the examiners was a consultative psychologist who gave immediate feedback. The residents’ reflections included understanding the importance of brain death evaluation and their shortcomings in communication attitudes and skills. The overall satisfaction in the flipped classroom was 4.89/5 and that in the simulation training class was 4.78/5.

Conclusion: In this workshop, we found that 50% of the ICU R3 residents had reduced ability with respect to brain death evaluation and organ donation concepts. This finding can help develop a teaching program to improve their ability with respect to brain death and organ procurement.

Take-home Message: This flipped classroom with high-fidelity simulation can be used to train the ICU residents to become more familiar with brain death evaluation and organ procurement.
#10GG11 (3106)
Finding the Perfect Balance between Flipped Learning and Lecture-Based Instruction

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Background: The flipped learning approach is gaining popularity among modern medical schools. Questions remain about how much of the curriculum to flip, and whether the in-class sessions for flipped lessons should be mandatory. Our study investigated whether medical students prefer flipped or lecture-based formats, and under what conditions.

Summary of Work: A 2016 study was conducted at the School of Osteopathic Medicine in Arizona in the U.S.A. We surveyed 108 first year students about their learning preferences, using an online survey, with a response rate of 99%. Likert ratings were analyzed using a statistical package: open responses were analyzed using open-coding processes.

Summary of Results: Students indicated their preferences for how the curriculum should be balanced. Nearly half (44%) of the students wanted more than 50% of the curriculum to be lecture based, while 18% selected a 50%/50% mix of lecture/flipped activities. The vast majority (68.7%) indicated that flipped learning activities should not be mandatory.

Discussion: Students indicated an openness toward flipped classroom learning activities, under certain conditions. Flipped activities should be well-planned and non-mandatory, useful for certain disciplines and not others. These preferences reflect millennial values for personal choice, time-efficiency, and variety with regard to learning experiences.

Conclusion: Our faculty enjoy interacting with students during in-class activities, and work very hard to develop creative, engaging lessons. However, we do not know enough about student preferences with regard to flipped learning format. We conclude that <40% should be flipped, and these sessions should not be mandatory.

Take-home Message: This experience has been very enlightening. We better understand variables associated with optimizing active learning and lecture-based instruction –from the student perspective. While individually, our students revealed differences in personal preferences for learning approaches, they shared with us important insights on ways to improve instruction and structure the curriculum.

#10GG12 (1023)
Comparison of Allied Health Science Students’ Outcome towards Learning Methods between Flipped Classroom and Traditional Lecture in Basic Anatomy of the Nervous System

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Background: Teaching the nervous system has challenged anatomy lecturers worldwide due to its difficulty and time limitation. Several researchers have shown the advantages and disadvantages using flipped classroom in medical education. To investigate its effectiveness, this study was conducted comparing allied health science students’ outcome towards flipped classroom with conventional lecture.

Summary of Work: 437 students of Basic Anatomy for undergraduate curriculum at Chiang Mai University in 2015 and 2016 were assigned in flipped classroom and lecture-based learning, respectively. To evaluate the knowledge achievement, a set of true-false questions was used before and after learning activities. Questionnaires were distributed to assess their satisfaction.

Summary of Results: The flipped-classroom utilized less in-class time and showed significant better score (p < 0.05) when compared to lecture-based learning. Overall student feedback was positive concerning the self-directed and interactive aspects of this learning method (4.33; rating scale 1-5). Nevertheless, it required considerable time to prepare learning materials for self-directed activities.

Discussion: The results of flipped classroom method were superior to that of traditional lecture. Nevertheless, when creating the lesson materials, lecturers should concern its limitation. Adequate preparatory time is necessary and electronic materials must be prompted.

Conclusion: The flipped classroom is the effective learning method which promotes students’ skill of active learner and lifelong learning ability. Further studies are required to confirm these effects on their learning behavior.

Take-home Message: Flipped classroom method is highly recommended in Thai medical education.
Enhancing flipped teaching using the mobile application Nearpod creates a dynamic teaching environment increasing student confidence and engagement

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Background: Clinical scientists bridge the gap between the diagnostic laboratory and clinical team, bringing expert knowledge of laboratory investigations to provide interpretation of results and advice on an appropriate testing strategy. Clinical scientists are trained through a competitive three year NHS apprenticeship-style programme, incorporating on-the-job training with a part-time MSc.

Summary of Work: We sought to identify new ways for students to contextualise theoretical knowledge into case-based scenarios simulating their profession role using an interactive flipped teaching model incorporating the iPad application Nearpod. Nearpod allows tutors to create interactive content for students who participate anonymously during a group teaching session.

Summary of Results: During face-to-face teaching, students were presented with two cases and asked to work through them individually on Nearpod, prior to group discussion. 85% of students reported increased confidence with course content following interactive teaching sessions. 67% of students found a key advantage was the ability to contribute anonymously.

Discussion: Students were also given case-based pre-session material also using Nearpod. Tutors received a report of individual answers for Nearpod content allowing weaker students to be identified, and teaching groups allocated based on a range of abilities. Students commented that each person had to contribute equally.

Conclusion: Tutors commented that Nearpod allowed development of a dynamic teaching environment, allowing tutors to gauge student understanding and therefore decide how to progress the teaching session. 85% of students felt they would benefit from more flipped teaching within the curriculum.

Take-home Message: Nearpod has allowed development of both a dynamic teaching environment and allowed identification of struggling students to provide additional support. This study has demonstrated that use of Nearpod can aid both students and their tutors in delivery of a flipped teaching model.

Simulation base education with flipped classroom improves resident clinical performance in intensive care - the experience of Taipei Mackay Memorial Hospital

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Background: Utilizing simulation base education (SBE) with flipped classroom (FC) to improve physician’s clinical skills is the trend of current medical education, this method reasonably encourage students and teacher interaction and simplify the teaching course. It is supposed to facilitate core ability of intensive care in R3 internal residents.

Summary of Work: Our workshop included 30-minute bridge-in, objective, pre-assessment and 40-minute flipped classroom. About participatory learning, there were total 85-minute four simulated scenarios including intra-aortic balloon pump and pace-maker simulation, therapeutic hypothermia, abdominal echo in ICU treatment and the chief resident’s leadership. The last, we had 30-minute reflection and summary.

Summary of Results: There were 9 residents, 4 trainers, 4 nurses and 2 standardized-patients participated in this workshop. The training workshop not only earned their satisfaction toward FC (4.9/5) and SBE (4.9/5), but also promotes ability in MICU (Likert scales, from 3.0/5 to 3.6/5) and alleviated difficulty in MICU (from 3.8/5 to 3.6/5).

Discussion: There exist a gap between awareness and clinical performance in resident’s ability. “Match” is defined as consistency in written-test and simulation, whereas “mismatch” is defined as inconsistency in both. Thus, “match-mismatch highlight” is our principle strategy to appraise resident’s professionalism. Trainees felt the workshop is helpful in the future (4.6/5).

Conclusion: In this workshop, combining flipped classroom and SBE not only improve the validity of integrated critical care but also focus on individual deficiencies. On the basis of match-mismatch highlight, faculties will more easily create preliminary remediation before they become a chief resident.

Take-home Message: This flipped classroom with high-fidelity simulation can be used to train the R3 ICU physicians to become more familiar with advanced intensive care ability and chief resident’s leadership.
Take-home Message: SIMPIC is an effective model that should be widely implemented to encourage medical students to study in specific fields and promote international relations. The competition exposes the organizing staffs to the international atmosphere without the need for the budget to send them abroad.

**#10HH01 (1742)**

Pilot Study on the Effectiveness of Role Play in Teaching Oncologic Emergencies to Residents and Medical Students

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Background: Handling of oncologic emergencies is daunting for most junior residents and medical students due to its complexities and often time-sensitive nature. We investigated role-play as a teaching method for oncologic emergencies to simulate real-life scenarios requiring junior residents and medical students (juniors) to think on their feet.

Summary of Work: We aimed to evaluate the effectiveness of role-play for teaching juniors about oncologic emergencies compared to the conventional didactic lectures. The pilot study was conducted for the juniors who received the conventional didactic lectures and participated in the role-play scenarios for oncologic emergencies simulating real-life cases.

Summary of Results: A pre- and post- role play questionnaire was administered for 23 juniors in this pilot. Role play was found to be an effective method and was deemed better than didactic lectures \((p<0.001)\). Role play tested and improved their clinical ability and they were more confident in handling oncologic emergencies.

Discussion: Role play which simulates real life scenarios provided faculty members with a novel platform for teaching oncologic emergencies to juniors. Compared to conventional didactic lectures, juniors felt that role play is effective as a teaching tool. They also felt more confident and better equipped to handle oncologic emergencies.

Conclusion: Role play is shown to be better than conventional didactic lecture in this pilot study in teaching oncologic emergencies for juniors. Juniors felt more empowered and confident in dealing with oncologic emergencies in their daily practice. We are planning to expand this pilot study further in larger cohort of juniors.

Take-home Message: In our pilot, role play has shown to be successful as a novel tool for teaching oncologic emergencies. It was well received by juniors as a teaching method and effective in empowering them to handle similar cases. It can be incorporated into routine teaching if proven successful in larger cohort.
Developing story-based study guide as a tool for harmonizing teaching and learning under the situation of various undergraduate medical curricula

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Background: Thai Ministry of Public Health has co-produced medical doctors to fulfill health service system in Thailand under the working group of the Collaborative Project to Increase Production of Rural doctor(CPIRD) for 22 years, in which currently has 37 training sites (MEC: Medical Education Centers) collaborated with 14 universities across country.

Summary of Work: Since CPIRD aims to produce rural doctors who are able to retain longer in the system, we design a system-thinking learning tool to harmonize the curricula. Story-based study guide was used as our tool. Study guide contents were mapped related to medical council competency criteria and current health policy.

Summary of Results: Topics in the study guide were finally categorized into 3 themes: 1) understand self 2) understand others 3) understand system. Overall is contained of thirty-two topics. Faculty development workshops were deployed to create and communicate the use of study guide. All study guides were easily accessed from main CPIRD website.

Discussion: We related the learning topics into one longitudinal story of patient life and medical learner life per se, which hope to conceptualize learners’ ideas of health service provider in Thai healthcare context, and to help facilitate learners’ self-learning and perceptively harmonize teaching strategies from various instructors working under CPIRD project.

Conclusion: Within the three categories of contents, thirty-two topics of study guide were created. The frequency of download was monitored. The satisfaction and suggestion from users were asked for an ongoing tool improvement. The descriptive and analytical outcome data will be reported at the conference.

Take-home Message: Story-based study guide can be a tool to harmonize teachers’ instructions across campus while promoting self-learning of learners.

The role of social networks on the function and impact of boundaries and interfaces in healthcare: methodology and findings of a scoping review and qualitative meta-synthesis

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Background: Contemporary healthcare provision involves fluid transient teams of healthcare professionals, patients and carers. In this context, professional learning often emphasises behaviourism and knowledge transmission, ignoring the social component to learning. We sought to determine the extent to which social networks matter for workplace-based learning and for optimal individualised needs-based healthcare.

Summary of Work: Taking a critical realist approach, a protocol was designed to explore the role of social networks at patient/carer-generalist-specialist interfaces, and how learning at boundaries/interfaces relates to networks. Palliative care and liaison psychiatry were used as exemplars with self-described remits for delivering advice/education through interactions with other professionals, patients and carers.

Summary of Results: We will present the protocol for our scoping review extended with qualitative meta-synthesis, and our findings, focusing on learning, communication, error, and behavioural change. Our results advance previous work with recommendations to improve effectiveness of educational interventions and workplace practices, with respect to reciprocal learning and shared care interfaces.

Discussion: We will discuss novel methodological approaches within our protocol and consider the implications of our findings with respect to (i) equipping health professionals to work and learn across boundaries/interfaces, and (ii) further research to guide development of educational interventions and safety/quality improvement initiatives using social networks to promote effective learning.

Conclusion: This review and metasynthesis took a deliberately broad perspective on the role of social networks in professional learning and practice in healthcare. The existence of related/overlapping networks at patient/carer-generalist-specialist interfaces, and how learning at boundaries/interfaces relates to networks at patient/carer-generalist-specialist interfaces, protocol was designed to explore the role of social networks. Palliative care and liaison psychiatry were used as exemplars with self-described remits for delivering advice/education through interactions with other professionals, patients and carers.

Take-home Message: Medical education research is an emergent field with cross-discipline foundations. Evidence reviews are important for establishing current understanding, identifying gaps, and building conceptual frameworks for further research. In this context we discuss findings from a protocol to investigate the role of social networks in professional learning and practice.

PROSPERO REFCRD42017054065
Neurology Goal Setting Study: Lessons from Sporting Excellence Translated into Medical Training

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Background: Goal setting is used by world-class athletes to maximise performance through cumulative improvement of many subcomponents of their given discipline. This study investigates the implementation of Goalscape goal-setting software (developed by German Olympic Sailing Team) by medical students as a tool to increase performance in objective structured clinical examinations (OSCEs).

Summary of Work: 43 third-year medical students undertook a mock neurology OSCE station (cerebellar examination). Students randomly allocated into 2 groups 14 days prior to OSCE. Group 1 given Goalscape with template designed by Dundee neurologists. Group 2 used traditional study methods. Difference in OSCE score between group 1 and 2 compared.

Summary of Results: The average OSCE score was 10.40/12.00 (SD 1.30) and 9.62/12.00 (SD 1.50) in the software and non-software groups respectively (p=0.088). Students rated the ‘usefulness for visualisation’ and ‘overall usefulness of Goalscape for medical students’ as 6.88/10.00 and 6.75/10.00 respectively using a qualitative questionnaire.

Discussion: Insignificant p-value likely due to small study population. Longer and more regular use of software likely required to influence performance increases. Mentoring from tutors specific to students own goals could help personalise learning and effectiveness of OSCE training.

Conclusion: We demonstrated a non-significant trend towards improvement when utilising structured goal setting. Larger population studies with more robust methodology may quantify benefits further. Future work will include a larger study population and a mentoring scheme to ensure the software is used effectively in order to utilise benefits fully.

Take-home Message: Goal setting software could be a useful tool to increase effectiveness of studying for OSCEs. Used extensively in high performance sport and could be translated into numerous aspects of medical training programmes. Goal setting software has proven popular with students and its role within medical education will be investigated further.

Discourse analysis of the portrayal of medical students within the media

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Background: Research suggests that the media has a role in informing health practices and beliefs. It could also be the case that media representations of medical practitioners affect medical students’ development of professionalism.

Summary of Work: A discourse analysis comparing text and television representation of doctors from 1980s to the present. Data were UK based documentaries, books and newspaper articles at the development of medical students. The analysis focused on discourses of professional identity.

Summary of Results: Preliminary results indicate that discourses of risk and glamour have appeared and that discourses around gender have significantly changed. There is a decline in positive portrayals of doctors in recent years, especially in the press.

Discussion: The increasingly negative discourses around medical professionalism in the media represent a threat to the development of a positive or desired professional identity. The increasingly positive and general portrayal of women doctors reflects and makes possible greater gender equality in medicine.

Conclusion: Over time the media has offered the public a different perspective of what it is to be a doctor, possibly reflecting social changes in regard to medicine and science. While this can have a negative impact, there are positive elements such as better representations of diversity.

Take-home Message: The media offers a perspective on professional identity. Difficult topics and themes are explored for public entertainment, and may provide a safe environment for such topics to be explored. Thus media can be a useful lens to examine students’ own beliefs about professional identity.
#10HH07 (306)
Are final year medical students subject to intentional blindness when interpreting chest X-rays?

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Background: Radiological interpretation is an essential clinical skill; however, error rate is high even in senior clinicians [A. Pinto et al. 2011]. A previous study demonstrated ‘intentional blindness’ in radiologists: when focussed on specific tasks, they overlooked other abnormal findings [Drew et al. 2013]. Does this apply to senior medical students?

Summary of Work: Medical students were asked to interpret a chest x-ray to assess nasogastric tube placement. The chest x-ray showed a 2cm incidental lung mass. To simulate an on-call scenario, students had 10 minutes for the task and were asked to document their findings on a sheet of history paper.

Summary of Results: Of 93 participants, 59 (63%) commented on the nasogastric tube. Of those who commented, 8 (14%) correctly identified it was safe; 18 (48%) identified it as unsafe and 23 (39%) passed no comment on safety. 64 students (69%) noticed the incidental lesion: of these, 41 (64%) commented on the nasogastric tube.

Discussion: Surprisingly, more students identified a lesion than commented on nasogastric tube placement, suggesting reduced intentional blindness in students compared to experts [Drew et al. 2013]. One explanation may be a fixed interpretation approach. Whilst it is encouraging they are looking systematically, the difficulty in interpreting nasogastric tube placement was concerning.

Conclusion: Intentional blindness is a less significant problem in final year students than in more experienced clinicians. However, students show limited task flexibility: many failed to engage with the task of assessing nasogastric tube insertion. Of those who completed the task, there was minimal competence in assessing nasogastric tube position.

Take-home Message: • Intentional blindness is a less significant problem in final year students than in more experienced clinicians. • Extensively drilling in systematic approaches may help reduce their rate of errors. • More training is needed on common practical tasks such as assessing nasogastric tube position.

#10HH08 (158)
Deliberate practice reduces stress and improves confidence to perform invasive procedural skills among undergraduate medical students

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Background: Medical students feel less proficient to perform invasive clinical procedures, which translates into stress response associated with increased autonomic activity. Practicing procedural skills repeatedly, improves their proficiency. However, the extent to which deliberate practice is required remains unknown. We investigated the extent of deliberate practice required to reduce stress response.

Summary of Work: Eighty pre-clerkship students, naïve to venepuncture and suturing, with no known sympathetic over-activity, were registered, shown a video and provided with a checklist to make five attempts of a task. The changes in pulse, blood pressure (BP), attempt duration and hand tremor were analysed with p-value <0.05 being considered significant.

Summary of Results: 56 students (response rate: 70%; females: 77%, Year-1: 57%) participated. The pulse, BP, Mean Arterial Pressure (MAP) and attempt duration reduced significantly between first and second attempts. Tremor scores improved as suggested by a heat map. There was no significant difference between genders or curriculum phase (Year1 vs Year 2-3).

Discussion: The coefficient of variance for pulse, BP, MAP and attempt duration were 50% between 1-2 attempts and 66% after 3-4 attempts. Task proficiency as shown by reduction in attempt duration, improved >50% between first two attempts and 66% after 3-4 attempts. The limitations included voluntary recruitment and disproportionate gender participation.

Conclusion: Female students were more enthusiastic to participate. The proficiency of a given task improved after repeated attempts. Their autonomic parameters also showed gradual improvement signifying lowered stress. Thus, students showed improved proficiency and confidence to perform assigned invasive procedural skills after 3 attempts.

Take-home Message: Integrated clinical skills sessions should be incorporated appropriately in an undergraduate medical curriculum. Emphasis should be given on ample hands-on practice opportunities to optimally improve students’ proficiency and confidence in invasive procedural skills.
#10HH09 (702)

Immersing students in acute medicine: the use of 360 degree filming to experience Cardiopulmonary Resuscitation

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**Background:** 360-degree videos allow the watcher to view the scene in every single direction, choosing what aspect to observe. When using a mobile smart device it can be viewed through a headset that allows a completely immersive experience. 360-degree videos have not, to our knowledge, been utilised in medical education.

**Summary of Work:** The aim of our research is to investigate the use of 360-degree filming to allow the students to experience a resuscitation situation. This research explores whether access to the video improves the students confidence about being a member of the resuscitation team as a junior doctor.

**Summary of Results:** A 360-degree video of a simulated resuscitation has been filmed and uploaded onto a secure website. 20 of the 40 final year medical students based at North Bristol NHS trust have access to the video. All Students' confidence will be surveyed in March 2017 to compare the groups.

**Discussion:** 360-degree filming allows the student repeated viewing of medical and surgical emergencies that they otherwise may not experience prior to becoming a doctor, taking in the environment as a whole, but also allowing them to focus on different aspects of there choosing.

**Conclusion:** The scope for use of 360-degree videos in medical education is wide and varied, in both undergraduate and postgraduate education. It allows students to fully immerse themselves in the environment, providing a learning experience that current simulation methods could never achieve.

**Take-home Message:** As the technology improves, the possibilities using 360-degree filming can only increase. Future work may include further videos of emergency situations, videos introducing clinical environments such as an operation theatre and videos of practical procedures. These are the first steps towards using virtual reality in medical education.

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#10HH10 (2624)

Relationship between self-regulated learning, tutorial performance and academic achievement: A path analysis

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**Background:** Self-regulated learning is an essential skill needed in student-centered learning such as Problem Based Learning. This skill will determine the level of students’ engagement in learning activities that in turn may impact on their achievement. This skill includes motivational belief and learning strategies.

**Summary of Work:** This study was aimed to identify the effects of motivational belief and learning strategy on students’ tutorial performance and academic achievement. Data collected through Motivated Strategy for Learning Questionnaire among fourth-year grade students (n=112) was then correlated through path analysis with their tutorial performance in Public Health Block and GPA.

**Summary of Results:** Path analysis indicated that students’ motivation and learning strategies impacted significantly on their tutorial performance that in turn influenced their academic achievement (p <0.05). Task value, which is a component of motivational belief, and organization, which is a type of learning strategy, had strongly effect on students tutorial performance.

**Discussion:** The quality of students’ motivation and learning strategies determine how far students’ engage in tutorial activity that in turn impact on their academic achievement. High motivated students perform well in the tutorial. Their capability to apply appropriate cognitive learning strategies also assist them to have good performance in the tutorial.

**Conclusion:** Motivational beliefs and learning strategies, which is part of self-regulated learning skill, have crucial roles in a student-centered learning such as PBL tutorials. This skill increases students’ tutorial performance and academic achievement.

**Take-home Message:** Having self-regulated learning skill such as good motivational belief and capability to apply appropriate learning strategies could induce students to be more responsible in their learning. As a result, they could achieve their learning goal optimally.
**#10HH11 (3239)**

**Self-directed learning in relation to academic performance**

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**Background:** Self-directed learning (SDL) is implemented in education to foster lifelong learning. It is also believed to promote better study results. We tested whether students of Radboudumc developed SDL using the Motivated Strategies for Learning Questionnaire (MSLQ). SDL is promoted in the medical curriculum by project-based courses and monthly coaching groups.

**Summary of Work:** The MSLQ was administered to first year medical and biomedical sciences students. We interpreted high SDL by scores on MSLQ scales ‘Elaboration’, ‘Critical thinking’ and ‘Metacognitive self-regulation’. Low SDL was indicated by ‘Rehearsal’ and ‘Organisation’. Two regression analyses were conducted for study results and both high and low SDL.

**Summary of Results:** Scores of the students (n=249) on the MSLQ learning strategy scales were used to calculate, on a 7-point scale, low SDL (mean=4.33, sd=1.24) and high SDL (mean=4.12, sd=0.98). Study results were related to both high SDL (R²=0.032, p=0.006) and low SDL (R²=0.028, p=0.010).

**Discussion:** Surprisingly, only a small difference in study results between levels of SDL was found. Perhaps SDL is not related to study results, as contradicting results are also emerging from other studies. Another explanation is that our current method of knowledge assessment might be skewed towards different learning strategies.

**Conclusion:** Students with high scores on SDL do not perform better on our current exams. We want to investigate this further. Different assessment content or methods might match the goals of the curriculum better. If SDL does not lead to better performance, effectiveness of implementation of SDL needs to be reconsidered.

**Take-home Message:** Our research raises concerns with regard to the translation of SDL to assessment. We believe that future exams will need to differ qualitatively from traditional assessment if we want to promote SDL and foster lifelong learning.

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**#10HH12 (2013)**

**Toward Mentoring in Medical Social Work – A Narrative Review of Mentoring Programs in Social Work**

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Chia Chia Teo  
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Siew Li Cheung  
Lalit Radha Kumar Krishna

**Background:** Mentoring reduces burnout and improves job satisfaction but differences in mentoring practice limit its use in medical social work. This review seeks to identify common mentoring approaches amongst successful mentoring programs in social work to guide the design of a consistent, adaptable and transparent mentoring approach in medical social work.

**Summary of Work:** A literature search of mentoring programs in social work between 1 January 2000 to 31 December 2015 using Pubmed, CINAHL, OVID, ERIC, Scopus, Cochrane and ScienceDirect databases involving a senior experienced social worker and undergraduate and/or recent graduates, was carried out.

**Summary of Results:** 1302 abstracts were retrieved, 22 full-text articles were analysed and 13 articles were included. Thematic analysis of the included articles revealed 7 themes pertaining to the mentoring process, mentoring outcomes, barriers to mentoring characteristics of mentoring relationships and mentors, mentees and host-organizations related factors.

**Discussion:** Mentoring in social work pivots on mentoring relationships and influenced by host organizational-, mentee- and mentor-dependent, goal-specific and context-sensitive features. Effective mentoring relationships need to be nurtured between mentors and mentees with similar values and interests and developed in an environment that facilitates frank discussion, trust and respect.

**Conclusion:** Mentoring in medical social works needs to be effectively supported by host organizations invested in creating conducive mentoring environments, providing mentor training and supporting mentees. Significant time and effort must be invested in matching mentors to like-minded mentees with similar goals and complementary personalities.

**Take-home Message:** • Mentoring pivots upon the mentoring relationship thus nurturing it is key. • There must be adequate support of mentors and mentees by host organizations in the form of protected time, training and oversight of the process. • More research in mentoring relationships are required.
Background: There have been increasing literature on mentoring as a formal faculty development strategy, mostly in western countries. Very few were discussed within Asian contexts. This study is to explicate the socio-cultural factors embedded in the formulation of a mentoring relationship from the narratives of the mentees and the mentors.

Summary of Work: We adopted a critical-analysis qualitative design to understand the socio-cultural factors that structured the mentoring relationship. 15 faculties via convenient sampling participated in in-depth interviews, which were transcribed in verbatim. Member check and recursive analysis to validate and expand emerging interpretations was used to increase the quality of analysis.

Summary of Results: The findings revealed four challenges of new faculty that may reflect the underlying sociocultural contexts of the mentoring relationship: a desire not to project a negative self image, lack of initiative to seek out mentoring, a low expectation towards the benefits of mentoring, and tenure rules that favored local graduates.

Discussion: The results revealed four intertwining sociocultural factors: (1) the power hierarchy and implicit codes of social interactions structured by the Confucius values, (2) respect for seniority, (3) inherited medical hierarchy originated from Japan’s colonization, and (4) the influences of grants and impact factors on new faculty recruitment and tenure review.

Conclusion: Mentoring has a long history in Taiwan. Socio-cultural contexts, including recent historical events and changing institutional structures (including tenure review rules), greatly structure the challenges faced by new faculty. These factors can also both facilitate and obstruct the formation of a conductive mentoring relationship.

Take-home Message: 1. Hierarchical inter-personal structure in medical school can negatively affect the formation of a mentoring relationship. 2. An effective mentoring program needs to consider the perceptions and expectations of junior faculty towards the program, and the embedded socio-cultural contexts. 3. Institutional tenure-review structure may inadvertently exclude faculty who are outsiders.

Take-home Message: 1. Awareness of the stages of mentoring involves better oversight and support of the mentoring relationship. 2. Awareness of the factors behind mentoring environments promotes and sustains the development of mentoring relationships. 3. Matching is critical to the development of mentoring relationships.
Active learning components of lecture capture programs increase test scores and knowledge retention

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Background: Our hypothesis is that a well-integrated asynchronous question and answer (Q&A) function within a lecture capture platform can increase quiz scores, comprehension of subject material and opinion of this type of active learning.

Summary of Work: Two hundred and eighty six students in an embryology course participated in the study. Performance on quizzes was linked to specific questions asked by students. Overall performance on quizzes was compared to cohort that did not receive lecture capture intervention. The quality of student’s questions was compared to quiz performance.

Summary of Results: After incentivized integration of Q&A module, its use increased by 250% and continued at that elevated level. Quiz scores after the Q&A module increased by 11% and continued at that elevated level. Comprehensive exam scores increase by 9%. Perceived quality of Q&A questions also increased and correlated with increased scores.

Discussion: Lecture capture is a tool that can be used by students for rote or active learning. The act of self-questioning has been linked to deep vs. surface learning. How captured lectures are viewed by the student will determine its perceived learning value.

Conclusion: The present study indicates that wide spread use of questioning significantly increases knowledge retention and quiz scores. The use of Q&A module was considered to be of great value and was used significantly by students.

Take-home Message: Q&A modules in lecture capture platforms that are significantly used can increase knowledge retention and quiz scores and students considered it to be of great value in studying and preparing for exams.
#10HH17 (2515)
Assessment of Panopto Software for teaching Undergraduate Anaesthesia in Namibia

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Background: Panopto is lecture capture software allowing online resource access, revisiting materials and learning at individual pace. It has been shown to increase retention and enhance student learning. Little is known of its usefulness in developing countries of Sub-Saharan Africa. We investigated its use for teaching Anaesthesia to Namibian medical students.

Summary of Work: Ten brief lectures were recorded via Panopto and delivered along with classroom teaching, preparing students for a summative Anaesthesia exam. 100 University of Namibia students participated as part of their MBChB course. Students completed questionnaires 6 months after the programme. The results of effectiveness were analysed by excel.

Summary of Results: Students rated Panopto lectures more highly than classroom teaching for use in exam preparation and for future career development. Over two thirds of students felt it was easy to access the lectures and used them for exam revision. Almost all students requested more educational resources be available via Panopto.

Discussion: Use of Panopto software to complement classroom based teaching in Namibia created accessible learning opportunities for students studying Anaesthesia. It enabled students to revisit and access material outside of the classroom. In this case it provided a more flexible and adaptable learning opportunity than that provided by traditional teaching.

Conclusion: Panopto can provide access to education materials for revision in rural countries like Namibia, allowing students to learn at their own pace in an accessible format when internet is available.

Take-home Message: Panopto can be a useful tool for students in their learning, revision for exams and future career goals.

#10HH18 (364)
Effects of Study Modification on Knowledge Retention by Integration of Lecture, Teamwork & Peer-feedback in Pediatric Basic Life Support

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Background: Knowledge retention usually decreases over time, particularly with traditional study methods. In order to achieve the goal of increasing knowledge retention, this study implemented a study modification by integrating lecture, teamwork and peer-feedback in the study course of Pediatric Basic Life Support (PBLS).

Summary of Work: Two groups of 4th-year medical students (30 in each) were assigned to traditional study (lecture-based) and modified study (lecture, teamwork and peer-feedback), during two consecutive study years. The students undertook pre-, post- and one-year retention-tests each with 10 multiple-choice questions. Comparison of test-scores between groups was assessed using a t-test.

Summary of Results: Results showed that the sequence from highest score in both groups was post-, one-year retention- and pre-test scores. There were no differences of pre-test and post-test scores between the groups. However, students in the modified-study group had a higher mean score in the one-year retention-test (5.06 vs 4.06, p=0.036).

Discussion: In comparison with traditional study, the study modification did not show any significant benefit for immediate knowledge (short-term retention). Nevertheless, an improvement in long-term knowledge retention was highlighted, which could result from integrating the provisional advantages of passive essential-contents from lectures, knowledge application from teamwork and encouraging self-reflection from peer-feedback.

Conclusion: Conducting PBLS teaching using this modified study method is recommended in order to improve long-term knowledge retention. Future research should focus on extending the benefit to short-term retention, with the aim of achieving a higher quality of learning.

Take-home Message: Study modification by integration of lecture, teamwork and peer-feedback enhances the long-term retention of PBLS knowledge. Implementing this study modification to the PBLS course of study and applying it to other subjects could provide an improvement in knowledge retention.
Introduction of interprofessional education (IPE) for medical and dental students

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Background: With aging societies, issues of age-related physiological changes and the number of comorbid systemic conditions endanger the oral status of the elderly. Tokyo Medical and Dental University (TMDU) started a new undergraduate curriculum in 2012 and the goal of our curriculum is improving interprofessional collaboration and patient care.

Summary of Work: Students from both departments learn together for common competencies such as relevant basic and clinical sciences, and social medicine. They also work together in mixed groups for collaborative competencies such as communication, teamwork, and roles/responsibility. In the final year, students join them to practice PBL tutorials focused on patient care.

Summary of Results: Analysis of the post-participation questionnaires written by students revealed that this program brought about desirable effects such as realizing the roles and responsibilities of one’s own profession, broadening one’s perspectives in patient care and understanding the importance of leadership and followership roles.

Discussion: They seemed to recognize factors to promote IPW by understanding “mutual complement”, “importance of mutual understanding, consideration” and “importance of communication”.

Conclusion: Our new undergraduate curriculum that integrates medical and dental education to train healthcare professionals may effectively help students acquire the IPE competencies. Cultivating self-affirmation within a profession prior to the IPE workshop would be necessary for better learning.

Take-home Message: Recent advancement in medical and dental sciences have blurred the boundaries between medical and dental care. Integrated education for medical and dental students might open the way to creating collaborative treatment plans.
#101l03 (2654)
Developing instructional design of Interprofessional Education (IPE) learning using 4C/ID method

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Background: Teaching and learning in inter-professional education (IPE) context still challenging. We should consider how the student from all professions get same opportunity for learning and know each other. Students engagement must be point of view to build instructional design of learning

Summary of Work: We were developed 4C/ID instructional design in IPE on community-based learning. Ten medical and 15 midwifery students were participated in this study. They must follow learning instruction consist of learning task, part-task practice, procedural and supportive information. Qualitative analysed were used from their reflection portfolio as learning evaluation.

Summary of Results: Each student reflect on how they engage with other profession. The learning instruction giving them opportunity, gather information and knowledge and easier step to start communication and collaboration. They also got immediate feedback from the supervisor as part of learning instruction, for their improvement.

Discussion: Specific learning and task-clear description for all professions were main points to develop educational instruction in IPE. Intention of communication and collaboration can be trigger by learning task. Immediate feedback was key factors for IPE group improvement, evaluation and group reflection.

Conclusion: Using 4C/ID instructional design get learning experience for student communication and collaboration in IPE context. The retention of learning task giving student engagement for building trust. Supervisor’s feedback also key factor to evaluation the process of student learning and reflection of their experiences.

Take-home Message: The most factor of successful IPE learning is the opportunity for student to gathering knowledge and skills from other professions. In order to that, Intention and student engagement must be consider in developing learning instruction. 4C/ID was accommodate from the task to get more retention to communication to build trustworthiness.

#101l04 (682)
Public Health Crisis Preparedness and Disaster Management for Medical Students through Multi-Discipline Interactive Platform

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Background: Public health crisis preparedness and response were fundamental for the healthcare professionals. Therefore, we developed the multi-discipline interactive platform and curriculum based on the core competencies of the medical education and The National Disaster Life Support for medical students to acquire skills to communicate, cooperate and coordinate with other professionals.

Summary of Work: The platform working group including physicians, nurses and logisticians from the hospital, Disaster Medical Assistance Team, the faculty from Department of Nursing, Center for Society, Technology, and Medicine, Urban Planning, Architecture, University Disaster Prevention Research Center, Paramedics and officers from local government through meetings to set up the teaching curriculum.

Summary of Results: A five-day course included lectures, group discussions, case and scenario discussions, interactive hand-on practices were conducted for background knowledge; table-top drills and simulation were used to evaluate the teaching outcomes. Students who participated the course were satisfied and achieved the goals that were set before the course.

Discussion: Through multi-discipline interactive platform, medical students acquired core competencies and skills for public health crisis preparedness and management. Further advanced course could be carried out. However, large amount resources and preparedness were required. Repeated discussions, communications, and time consuming among faculty members were mandatory to build up the platform.

Conclusion: The multi-discipline platform and five-day interactive course was enough to attain the basic knowledge and manage their expanding professional networks. Different professions worked well in this platform and demonstrated developing a basic multi-discipline course for medical students were feasible although students had limited medical knowledge and competencies.

Take-home Message: We developed a multi-discipline interactive platform and five-day course curriculum based on the core competencies of the medical education and The National Disaster Life Support for medical students to communicate, cooperate, coordinate and respond public health crises. Different interactive, hand-on scenario and drills were used to achieve goals.
Teaching Systems of Healthcare in a Year-long Interprofessional Education Course for Medical, Dental and Advanced Practice Nursing Students

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Background: Interprofessional clinical care is known to be safer and more efficient, leading to increasing demand for interprofessional education. For the past five years the medical, dental and nursing schools at UCLA have joined in an interprofessional year-long, required, seminar course on systems of healthcare.

Summary of Work: 175 third year medical, 128 third year dental, and 20 to 40 second year advanced practice nursing students meet in groups of 9, for 3 hours, 9 times, with 2 tutors per group. Topics include healthcare finance, conflict of interest, error and QI, implicit bias and stigma, boundaries and burnout.

Summary of Results: Student initially object to missing clinical time. They soon enjoy learning about other professions, and complain if they don’t get all three professions. Groups are best when balanced in numbers from professions. Faculty need extensive preparation to overcome their own assumptions about the other professions, and to think across professions.

Discussion: This course uses shared written reflection to bring the clinical experiences of the students into the groups, encouraging analysis of systems as well as helping students find some commonalities across professions. Current articles in professional journals bring in content, and demonstrate the differences and similarities of each profession’s literature.

Conclusion: Systems of care can be successfully taught as an interprofessional course. The perspectives of other professions deepen the discussions of topics such as population health or stigma. With good faculty development, and careful selection of topics, students value the learning about each other, as they gain perspective on the system.

Take-home Message: Organizing interprofessional education requires overcoming logistical obstacles and often some initial student and faculty resistance. Systems of care is a topic which can bring together multiple professions in a meaningful conversation. Ongoing faculty development, and bringing the clinical training experiences of the students into the discussions is essential to success.

Voices from students: Interprofessional Education Competencies and how first grade students catch them in the final report

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Background: Chiba University IPE program for the first grade students of medical, pharmaceutical and nursing departments has 6 learning objectives with core contents of listening to patient’s voices and considering them in teams. The trend how students catch and understand learning objectives is important for improving education, but is not clear.

Summary of Work: Two studies were conducted on the final reports of the first grade students (n=90, randomly extracted from three departments) as follows. Study 1 (quantitative): How often do students refer to each learning objective in the report? Study 2 (qualitative): What are the keywords of students’ description concerning learning objectives?

Summary of Results: The most mentioned learning objective was “grow as professional”, followed by “understand professional role, “communicate positively, “explain the team achievement, “understand patients” and the least was “fulfill responsibility”. Representative keywords of students’ description were acquisition of knowledge, stereotyped understanding, dispel anxiety of patients, individuality of patient, personality of team members.

Discussion: “Understand patients” and “explain the team achievement” are less mentioned than self-grownup or stereotyped professional role. This tendency means lack of concrete understanding of patient or team member. However, as “individuality of patient” and “personality of team members” also appear as keywords, students might relativize their stereotyped view.

Conclusion: As expected the first grade students tend to have stereotyped view and not to describe solid understanding of patients or team members. At the same time, the fact they notice the importance of individuality or personality, or “values”, is the proof that valued-based educational approach is suitable for them.

Take-home Message: The recent trials of interprofessional care/education have presented the power and value of values-based practice beyond a mere technical discussion. The first grade students not only have stereotyped tendency but take interest in values. We should pay attention to their potential interest in value when improving educational curriculum.
Collaborative Approach To improve teaching And Learning Yielding Sustainable and Translational outcomes (CATALYST)

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Background: Collaborative teaching is usually limited to collaborations within the same discipline. The CATALYST project is designed to develop the translational cross-disciplinary e-teaching platform in geriatric medicine. The rapidly aging population demands a system that promotes better health. Our students will impact on geriatric care of our community through various disciplines.

Summary of Work: CATALYST consisted of an online learning platform and outreach sessions. Geriatric care and medication safety teaching materials were prepared by teachers from Biomedical Sciences, Pharmacy, Medical Science, Nursing, Chinese Medicine, and Social Work. The community outreach program provided platforms to engage students to utilize the knowledge learned in the community.

Summary of Results: 206 students were enrolled. According to the pre-post survey, there was an improvement by 17% in understanding medication safety, 27% in atrial fibrillation knowledge, 9% in understanding elders’ needs and 11% in communication skills with elders. Over 90% of students agree that both the CATALYST and outreach met their expectation.

Discussion: The evaluation result proved that CATALYST could strengthen students’ knowledge in a wide variety. Many elders have multiple chronic diseases, drug-related problems, home-alone with multiple psychosocial problems that require our attention. CATALYST created a good inter-professional learning experience to improve students’ understanding of geriatric care in different perspectives.

Conclusion: The CATALYST project promoted inter-professional collaborations to enhance efficient teaching and learning platforms to improve cohesive teaching and learning outcomes addressing the needs of the public. The CATALYST project strived to impact on the quality and delivery of teaching and aims to improve professional education in tertiary education institutions.

Take-home Message: The CATALYST project promoted inter-professional collaborations to improve cohesive teaching and learning outcomes addressing the needs of the public. This new teaching platform incorporated both basic and fundamental knowledge subjects in biomedical sciences, social sciences and clinical therapeutic courses in medicine, nursing, pharmacy, and social welfare sciences.
#10II09 (3191)
Developing a Comprehensive Evaluation Framework for Interprofessional Education: Successes and Challenges

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Background: The Health Sciences Education and Research Commons (HSERC) is mandated to develop, deliver and evaluate large-scale (+1000 students) interprofessional education (IPE) experiences. In 2014, HSERC developed a consistent approach to evaluate the impact of IPE programming with pre-licensure students across eight faculties with thirteen programs.

Summary of Work: HSERC piloted an evaluation methodology for its IPE programming. A challenge was gathering reliable and valid data to inform curricula changes. The process included using Kirkpatrick’s model for assessing current evaluation activities, creating a learning continuum model adapted from the National Academies of Practice, identifying measurement instruments and qualitative methods.

Summary of Results: Piloting the evaluation methods highlighted issues with student survey fatigue and logistics with collecting data from students in diverse programs. Alignment of reaction surveys was created across three IPE experiences. Additionally, strategic decisions about the qualitative data collected ensured all data fit within a consistent evaluation framework.

Discussion: Opportunities and challenges emerged as a result of this work. Establishing an overarching evaluation plan for the IPE experiences shifted the focus away from ‘one-off’ reaction data and provided a more consistent approach to IPE curricular evaluation at a large institution. Data collection across diverse programs continues as a challenge.

Conclusion: This comprehensive approach to IPE evaluation shifted our focus away from disconnected evaluation data to a more consistent approach that provides educators with evaluation research to create evidence-informed education. Additionally, this methodology increased capacity to aggregate data across programs by establishing consistencies in data collection.

Take-home Message: Developing a comprehensive approach to IPE evaluation at a large institution creates an evidence-informed curricula and provides an opportunity for long-term strategic decision-making about resource use in IPE programming. This approach also creates a shared evaluation language among health science educators from diverse programs.

#10II10 (1257)
Task-based approach for educational demonstration of case discussion in an interprofessional team: Experience from Kaohsiung Medical University Hospital

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Background: Group case discussion is a common educational strategy for demonstration of interprofessional team dynamics at problem-solving process. Learning about knowledge of interprofessional collaboration occur when clinical students observe the dynamics and reflect on discussions with peers and teachers. Identifying clear interprofessional tasks is critical to the outcome of such strategy.

Summary of Work: In Kaohsiung Medical University Hospital (KMUH), regular case discussion sessions were conducted for educational demonstration of interprofessional collaboration in different healthcare disciplines. Surveillance revealed that multi-task and long medical history would lead to poor group dynamics and learning outcome. An action research was conducted to establish the process of focusing.

Summary of Results: The action team created a task-based approach procedure that identify the healthcare needs, missions for interprofessional collaboration, goals for healthcare quality, tasks of team members and learning objectives. Surveillance showed that such procedure helped to create a focused discussion and to reveal the interactions and dynamics between team members.

Discussion: In case discussion sessions for educational demonstration, members in the demonstration team report and bring pieces from the puzzles of interprofessional collaboration together. However, unfocused cross-talks usually produce abundant contents and result in poor group dynamics. Negative role modeling at learners’ observation would have great impact on the educational outcome.

Conclusion: There are both professional and interprofessional dimensions in every case history that is used for educational case discussion. A process to identify the real interprofessional tasks and the hot issue that would bring about most of the team dynamic would be necessary and critical to the educational outcome.

Take-home Message: Interprofessional case discussion for educational purposes would be more effective in showing interprofessional dynamics and interaction skills if a focused major interprofessional task could be identified and be used as the hot topic for the discussion.
National reform of social and health services on the way – How to improve students’ multiprofessional knowledge and skills?

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Background: Medical education in Finland is soon facing new challenges with a national legislation uniting social and health services. To prepare our students and to enhance their multiprofessional knowledge and skills, a new multidisciplinary study module (3-5 ECTS) was created by two universities and one university of applied sciences.

Summary of Work: The course was launched and implemented during autumn 2016. Learning outcomes included e.g. familiarizing roles and duties of different professions in multiprofessional patient care, developing consultation and interaction skills in multiprofessional team. Different teaching methods (lecturing, solving clinical cases in web-based small group and seminars with consults) were used.

Summary of Results: Students (n=55) were clearly appealed to have a chance to solve a case which resembled real life situation. The assignment was successful since in the course evaluation it was rated as exhilarating (3.9/5.0) and useful for learning collaboratively in multiprofessional teams (4.4/5.0).

Discussion: The course was well received by students from six different social and health care study programmes. Many students wanted to grasp this rare opportunity to learn multiprofessional team skills as part of their undergraduate studies.

Conclusion: This course pilot showed that there is a clear need for more opportunities to learn in a multiprofessional social and health service environment. The overall concept and the teaching methods (e.g. combining lecturing and collaborative case based learning) were useful and did support subject learning and reaching learning goals.

Take-home Message: More and more patients are assessed and managed by array of professionals. In higher education different study programmes should work together and give students more options to learn and practice multiprofessional skills during their studies. This way future employees learn skills needed in patient care and customer service.

Is a good idea enough for effective IPE?

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Background: Interdisciplinary healthcare teams that work collegially, with a patient centred approach, can lead to improved patient satisfaction and clinical outcomes. Interprofessional education (IPE) is designed to begin to develop these skills prior to clinical practice. Is a good idea for IPE workshops enough for effective IPE within an undergraduate setting?

Summary of Work: Two separate IPE workshops were designed between medic and medical imaging students, and medic and pharmacy students respectively. The structure and content of the workshops was to consolidate and provide an opportunity for students to apply their knowledge whilst learning about the roles and responsibilities of other allied health professionals.

Summary of Results: The readiness for interprofessional learning questionnaire (RIPLS) using a Likert scale was performed pre and post workshops. Pre Likert scoring revealed positive perceptions for IPE from the student groups. Post workshop student comments and mean ±SD Likert averages highlighted a more mixed response, indicating that the intervention was entirely successful.

Discussion: Qualitative student comments highlighted disparity of experiences between students from medical imaging and medics in particular. Despite being able to contribute their knowledge/understanding and sharing about their roles and responsibilities; they felt they didn’t gain an equal experience, and thus benefit from the shared learning.

Conclusion: Despite the careful alignment of curricular and the opportunity for students to consolidate their knowledge and understanding, the workshops weren’t an overall success. It is evident that for an effective IPE curriculum; greater thought and consideration is required to ensure the intervention is successful and promotes positive outcomes.

Take-home Message: Careful consideration of a multitude of possible interactions between UG students is required to ensure IPE interventions provide a positive, long lasting impact. Failure to ensure this could result in further dividing professionals; leading to the reinforcement and possible strengthening of previously held stereotypes and judgements.
The AMSTERDAM IPE programme: 10 best practices for realising IPE across higher education institutions and health curricula

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Background: Health-related problems gained in complexity both in co-existence of multifaceted problems within one patient, and the number of care providers and systems that are involved. This requires an interprofessional approach involving inter-connected professionals. They collaborate synergistically as a team integrating vocational expertise, and increase continuity of care across institutional boundaries.

Summary of Work: Early 2014, two Higher Education Institutions initiated the AMSTERDAM Interprofessional Education programme. This constructively aligned programme aims to be a best practice IPE programme. The programme is based on the CIHC competencies, perspective taking and role modelling, performance based assessment, and authentic educational environments.

Summary of Results: The IPE programme expands over four years in nursing, physiotherapy, occupational and exercise therapy and medicine. Each year student perspective is widened passing through the I, WE and TOGETHER phases. Year one focuses on roles and responsibilities, year two and three on teamfunctioning, year four on leadership and conflict mediation.

Discussion: The realisation of Interprofessional Education is usually hampered by logistic problems and difficulties in educational design. Based on an interprofessional module for over 100 students that is implemented in five profession specific curricula, ten managerial and educational recommendations for initiating, designing, testing and implementing this programme will be discussed.

Conclusion: The formation of an inter-institutional steering group facilitated convergence of institutional ambitions into one vision and a mapped out curriculum structure. Realisation of an IPE programme demands a. explicit educational alignment of concurrent concepts in a curriculum, b. leadership at all echelons to manage logistic problems.

Take-home Message: Best practices include: set up a transition management team, develop an educational rational, adopt a competency framework, speak a shared language, use role modelling and performance based assessment, pilot frequently, translate towards a curriculum in action, inform stakeholders, create an IPE Community of Practice, and practice what you preach.

The effectiveness of bedside teaching for stroke rehabilitation in improving the attitude towards interprofessional learning

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Background: Interprofessional learning(IPL) has the potential mechanism to enhance collaboration among healthcare professionals to improve patient outcome. The aim of this study is to evaluate the effectiveness of the bedside teaching of stroke rehabilitation in improving the attitudes of undergraduate conventional medical(CM), Thai traditional medical(TTM), pharmacy(PM), and physical therapy(PT) students towards IPL.

Summary of Work: Medical teacher facilitate the students to share knowledge including role and responsibilities of their own profession to the others. A 19-point Readiness to Inter-Professional Learning Scale (RIPLS) questionnaire comprising three subscales was administered to students both before and after the bedside teaching. Results were analyzed using paired-samples t-tests.

Summary of Results: Overall scores were significantly higher for all three RIPLS subscales after IPL among CM, TTM, PM, PT students. Examining the RIPLS items individually, significant improvement in scores was among CM, TTM, PM, PT students. Examining the RIPLS items individually, significant improvement in scores was among CM, TTM, PM, PT students obtained in all 19 items.

Discussion: Overall scores were significantly higher for all three RIPLS subscales after IPL among CM, TTM, PM, PT students indicates that bedside teaching of stroke rehabilitation was effective in improving attitudes of undergraduate students. These improvement was obtained among CM, TTM, PM, PT students able to focus the importance of teamwork specifically between these healthcare professions.

Conclusion: This study shows that bedside teaching of stroke rehabilitation was the effective method to promote improvement of attitude toward IPL among healthcare professions. Hopefully, this study will encourage others in delivering the concepts of teamwork, and collaboration among healthcare professions.

Take-home Message: Bedside teaching of stroke rehabilitation is the effective method to improve the attitude toward IPL among healthcare professions.
What changes do students of emergency nursing, medicine and student paramedics commit to after an inter-professional simulation training?

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Background: Inter-professional education and training is gaining more importance in medical education lately. However, measuring outcome beyond participant satisfaction is notoriously difficult and thus little is known about what students take home and into the workplace. One potential way to follow up on interventions is to measure participant’s commitment to change.

Summary of Work: We developed a full scale, day-long simulation training for students from pre-hospital and hospital-based professions. Key objectives included early training of inter-professional teamwork, role clarification, and handover – communication. After each training day, participants were asked to commit to intended changes. Commitments were categorized in a qualitative inductive approach.

Summary of Results: 129 commitments to change were made by respectively 46 participants of two training days. Commitments were evenly distributed over three emerging categories “communication”, “behaviour” and “factual knowledge” and slightly less often referred to a fourth category, “attitude”. Number of commitments in each category did not differ significantly between professions.

Discussion: Only nursing students committed relatively more to change their “communication” and “behaviour” than working on their “factual knowledge”. Surprisingly there were no other differences in changes intended to take home and into their workplace between students from different professions. This is remarkable considering their different backgrounds, roles and experiences.

Conclusion: Students committed to a number of changes relevant for inter-professional collaboration. The simulated cases were medically challenging given the educational level of participants. We assume that this challenge helped students identify a value in collaboration between professions, leading to the observed commitments. This assumption needs further testing.

Take-home Message: Students of nursing, paramedics and medicine commit to roughly the same changes of “communication”, “behaviour”, “factual knowledge” and less so “attitude” after an inter-professional simulation training.

Is there a “quick fix” to integrate IPE in clinical practice for all students in health- and social sciences?

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Background: The call for greater interprofessional collaboration (IPC) in health- and social care is putting interprofessional education (IPE) at stake. Internationally many models of IPE have been tried out but logistics, costs, and lack of support have challenged success.

Summary of Work: Based on theories on learning (Lave and Wenger 1991) IPC capabilities develop at the best in authentic settings with real patients. In Tromsø several pilots were run in different clinical placements. Interprofessional student-teams assessed, treated patients and wrote a common medical report. Self-assessment reported high learning outcomes among students.

Summary of Results: Based on these experiences a new design of IPE is hypothesized to construct a “pragmatic solution” for learning IPC. In a new project students in regular community- or hospital-placements will, without further planning, work with common patients in interprofessional teams. A handbook describing possible IP-learning activities will guide their work.

Discussion: The “pragmatic solution” for learning IPC will challenge established clinical practices, and the staff needs to rethink, and open for all possibilities of putting different students together. Taking advantage of the clinical stage as a very potent arena for learning IPC, the “pragmatic solution” may solve evident obstacles in IPE.

Conclusion: There is a need to be pragmatic when designing IPE. IPE can’t be too demanding on placements nor on the study programs. By using existing placements where different students are in practice at the same time, equipped with a handbook, might give sustainable models to learn IPC in authentic settings.

Take-home Message: If interprofessional collaboration is to succeed, interprofessional education for health- and social students must be done the easy and pragmatic way.
Exploring medical students' experiences regarding inter-professional collaboration in the clinical placements

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**Background:** Literature shows that reflection is a key component of professional competence, of which, working in a multidisciplinary team is vital. Clinical placements provide students with the opportunity to interact with the multidisciplinary team. This study analyses reports regarding the MDT providing insight into what students learn from this clinical exposure.

**Summary of Work:** In this study, a thematic analysis was carried out. 80 reflective reports by 4th year Barts' medical students; written using the SHEEP framework were looked at. Recurring themes regarding inter-professional practice, with a focus on human factors, were explored further in 4 focus groups.

**Summary of Results:** Preliminary results suggest that reflection of clinical events provides an awareness of: 1) The importance of good collaborative practice and how it is achieved. 2) How inter-professional practice contributes to good patient-centred care. 3) The challenges professions face in delivering care through a collaborative approach within the clinical environment.

**Discussion:** Students' attitudes towards professionalism has been shaped by reflecting on their interaction with the multidisciplinary team on placement. Results show that both positive and negative experiences encountered by students provide a rich learning context for the development of their professional identity, and enhances their learning about MDT collaboration.

**Conclusion:** Participation of medical students on clinical firms, and their observation and exposure to both positive and negative experiences is essential for their personal and professional development in future and being able to reflect on these experiences is key in the facilitation of learning about MDT collaboration.

**Take-home Message:** Reflecting is a valuable tool that has been proven to help students understand the complexities of the clinical environment, thus equipping them with the awareness of skills required to deliver holistic, patient-centred care. Reflective tools, such as the SHEEP framework, provide guidance for students to become effective reflective practitioners.
Ensuring practical relevance of assessment tools - A resident-driven initiative to move up the Miller's Pyramid; Developing ‘baby’ medical officers in anaesthesia into competent trainees

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Background: A resident-led initiative to introduce a workplace and performance-based-assessment with direct-observed-procedural-skills (DOPS) to replace tests that were theory-based with context-free MCQs and short-answer-questions to assess clinical competencies for newly-inducted ‘baby’ medical officers (MO) results in changed perception amongst trained anaesthetists with improved confidence in baby MOs.

Summary of Work: The DOPS assessment constructively assesses evaluation of patients and practical skills performed during induction, maintenance and reversal of anaesthesia. Two crisis scenarios discussed assessed ‘shows how’ responses. Marking schemes were rigorously reviewed at multiple levels. Examiner standardisation included questioning approach, candidate prompting and detailed marking schemes.

Summary of Results: Analysis of 60 questionnaires revealed that the introduction of DOPS led to (1) trained anaesthetists having greater confidence in leaving baby MOs in theatre to troubleshoot and escalate intraoperative issues accordingly (2) perception that baby MOs take the assessment more seriously and possess greater practical knowledge.

Discussion: Despite challenges with manpower and logistics, DOPS implementation is associated with intangible benefits - including streamlining of learning objectives and empowerment of baby MOs, reduced clinical strain on trained anaesthetists and most importantly improved patient safety.

Conclusion: The process of preparing patients and performing an anaesthetic is considered a procedure - hence DOPS as the chosen tool. Employment of performance-based-assessment to a previously lackluster theory-based written-only assessment ensures practical relevance of assessment tools by ascending up the Miller’s pyramid from ‘knows’ and ‘knows how’ to ‘does’ levels.

Take-home Message: This resident-driven initiative has led to the perception of improved attitude towards assessment and greater competency of baby MOs. This will continue for future batches with potential additions of more workplace-based assessments (OSCE and 360-degree-feedback).
#10JJ03 (2627)
Enhancing General Medical Higher Specialty Training – Delivery of a dedicated Inter-Professional Pilot Simulation Course focussing on Non-Technical Competencies

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**Background:** The Medical Registrar role increasingly involves delivery of complex clinical care through management of multidisciplinary teams. The General Internal Medicine (GIM) curriculum reflects this, through non-technical competencies. Currently, there is no consensus on how to deliver training for this effectively, but growing evidence supports the use of simulation-based education (SBE).

**Summary of Work:** We developed an innovative, inter-professional pilot simulation course for GIM Higher Specialty trainees in our region. Content is mapped to the GIM curriculum and a collaborative approach ensures quality control, sharing of faculty and expertise. Pre and post-course questionnaire data is thematically and statistically analysed.

**Summary of Results:** Three of six course dates have been completed, with feedback from 11 of 17 (65%) participants. Early analysis reveals learning centred around development of communication, time management, leadership and team-working. The course appeared tailored to participants’ needs, reflecting their challenging role. Full results will be available for AMEE 2017.

**Discussion:** GIM Higher Specialty trainees have a role that has become increasingly complex and demanding, with less time to learn. SBE offers training in a realistic and safe environment, allowing participants to develop and enhance skills necessary for optimal patient care. This reinforces the need to incorporate SBE into Specialty curricula.

**Conclusion:** It appears that a dedicated, inter-professional simulation course can address the deficiencies in non-technical competency training for GIM Higher Specialty trainees. The full results of this pilot study will aim to strengthen preliminary findings and provide a platform for justifying a GIM simulation programme across the deanery.

**Take-home Message:** The delivery of a dynamic, curriculum-mapped, inter-professional simulation course can be used to enhance the non-technical competencies of GIM higher specialty trainees. Ultimately, this may be important in helping trainees to deal with challenges of the Registrar role.

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#10JJ04 (193)
Strategies to determine readiness for independent clinical practice amongst junior psychiatry residents in the ambulatory setting

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**Background:** Changi General Hospital (CGH) adopted the direct observation (DO) supervisory model for all new cases for third year psychiatry residents during their one year ambulatory posting. Strategies to help determine independence in their clinical practice are important for the development of their clinical competence and also addressing increasing manpower costs.

**Summary of Work:** 3 supervisors are assigned to all 3 residents and rotated every 3 months. Mini-cex overall scores are captured for all new cases. Supervision records are kept detailing global impressions regarding appropriate diagnosis, interventions and follow-up arrangements. Monthly supervisor meetings are conducted to discuss residents’ progress.

**Summary of Results:** There were 15, 14 and 14 patient encounters respectively for the 3 residents during a 6 month period. Mini-cex ratings showed increasing overall scores for Resident 1 and 3 but not Resident 2. This finding was aligned with the supervision records which also showed less satisfactory scores for Resident 2.

**Discussion:** Previous decisions made regarding residents’ readiness for independent practice were based mainly on global impressions by supervisors. Some residents were unconvinced by their supervisors’ recommendations. Regular mini-cex evaluations helped to determine progress in their overall clinical competence and feedback given to residents was viewed as more objective and better received.

**Conclusion:** Supervisors are given the heavy responsibility of assuring residents’ competence in delivering safe patient care. The unpredictability of case complexities in the ambulatory setting made this even more critical. The availability of reliable and valid assessments using mini-cex has helped with determining the readiness of residents for independent clinical practice.

**Take-home Message:** Learners in training programs are expecting more objective feedback with regards to their training progress. Although the use of global impressions by experienced supervisors are important to help determine readiness for independent clinical practice, objective measures using mini-cex evaluations are necessary for delivering convincing feedback.
#10JJ05 (3269)
Competence by Design Cohort Transformation: a road map for the changes in Canadian specialty education

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Background: Competence by Design (CBD) applies the principles of competency based medical education to specialty education in the 68 disciplines recognized by the Royal College of Physicians and Surgeons of Canada. This transformational change is in its early stages of implementation, focusing at this time on residency training.

Summary of Work: The Royal College elected to sequence the adoption of CBD, creating 7 cohorts among its 68 specialties and subspecialties. These were allocated to cohort groups ranging in size from 2 to 13 disciplines. The initial cohort (2 disciplines) began its educational design in 2014; the final cohort begins in 2020.

Summary of Results: Factors in the adoption of the cohort model included: the educational, financial and physical resources required to support the work of education design; the impact of the change to individual programs and to faculties of medicine; the impact of the change on examination scheduling; and the accreditation cycle.

Discussion: Factors involved in a discipline’s cohort placement included: discipline preference; balance of specialty and subspecialty disciplines; balance of small and large disciplines; balance of the nature of the discipline (medical; surgical; diagnostic); impact of one discipline on others that are closely related; and other discipline priorities (e.g. discipline review).

Conclusion: Beginning in its cohort year, each discipline convenes in a series of three 3-day workshops to define competencies, milestones, entrustable professional activities, required training experiences and a program of work-based assessment. The work is facilitated by Royal College team of Clinician Educators, writers and administrators.

Take-home Message: The cohort approach has facilitated iterative improvements to the educational design of CBD, as well as gradual expansion of CBD expertise and the resources for the workshops, design process and implementation. This staged model of design and implementation may be of value to others undertaking large scale educational transformation.

#10JJ06 (2448)
Self-rating of Open Surgery Skills

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Background: When training surgical skills in self-directed training curriculums trainees receive little or no feedback from faculty. Using self-rating during training can help trainees to reflect, evaluate themselves and assess their own strengths and limitations. However, it is an ongoing discussion whether trainees are able to accurately rate their own performance.

Summary of Work: Twenty doctors took part in a course in open surgery and their exams were video recorded. After the course they were asked to rate their own videos, and those of two peers using the Objective Structured Assessment of Technical Skills. An expert rater also rated the videos.

Summary of Results: Preliminary data show that participants rate both themselves and their peers lower than the expert did. Compared to expert rating, participants rated themselves 2.5 point lower on average. When rating their peers, trainees rated their less skilled peer 5.2 points lower and their more skilled peer 1.7 lower.

Discussion: Trainees underestimate both their own and their peers surgical performance. That trainees rate themselves lower indicates that there is an unidentified strength that the participants are not aware of and could indicate that they tend to err on the side of caution.

Conclusion: Self-rating can guide trainees in self-directed training of surgical skills. Trainees set a high standard for their own performance and that of their peers which shows a limitation in self-awareness. This could indicate that doctors are less prone to take risk on their patients’ behalf.

Take-home Message: Trainees underestimate their own surgical skills and that of their peers in an open surgery course. Trainees lack of self-awareness show that they are unaware of their own strengths when it comes to surgical skills. This may also indicate that they are less prone to take risk when treating patients.
### Background:
There is a concern in the UK over the morale of junior doctors and the political challenges that they are currently faced with, resulting in reduced numbers progressing from foundation training to specialist training. This is particularly relevant within Paediatrics, where recruitment has become a big challenge.

### Summary of Work:
Junior doctor focus meeting s within departments, were chaired by the PGME team so that senior clinicians were not present and unable to influence the confidential discussions. Minutes were collated and themes established to tackle the identified learning needs and to resolve issues around safety and the working environment.

### Discussion:
The challenge to junior doctors in a large Paediatric hospital like Great Ormond Street Hospital, are that it provides a wealth of educational opportunities but the work can be isolating and menial. It is important that those involved in planning education appreciate fully what the feeling are at the coalface.

### Conclusion:
Through the use of focus groups we were able to enhance our own understanding of how to improve the quality of training and education within our hospital and were able to develop better links with the junior doctors, helping to support them through their training here.

### Take-home Message:
Showing support, providing lunch and taking time to listen to junior doctor can improve both morale and stimulate ideas for change within the work place. Those working at the coalface are often the best people to generate thoughts about how to improve education and training within an organisation.
#10JJ09 (2572)
Time to Talk? What Anaesthetic trainees and trainers value about the ARCP

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Background: In the UK the Annual Review of Competence Progression (ARCP) provides a yearly, formal review of a postgraduate trainee’s progress. Despite ARCPs universal use there is little published literature. The London Academy of Anaesthesia (LAA) conducts face-to-face ARCPs and surveyed both trainees and trainers for their views on the ARCP.

Summary of Work: London Anaesthetic trainees and ARCP panel members self-completed corresponding anonymous questionnaires. Both surveys included a mix of open and closed questions. Free text answers were subjected to thematic analysis.

Summary of Results: 63 trainees and 57 trainers completed surveys. All training years represented, trainers’ experience from 1 to >10 years: • Both groups valued meeting face-to-face. • Validation important for trainees. • Both used ARCPs to plan further individualised learning. • Trainees criticised the fixed criteria, trainers requested more administrative support. • Both groups wanted more time.

Discussion: ARCP compétences viewed as a minimum standard by both groups. Trainees wanted more individualised assessment and feedback. Trainers had a different perspective, valuing standardisation. Current trainees may have only trained within a competency based system and may not have considered the rationale for its introduction.

Conclusion: The main trainee themes mirrored those of trainers for the value of ARCPs. Trainees were dissatisfied by the reductive nature of a competency-based system but trainers were more focussed on ensuring fairness. Despite trainees’ reservations, the ARCP process prompted positive learning behaviours such as self-awareness and reflection.

Take-home Message: Within a competency based system face-to-face ARCPs offer an opportunity to promote learner centred curricula.

#10JJ10 (1653)
Verbal handover practices using SBAR among Pediatric residents: how we can make it better?

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Background: Patient handover is a crucial process for transfer of patients’ information. Thus, its standardization enables concise relay of information across team members. Different systems of communication have been developed to achieve effective and safe handover. Our aim is to study the completion of patient information during handover using SBAR modality.

Summary of Work: An observational study was conducted in Pediatric Department of Hamad General Hospital. The observational tool was structured to examine the contents of the oral handover using SBAR method, which was filled by chief residents. It included the organization of the handover and 9 essential elements conveyed in SBAR format.

Summary of Results: We observed total of 26 residents’ endorsements. 50% of the residents’ handovers had completed 100% of the 9 elements of endorsement using SBAR, while 35% covered 75% of the SBAR elements in endorsement. The commonest missing elements were patients’ demographics and location (23%) followed by situation awareness (19%).

Discussion: The majority of the residents’ handovers were inclusive of the 9 elements of SBAR. An extra important element was observed in 12% of the endorsements, which is “read back by the receiver”; an element that is not part of the SBAR modality.

Conclusion: Our study has highlighted areas for improvement in SBAR content. Adding “read back by receiver” = (R) to the SBAR may ensure that crucial patients’ information is well understood by the receiving team. Creating a modified handover modality in form of SBARR may greatly improve endorsement safety and quality.

Take-home Message: Systemic organized patients’ handover will greatly impact patient care and safety.
#10JJ11 (379)
A Blended Team-Based Learning Intervention For a Paediatric Emergency Medicine (PEM) Orientation Programme For Residents and Medical Officers in Singapore

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Background: Both Blended Learning and Team Based Learning (TBL) have roots in the constructivist theory, which emphasizes learners taking initiatives in learning. Individually, Blended Learning and TBL have been shown to be useful instructional methods but there has been little research done on the combination of the two.

Summary of Work: An orientation programme in paediatric emergency medicine was developed using a combination of Blended Learning and TBL (Blended TBL). At the end of the programme, learner perceptions are assessed online by a feedback tool that collected both qualitative and quantitative data.

Summary of Results: 67 learners underwent the programme from November 2015 to April 2016. 94% of learners agreed or strongly agreed that the course prepared them for work. The qualitative feedback revealed that learners appreciated the multiple levels of interaction (21.3%), questions and clinical scenarios (20.4%) and the relevance to real work (13.9%).

Discussion: The combination of Blended TBL allows collaborative work on real-life clinical problems, repetition, accountability, independent learning and indirect coaching by faculty, and is likely to play an important role in preparing doctors for actual work on the ground.

Conclusion: Blended Team Based learning may be a useful instructional method that combines the benefits of Blended Learning and TBL. The collaborative learning that takes place amongst peers, when real life problems are discussed and opportunities are given for reflection, may enhance learning and prepare doctors for clinical work.

Take-home Message: Blended TBL is a useful educational tool that may be useful in efficiently preparing doctors for practical clinical work.

#10JJ12 (2761)
Trainer doctors' activities to support learning at work in specialty training for occupational health

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Background: Specialty training for Finnish occupational health (OH) physicians is supervised by trainer doctors who i. assist trainees in defining their learning needs, ii. support learning through e.g. weekly tutorial sessions and iii. evaluate progress every six months. To develop pedagogical training, we examined the trainers’ use of related educational activities.

Summary of Work: To construct the questionnaire, we extracted potentially relevant and feasible educational activities from literature and from focus group discussions with senior trainers. Altogether, the use of 39 educational activities was inquired. In 2012, 148 trainers (45%) participated nationwide in the electronic survey.

Summary of Results: The use of educational activities (very/quite often, % of trainers) ranged from Discussing trainees’ cases during tutorial sessions (90%) and Answering trainees’ immediate questions (82%) to Critical reading of scientific articles in tutorial sessions (16%). In terms of assessment, the methods ranged from Case-based discussions (79%) to Multidisciplinary feedback (23%).

Discussion: Trainer doctors are familiar with traditional consultative activities. Regarding Eraut’s intention-based classification of learning at work (implicit, reactive, deliberative), the prevalent activities are generally helpful in making implicit learning visible and in strengthening reactive learning. To support more deliberative learning, a wider set of educational activities is needed.

Conclusion: As a next step, pedagogical training should aim for enhancing trainers’ theoretical understanding and practical skills for facilitating deliberative learning at work. The results of this survey have been carefully considered while preparing a new edition of the OH trainers’ guide book in 2016 as well as new pedagogical courses.

Take-home Message: University-regulated specialty training for OH is mostly learning at work, supported by trainer doctors. Most of the training takes place outside university campuses. There is a need for continuous pedagogical training for the trainers. Their present repertoire of traditional consultative educational activities awaits to be widened.
#10JJ13 (2826)
Learning Together integrated child health clinics in primary care: is the 'bang' worth the 'buck'

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**Background:** Learning Together (LT) is a complex educational intervention to improve health outcomes, quality of care and integrated care. Paired registrars see patients together in clinics hosted by a GP trainer. The initiative in child health has spread to nearly 100 sites, mostly in London; and to psychiatry and elderly medicine.

**Summary of Work:** A realistic evaluation used qualitative and quantitative methods to investigate who learnt what and how. Cost analysis and ‘before’ and ‘after’ notes reviews, with patient follow up, used NICE guidance to model how effective the intervention would have to be to meet NICE’s implementation threshold.

**Summary of Results:**
- Data: 65 Learning Logs 48 semistructured interviews.
- Learning: clinical, collaborative - changed practice for both registrars.
- Predictive interdependent learning platform developed.
- Cost effectiveness model: Each clinic costs system an extra £37. Only need one child returned to good health for two more weeks for clinics to be considered cost effective.

**Discussion:** LT is a complex educational intervention which results in multi-layered learning for both the specialist (paediatric registrar) and the generalist (GP registrar). Learning results in improved clinical outcomes, and this improvement is sustained. In addition, economic modelling suggests that the educational model is cost effective.

**Conclusion:** In a time of tight resources LT offers an alternative solution to address training needs and improve outcomes. We believe clinics can be scaled up and delivered across many different health settings, and can also be extended to other specialties.

**Take-home Message:** Learning together clinics represent an exciting innovative shared learning intervention with improved health outcomes at a very low cost - £37 per clinic. Only one child needs to be better for 2 weeks for a set of clinics to be considered cost-effective: the 'bang' is most certainly worth the 'buck'.

#10JJ14 (531)
What kinds of competencies are required for on-call physicians in homecare? A qualitative research of homecare providers' experiences in Japan's super-aged society

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**Background:** In aged population, it is important for hospital physicians to secure continuity of care before and after discharge. Therefore, Tenri Hospital provided residents a homecare programme, in which the residents had to manage an unexpected situations as on-call physicians. However, competencies were unclear to perform the on-call responsibility.

**Summary of Work:** Design: Qualitative research using semistructured interviews about competencies in homecare on-call as the data source. The data was analyzed by three physicians using theme analysis.
Setting: Tenri City, Japan. Participant: a total of eight homecare physicians and nurses.

**Summary of Results:** The core competencies were divided into following six categories: Clinical skills for frequent complaints, Sharing patients' information in advance, An attitude of humility, Understanding purposes of homecare, Understanding roles of homecare nurse and A thoughtfulness for patients and their families. We also extracted fourteen subcategories regarding homecare on-call.

**Discussion:** Most of the competencies were non-technical skills such as fundamental attitude, preparation and communication. To work as on-call physicians, it was necessary to improve these skills and capacities to deal with frequent complaints. Therefore, it was necessary for homecare training to provide comprehensive educations focusing on non-technical skills.

**Conclusion:** We performed a qualitative research about on-call responsibilities in homecare. As a result, it was revealed that the key competencies were mainly based on non-technical skills such as fundamental attitude, preparation and communication.

**Take-home Message:** For on-call physicians in homecare, it is necessary to acquire non-technical skills consisting of general cognitive and social competencies, in addition to technical medical skills.
Perception gaps between core teaching hospitals and cooperative training facilities regarding community medicine in Japanese clinical training systems

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Background: A two-year clinical training system was introduced in 2004 for medical school graduates with community medicine included as a mandatory subject. Each institution decides the subject’s contents; however, what these specific contents are and the effects of the community medicine training are unknown.

Summary of Work: We surveyed 57 core teaching hospitals and 181 cooperative training facilities regarding community medicine. The questionnaire asked about community medicine training in terms of its curriculum development, effectiveness, and the suitability and learning of the basic attitudes needed to be a medical practitioner.

Summary of Results: Both facilities see community medicine training as effective. However, there are perceived gaps between the two organizational types regarding learning about the ‘doctor-patient relationship’, ‘team medicine’, and ‘social nature of the medicine’. Approximately 30% of the cooperative facilities do not design the community medicine curriculum.

Discussion: If only one of the organizational types designs the community medicine curriculum, this has a potentially harmful effect on residents in community medicine, as this may not take into consideration the learning items that the other organizational type considers advantageous.

Conclusion: Perception gaps exist between core hospitals and cooperative facilities about community medicine training; such gaps potentially limit the learning of community medicine.

Take-home Message: To improve the community medicine curriculum, it is necessary to recognize and narrow these gaps.

Family Medicine trainees’ perceptions of patient-centred care: Is it time to make the implicit, explicit?

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Background: Across the globe, family medicine (FM) has adopted patient-centre care (PCC) as a core value and, in Canada, it is one of the four foundational principles. PCC requires the development of a perspective where the goal of care is to find commonality between the patient and practitioner.

Summary of Work: The purpose of this qualitative study was to explore FM trainees’ perceptions of PCC and the learning experiences that contributed to the development of their awareness. Phenomenological design was used, based on semi-structured interviews with 13 Postgraduate Year-2 trainees.

Summary of Results: The findings revealed that trainee’s explicit perceptions of PCC involved individual contexts, patient-physician relationships, patient goals, communication, and time. Implicit perceptions that emerged from the narratives involved compassionate care, community linkages, teamwork, family involvement, self-awareness, and shared decision-making. Participants viewed their PCC training as primarily informal and unplanned.

Discussion: Participants had a relatively comprehensive implicit understanding of PCC and possessed capacity to integrate it within the context of patient care. They believed it was an innate skill requiring no formal training. Adopting a ‘reactive learning’ framework could utilize informal and implicit learning by preparing for emergent PCC training opportunities.

Conclusion: This study highlights a need to make what residents seem to know implicitly, a much more explicit part of their learning experiences. This could be accomplished by formally introducing the PCC model, and by sensitizing trainees and instructors to systematically engage in informal learning opportunities throughout the educational training program.

Take-home Message: FM trainees have an explicit and implicit understanding of PCC obtained primarily through informal means. Choosing a model to formally introduce PCC into residency training programs, one that instructors fully embrace and understand, is key if effective teaching, learning and practicing of PCC is to occur.
**#10JJ17 (2423)**

Fit for the Future: Evaluating an innovative integrated community care training post

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**Background:** ITPs (Integrated or Innovative Training Programmes) have been recognised as a distinct type of training post for general practice. Previous research has found them to provide an enhanced training experience. This poster describes and evaluates a ‘new generation’ ITP post which was piloted in the New Forest.

**Summary of Work:** The post comprised a mix of 2 days a week in GP and 3 days in community posts. The posts were evaluated using a focus group of trainees and trainers and survey, and the evaluation was conducted by two current GP trainees.

**Summary of Results:** The evaluation aimed to determine if the integrated structure provided a positive educational experience and if it prepared trainees for a career in general practice. Participating trainees and trainers reported that the post was helpful in developing skills and competencies related to community care, but identified some challenges.

**Discussion:** Three key themes were identified: 1. Perceptions of improved quality of training; 2. Feeling better prepared for a career in GP. 3. Better awareness of primary/secondary care system and interface.

**Conclusion:** ICCs mark a welcome return of ITPs to GP training and can offer a positive experience to trainees in developing their care knowledge and skills. The trainees undertaking this evaluation gained insight into evaluation research.

**Take-home Message:** There continues to be a role for integrated training posts in training, especially with the increasing care complexity. ITPs can add a different dimension to experience in training.

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**#10JJ18 (1114)**

Irish GP Trainers' experiences of the GP trainer-trainee one-to-one tutorial; a qualitative semi-structured interview study

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Anthea Lints
Gill Aitken

**Background:** The objective of this study was to explore via qualitative research GP Trainer experiences of the formal one-to-one tutorial within Irish Postgraduate GP Training. Irish trainers are contracted to provide weekly protected one-to-one Trainee tutorials. Little information exists regarding GP trainers’ perspectives of the one-to-one tutorial in an Irish context.

**Summary of Work:** Ethical approval was granted from the ICGP Research Ethics Committee. Recruitment occurred from one Irish training program, enabling results to reflect the experiences of a specific trainer group. Two pilot interviews and eight face-to-face semi-structured interviews were conducted from November 2015 to April 2016, allowing in-depth qualitative thematic data analysis.

**Summary of Results:** Trainers viewed their clinical experience as their main teaching asset. Protected time and preparation were necessary for positive one-to-one learning experiences. Patients were considered essential for tutorial topic inspiration and reflection on workplace experiences. Trainers were divided on their opinions of receiving trainee feedback; some feared negative appraisals from trainees.

**Discussion:** This study resonates with existing literature. One-to-one tutorials address the intangible elements of being a GP, facilitating trainee immersion in the ethos of general practice and the acquisition of skills deemed necessary to survive as a GP. GP Trainers’ were concerned about the integrity of trainee feedback on their teaching.

**Conclusion:** Protected time is essential to provide successful one-to-one teaching. Trainers need to feel supported in receiving feedback from Trainees on their teaching. This study may help inform those responsible for Postgraduate GP training in Ireland of Trainer experiences with one-to-one tutorials. This may help support Trainers in delivering one-to-one teaching.

**Take-home Message:** One-to-one tutorials in GP Training extend beyond their academic functions. Trainers view them as essential tools in supporting GP Trainees’ transition from the hospital to the community environment, and aiding holistic preparation for independent GP practice.
Dialogues between the tutoring physicians and the physicians undergoing specialist training in occupational health (OH) in Finland

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Background: The training program of specializing physicians in OH includes two years’ training in contracted OH-units. The tutoring OH-specialist physicians need to be approved by the university. Tutors provide 2 hours’ personal guidance per week to the trainees. This study evaluated the arrangements and contents of these dialogues.

Summary of Work: We asked all our trainers (n = 46) to complete a survey with their trainees; four trainers and 9 trainees participated. All of the interviews and dialogues were databased, transcribed and analyzed by inductive content analysis to reveal the present practices revealed by the dialogues.

Summary of Results: Three trainers organized the dialogues face to face with 1-3 trainees, one trainer arranged them remotely via Lync. Dialogues were organized at 1-2 week intervals, each lasting 1-2 hours. The themes of the dialogues were agreed beforehand with the participants also exploring them and preparing material in advance.

Discussion: The tutoring dialogues were carried out as instructed by the university. The trainees were very satisfied with the dialogues. All the tutors had completed some pedagogical education in our university. Due to the small number of dialogues and participants, there is a need for further research.

Conclusion: There is little published research on tutoring dialogues in Finland. We found that tutoring dialogues seemed to be arranged as instructed. The themes were usually agreed in advance and required preparation by the trainees. Dialogues were organized individually or in small groups. The trainees appreciated the dialogues in groups.

Take-home Message: Tutoring dialogues are one of the key methods of learning for specializing physicians in OH. The dialogues are structured and based on pre-determined learning objectives. The execution of the dialogues varied. The trainees appreciated the possibilities offered by the dialogues; the trainers were satisfied with their efficiency.
Providing Chief Residents with Simulation Strategies to Teach Patient Safety

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Background: Challenges to improving patient safety include the lack of curriculum and faculty. Interactive curricula are associated with better learning outcomes. The purpose of this initiative was to develop a “train the trainer” simulation-based curriculum for Chief Residents empowering them to teach patient safety at their own facilities.

Summary of Work: Curricular content included simulation and patient safety background; simulation types; simulation-based team training; and the debriefing and evaluation of resident learners. Strategies encompassed slides, role playing, video, and high-fidelity simulation.

Outcomes included self-confidence and observed performance in using simulation to teach patient safety knowledge and skills to other residents.

Summary of Results: Fifty-five residents rated their confidence in “teaching teamwork techniques using simulation” (2.4 vs. 4.0, pre vs. post, p < 0.001) as improved following the course. Performance in crisis simulation scenarios demonstrated improvements in “assertiveness” (6.1 vs. 7.9) and “situational awareness” (4.6 vs. 7.7), respectively (pre vs. post, p < 0.001).

Discussion: Previous studies have demonstrated that interactive curricula, including simulation, improve learning outcomes. There is a need for faculty capable of teaching patient safety using modern educational strategies. This study demonstrates the success of a brief course, easily reproducible, to enhance the simulation skills of patient safety educators.

Conclusion: The curriculum in this study was associated with an increase in faculty confidence and performance in using simulation strategies to teach patient safety concepts. The curriculum provides a useful mechanism to expand core faculty and improves the methods utilized to deliver patient safety education.

Take-home Message:
• Healthcare needs more faculty to teach patient safety.
• Interactive curricula are associated with better learning outcomes than didactic courses.
• A brief course is described that augments faculty to teach patient safety using simulation strategies.
• Educators utilized their skills to implement simulation-based curricula at their own institutions.
Creating high-performance multi-professional teams in a critical care setting: Non-technical skills development in simulation-based training

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Background: High-performance multi-professional teams (HPMTs) have been associated with improved patient safety and care quality, particularly in intensive care units (ICUs). In addition to technical competences, non-technical skills have proven equally essential to higher performance. However, it is unclear whether multi-professional simulation training focused on behavioural skills could influence this field.

Summary of Work: We designed manikin simulation sessions through several scenarios with common clinical syndrome evolution in the ICU, focusing on behavioural skills assessment followed by structured debriefing over one year. Sixty trainees from a multi-professional critical care training programme were enrolled. Non-technical skills (situational awareness, decision making, teamwork and leadership) were evaluated.

Summary of Results: Twelve critical care residents (doctors 3-5 years post-graduation) and 48 multi-professional critical care residents (nurses, physiotherapists, nutritionists, pharmacists) completed a self-assessment questionnaire (Likert scale) after the training programme. All trainees “strongly agreed” or “agreed” the simulation was relevant to their training in all non-technical domains, with no statistical difference between groups (p>0.05).

Discussion: According to questionnaire answers, simulation training made critical care residents feel more confident in leadership and decision-making domains. Likewise, all trainees (including doctors) agreed on improvements in communication skills developed during simulations related to teamwork and situational awareness. Additionally, all trainees reported increased self-confidence in critical scenarios after training.

Conclusion: Improvement in non-technical skills is crucial to HPMT development. We present our positive experience with behavioural domain training to residents and multi-professional trainees using realistic simulation with manikins focused on non-technical competence training. This feasible approach had good acceptability and a robust educational impact on the evaluated domains.

Take-home Message: Simulation training made critical care residents feel more confident in leadership and decision-making domains. Participants were found knowledgeable but needed improvement in critical thinking skills and application. The training design facilitated critical thinking skills in the management of falls risk in patients through a multidisciplinary facilitators. Skills involving managing behaviorally challenged patients and situational awareness are best learned through simulations.

Practical scenarios in simulation sessions helped participants relate the training to daily clinical practice. Interactive training design facilitated the participants to analyse clinical practice methodically and actively involve in decision making on patient care. The participants could apply their knowledge into practice with confidence.

Take-home Message: Quality and patient safety have been the focus of modern healthcare. Non-technical skills development has proven essential to this goal, and simulation-based training programmes focusing on behavioural competencies could be a potential tool to help create high-performance multi-professional teams.
Could we use motion capture software and multifractal analysis for the assessment of students’ performance in simulated scenarios? Giving numbers to complex interaction assessment.

**Background:** Assessment of complex interactions between multiple participants is very prone to judgement error. Checklists and global assessment scales are applied with mixed results. Trained and standardized assessors are the most reliable. Development of technology that will give values to what is being observed by human assessors is challenging.

**Summary of Work:** Videos from simulated sessions have been analyzed with Tracker Video Analysis and Modelling Tool for Physics. For people involved time series of localization on two dimensional grid were created and then calculated with use of multifractal time series analysis tool for Mathlab. Those were matched with major event matrix.

**Summary of Results:** For all scenarios we identified significant changes (change>0.2) in Hurst exponent (H(t)) for major events.

**Discussion:** The influence of events on parameters of analysis including Hurst exponent, probability distribution were studied. Hurst exponent had change pattern in relation to uncertainty understood as information deficit. H(t) was low at the beginning of each scenario, then rose to level around 1.5 and dropped down each time uncertainty increased.

**Conclusion:** Significant change in multifractal analysis results points us towards moments which were more difficult for students making video based feedback more effective. With further development this could be utilized also to other applications like real life identification of difficulties in team performance in automated manner.

**Take-home Message:** Advanced statistical models applied to motion capture software that utilized standard video equipment of regular simulation room enabled identification of several different events within each session. That methodology at the moment could be used as red flag marker.

**AMI 2017 Abstract Book**

Wednesday 30th August

#10KK05 (2588)

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**Chi-Chen Yang**

**Background:** The purpose of this study is to apply situational simulation to new nursing staffs during nursing education, to increase the accuracy of medication dispensing and to ensure patient safety.

**Summary of Work:** A cross-sectional research design. Participants completed the pre-and post-test through questionnaire which included a background form, a cognitive test and a satisfaction questionnaire. The education in this study includes both the lecture and hands-on skill in medication dispensing. Descriptive statistics were used to summarize the satisfaction of this educational program.

**Summary of Results:** In this particular study, participants were 100% females (N=15). The Cognitive test scores increased after this program (scores 96 to 99). Participants had higher satisfaction after this program (M=4.8, SD=0.1). Among the items within the questionnaire “This course helped me with the medication technical knowledge and skills” showed Mean=4.9 (SD=0.07).

**Discussion:** This study showed that nurses increased their confidence to perform their clinical practice. This finding was consistent with the previous study (Chung, 2014) which “Nursing is a professional competence-oriented practice, must be integrated through the process of cognition and practice to be skillful”. Simulation was the useful learning experience.

**Conclusion:** The results of this study showed that new nurses who completed the situational simulation education program improved their medication knowledge and skills. The retention rate of new nursing staff was increased in this study. Comparing with the traditional program, it showed great influence on the retention of ICU staff members.

**Take-home Message:** The results showed that the real-existing scenarios orientation program increased nurses’ medication technical knowledge and skills. This course was not only useful for medication dispensing, but also suitable for other practice programs. Thus, simulation education should be further developed and provided to all new employees in the hospital.
In search of the optimal bronchoscopy training platform: Evaluating the use of a novel, low cost, virtual tool for pre-training novice learners

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Background: Bronchoscopy training is costly and novice trainees have difficulties manipulating a bronchoscope because: complex motor skills and counterintuitive nature. We developed a low cost, durable, virtual tool for pre-training of novice learners. We evaluated whether the new model improves the performance of a novice learner.

Summary of Work: 24 novice learners were randomized to usual instructions versus pre-training with the bronchoscopy tool combining Power Point Presentation with instruction on movements, depending where the lumen is on screen while trainee is holding a scope. Both groups were tested in virtual reality for speed (time) and accuracy (collisions, red outs).

Summary of Results: Data were analyzed using independent samples t test and Mann Whitney. The pre-training group was faster (106 s vs 127 s) had more effective movement (62.8 %vs 59.5%) and less time in red out (0.06 vs 0.1), however, none of the differences was statistically significant.

Discussion: Based on motor learning theories of Fits and Posner, Challenge Point Theory and theory of action representations we speculated that novice learners may benefit from additional “pre-training” on simplified models that enable the formation of initial action representations for bronchoscopy tool-handling skills.

Conclusion: Skills for complex procedures like bronchoscopy may be achieved by observing and interacting with low-fidelity models, so long as they contain the fundamental constructs of the skills. Some trainees might have no problem dealing or learning through complexity.

Take-home Message: Simplified but durable model may allow novice trainees to develop their instrument holding and navigation skills and shorten their learning curves.

Evaluation of remote retention of cricoid pressure force using a simulator

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Background: Cricoid pressure is a technique used worldwide to reduce the risk of aspiration during tracheal intubation. We evaluated the remote retention of cricoid pressure by anaesthetists using a simulation model constructed by combining the pharyngeal model and a gravimeter.

Summary of Work: Cricoid pressure with a force of ‘10N’ or ‘30N’ was performed before training. Then, participants were trained to perform cricoid pressure with a force of ‘10N’ and ‘30N’ within 10% difference. At one, two, and three months after training, the participants were asked to perform cricoid pressure.

Summary of Results: In ‘10N’ trials, the applied force of cricoid pressure was significantly higher one, two, and three months after training, compared to immediately after training (P=0.001, P<0.001, and P<0.001). In ‘30N’ trials, the applied force of cricoid pressure was significantly higher compared to pre-training and immediately after training (P=0.003, P<0.001).

Discussion: Anaesthetists tended to perform cricoid pressure with a force higher than 10N in ‘10N’ trials even after training. The applied cricoid pressure force in ‘30N’ trials also tended to be higher compared to pre-training and immediately after training. Caution should be exercised to avoid performing cricoid pressure with excessive force.

Conclusion: Our data suggest that anaesthetists are likely to perform cricoid pressure with excessive force even after simulation-based training. Regular simulation-based training is needed.

Take-home Message: Regular cricoid pressure training may be important from the viewpoint of remote retention.
#10KK09 (574)

Hold In Hands! The Impact on Learning of the Papanicolaou Technique (Pap Test) in Simulation Activities Using Cold Porcelain Models of Uterine Cervix

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Background: Students report the benefit in training with the anatomical structure in hands. Research relating to medical education, skills acquisition and skills of undergraduates is extensive. The need for improving dynamics of health education leads to the constant search for techniques that aim at excellence in clinical practice.

Summary of Work: Second-year students of medical school of Faculdades Pequeno Príncipe in the module "Medical Skills and Communication" could train the Papanicolaou smear collection in a model made with cold porcelain, which they could hold in their hands, allowing the tireless technique training in a safe and supervised environment.

Summary of Results: Performing the cytopathological examination after training in cold porcelain models holding it in hands became easier and allowed the correct learning of the technique, since this activity provided an optimal visualization of the cervix model. In addition, students reported greater security in performing the exam collection.

Discussion: Models and mannequins allow visualizing the technique described in the literature. Using uterine cervix models in hands allows greater precision in the examination execution, facilitating later training with the cervix anatomically positioned within the mannequin. It facilitates mistakes correction since it allows repeating the technique as many times as necessary.

Conclusion: Cold porcelain cervix models allow manipulation and direct visualization ensuring the constant and tireless training of the Papanicolaou smear until its plain execution. Thus, in addition to increasing the student's dexterity, it makes the execution of the technique faster, reducing patient exposure and unnecessary expenses with material.

Take-home Message: It is possible to optimize and facilitate skill training in students using manipulable and direct visualization models. The theory linked to practice allows approximating situations experienced in the medical dynamics. The student can ethically and tirelessly train the technique ensuring greater skill and confidence in future executions of the exam.

#10KK10 (191)

A comparison between the commercial perineal repair trainer and the sponge model, a low-cost alternative for experiential learning of obstetric perineal laceration repair at the undergraduate level

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Background: We replaced the commercial perineal repair trainers with the low-cost models prepared from car wash sponges in some of the obstetric laceration repair skill classes for the 5th year medical students. All students reviewed the procedure with a clinical instructor before learning by deliberate practice on the trainers.

Summary of Work: 128 students were included (97 sponge model, 31 commercial model). Students of both groups rated their perceived confidence in performing the procedure before and after the classes, and their satisfaction with the models, on a 5 point rating scale. The confidence and satisfaction rating were compared using t-tests.

Summary of Results: Students of both groups reported higher confidence after the class (2.03 to 3.45 sponge model, 2.42 to 3.71 commercial model) and the increase in perceived confidence was comparable between both groups (1.42±0.99 vs. 1.28±0.91, p 0.62). The overall satisfaction was high and not statistically different between the two models.

Discussion: Overall, the learners' responses were strongly positive for both the sponge model and the commercial model. The sponge model may lack the realistic texture and elasticity compared to the commercial silicone model, but it can adequately represent the anatomical landmarks and improve students' confidence in performing perineal laceration repair.

Conclusion: The sponge model is comparable to the commercial trainer in terms of increasing the learners' confidence in the obstetric laceration repair at lower cost. For teaching a larger number of students such as medical undergraduate class, this sponge model may be a valuable and cost-effective option.

Take-home Message: For the medical schools where commercially part task trainers are not readily available. An alternative model prepared from car wash sponge may be considered for teaching deliberate practice of obstetrical perineal laceration repair.
The virtual reality EyeSi direct ophthalmoscope simulator: Establishing a proficiency test with solid evidence of validity

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Background: Young doctors avoid the fundoscopic examination in the clinic due to lack of confidence and proficiency in the skill. Therefore, we aimed to develop a simulation-based test of proficiency in direct ophthalmoscopy with solid evidence of validity.

Summary of Work: Three groups with different proficiency levels in ophthalmoscopy (13 medical students, 11 interns, and 8 ophthalmologists) completed one trial on four simulator modules. We used a virtual reality direct ophthalmoscopy simulator (EyeSi direct from VRmagic) for the assessment. Data was collected from all five sources within Messick’s framework.

Summary of Results: The content aligned with the construct of interest. Inter-module reliability was sufficient for certification purposes (Cronbach’s alpha = 0.84). The ophthalmologists significantly outperformed the medical students (p < 0.001). We determined a pass/fail score at 2,615 points and the consequence analysis showed excellent capability to discriminate between experience in ophthalmoscopy.

Discussion: We expect doctors to master the fundoscopic examination, but fail to define a required level of skills. We must demand a certain level of proficiency in order to avoid clinical consequences. Our pass/fail level sets a new standard that can aid in the evaluation and certification of fundoscopic skills.

Conclusion: We have collected data from all five sources of validity and established a proficiency test in direct ophthalmoscopy with solid evidence of validity. The simulator allows medical students and doctors to reach proficiency in direct ophthalmoscopy before diagnosing patients in the clinic.

Take-home Message: We have developed an objective test on the EyeSi direct that can be used as a reliable tool for the assessment of fundoscopic skills. This can be applied as an aid in certification of young doctors.

Recent Changes in Simulation-based Medical Education in Japan; Comparative analysis of National Surveys 2012 and 2016

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Background: Recent changes in patient safety policy have led to increasing significance of simulation-based medical education. However, we have confirmed considerable differences among 80 medical schools in simulation-based learning environments during clinical clerkship in Japan, which may affect different learning opportunities for trainings with simulators or simulated patients (Ishikawa, AMEE 2013).

Summary of Work: We previously performed nationwide survey on the prevalence and application of clinical skills laboratories for clerkships in 2012. Since we conducted the latest survey in 2016, we report the results of comparative analyses. Registered questionnaires were sent to all medical schools (n=80). The response rate was 95%.

Summary of Results: Seventy-four schools (97%) have installed skills laboratory. Floor space varied from 214 m2 in 2012 to 339 m2 in 2016. The number of uses by medical students increased from 1,402 to 1,978, however, there were huge disparity (150 to 10,000). Only 29 schools (38%) implemented training program with simulated patients.

Discussion: This survey revealed that almost all medical schools in Japan has installed clinical skills laboratories and that the floor space has been expanded. We also observed significant increase of the number of uses by medical students. Further effort spreading learning with simulated patients seems necessary.

Conclusion: Recent changes in simulation-based medical education were confirmed by national surveys 2012 and 2016 in Japan.

Take-home Message: Although there were favorable changes such as more spacious learning space of the facility and the increased number of the annual uses by medical students, there were significant disparities in the implementation of simulation-based learning among schools.
#10KK13 (1304)
Competence and patient safety shake hands in laparoscopic skills training: A case from the Central Hospital of Central Finland

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**Background:** In Finland residents usually begin the training of basic surgical skills in central hospitals. Laparoscopic skills are important, but difficult to master. In the Central Hospital of Central Finland (CHCF) this training is done in modules forming a program "License to operate".

**Summary of Work:** In the CHCF the laparoscopic training program for surgical residents consists of five sequential modules: theory, a home-practice kit, two different simulators and training on patients. All residents have to pass a structured evaluation after each module. Independent laparoscopy is not permitted before this program is completed.

**Summary of Results:** In the CHCF the residents’ laparoscopic skills level is now continuously compared to a defined baseline. This promotes patient safety and teamwork within operations facilitating further training of the residents.

**Discussion:** Discussion: In the CHCF the modular laparoscopic training program was designed several years ago as a part of academic work. Since then the program has been continuously developed according to feedback and experience. Appreciating the opinions of residents and trainers is essential: this keeps the motivation and commitment high.

**Conclusion:** In Finland all surgical residents have a common training period lasting two years, which is challenging as the training must proceed fast without risking patient safety. Skills needed in laparoscopy require specific attention. A tailored and modular training program seems to work in a normal hospital context.

**Take-home Message:** Basic surgical skills, like laparoscopic skills, are mainly trained in central hospitals and need special attention. Time to train them is short, which challenges both patient safety and methods used. Residents should not be permitted to work independently before a baseline of competence is secured.

#10KK14 (2852)
Hybrid simulation: a novel approach to teaching gynecological exam

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**Background:** Gynaecological examination is uncomfortable and often painful procedure. Therefore students usually learn it in simulations centres or labs using low-fidelity trainers. Such setting allows for practicing technical skills but lacks the opportunity to master interpersonal and communication abilities and to respond to changing patient behaviour.

**Summary of Work:** In order to bridge this gap we implemented innovative teaching model, the hybrid trainer, which consisted of the low-fidelity pelvic trainer combined with the simulated patient (SP). The objective of the study was to assess its feasibility in teaching gynaecological examination. The study design was a mix method study.

**Summary of Results:** Few studies reported on utilizing hybrid models in training medical students. Such reports described teaching auscultation, catheterization and wound suturing. Similarly to our results, authors reported on the feasibility and benefits of such models. We were not able however to find any paper describing such approach in teaching gynaecological exam.

**Discussion:** 50 students and residents participated in eight 2.5 hours–simulation sessions and responded to questionnaires and semi-structured interviews. Students perceived hybrid trainer as valuable learning experience offering opportunity to practice technical and communication skills simultaneously. Faculty and SPs also greatly valued that new teaching approach.

**Conclusion:** This study presents a new model for teaching pelvic gynecological exam and indicates its feasibility both in undergraduate and postgraduate education. However our preliminary results need to be further evaluated in a larger population before implementation into the curriculum.

**Take-home Message:** Hybrid simulation can be a feasible alternative for teaching gynecological exam and bridges the gap between low-fidelity trainers and real patients.
#10KK15 (3203)

**Should sim man die? Final year medical students’ beliefs and attitudes regarding death and simulation**

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Kevin Jones

**Background:** There is a lack of research regarding medical students’ beliefs and attitudes towards ‘sim man’ dying in simulation. This study aims to assess whether final year medical students feel it is acceptable for sim man to die and to gain insight into their attitudes and beliefs regarding simulation and death.

**Summary of Work:** A questionnaire was distributed to final year medical students on placement in a hospital in South England. This included dichotomous questions with white space for students’ comments. They were also asked whether they agreed/disagreed with statements regarding death and simulation. Thematic analysis and coding were used to analyse the data.

**Summary of Results:** 34 out of 35 students completed the questionnaire. 97% of students felt they should have end of life simulation scenarios. 88% of final year students felt that sim man should be allowed to die in acute scenarios. Themes included preparing to deal with death in a safe environment.

**Discussion:** The majority of final year medical students feel that sim man should be allowed to die in both end of life and acute simulations. Although they perceive many benefits they also have important concerns which must be considered when embarking on such simulations.

**Conclusion:** Educators should avoid taking a paternalistic approach by assuming sim man dying is too distressing for medical students and should consider utilizing this as an undergraduate learning tool for dealing with death. The way medical students cope with death can be affected by the support of supervisors and debriefing opportunities.

**Take-home Message:** Simulation provides a safe, supportive environment with allocated time to debrief and discuss difficult issues surrounding dealing with death as a medical student. Educators should utilize simulation as a learning tool for final year medical students.

#10KK16 (2200)

**Learning and stress level in announced vs. unannounced In Situ Simulation**

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**Background:** In Situ Simulation (ISS) is a method to develop teamwork in trauma- and medical emergencies. ISS can be either announced or unannounced; however, differences between the two have yet to be explored. This study describes the difference between announced and unannounced ISS regarding self-perceptive learning and stress levels.

**Summary of Work:** The design is a quantitative study and action research. A total of 16 ISS’s, 8 unannounced and 8 announced, were planed at the Emergency Department at Bispebjerg Hospital, Denmark. The participants are authentic teams covering trauma- and medical emergencies. Assessments include questionnaire and State and Trait Anxiety Inventory Scale.

**Summary of Results:** The study is sceduled from November 2016 until February 2017 and results will be presented at the AMEE conference 2017.

**Discussion:** Our hypothesis is that unannounced ISS is more stressful than announced ISS, but unannounced ISS is expected to have higher fidelity. It is important to clarify these factors for the planning of future medical simulation, and furthermore, to clarify if this outcome relates to profession of the health care professional.

**Conclusion:** Awaiting data.

**Take-home Message:** Our study clarifies elements of ISS which can influence the future planning of medical education. The perspective is to improve patient care.
Combining Innovation, Simulation and Medical Education: Development and Using a Low Cost Device To Teach Peripheral Venous Cannulation Skill

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Background: Simulation is a very useful educational tool that provides a safe environment for training professional and avoids the ethical dilemmas of direct training in patients. Nevertheless, simulators may have high cost and this can difficult its use. We have developed a low cost simulation model fully adjustable to body.

Summary of Work: The study had two phases: Building of the experimental simulator, and a Controlled Trial comparing the performance of the body adjustable device in relation to an already available commercial device. Medical students participated in a pre-test, lecture, randomization of the groups, puncture, post-test and a satisfaction questionnaire.

Summary of Results: The study groups were homogeneous for age, sex, pre and post-test results, attitudinal assessment, puncture performance and perception of the simulation realism.

Discussion: The purpose of providing a low cost access to simulation justifies the search for alternatives to already available commercial simulators. Training in dummies does not teach the subjective aspects of a doctor-patient relation. Simulation that provides such an interaction can generate a more realistic experience, integrating knowledge, attitudes and skills.

Conclusion: The experimental simulator proved to be a low cost alternative to the teaching of venipuncture skills in the upper limb. The cognitive, procedural and attitudinal performance of the students who used it was similar to those who trained with the commercial device.

Take-home Message: The critical and reflexive analysis of the difficulties along with the use of creativity are essential to the innovation and improvement of the teaching of venipuncture skills for the health area education.

Retention of Pediatric advanced life support (PALS) skill in final year medical students

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Background: PALS is the important part of the pediatric emergency skill. Its retention of knowledge and psychomotor skill has been shown to decline after training. The aim of this study is to evaluate the retention of PALS skill in final year medical students immediate after courses and 1 year later.

Summary of Work: Thirty-eight final year medical students were received PALS workshop at beginning of 2016. OSCE checklist (pulseless ventricular tachycardia) was used to assess the students as team leader 1 week and 1 year after attended the workshop. Pair t-test was used for OSCE scores. The survey on student’s confidence was done.

Summary of Results: From one week to one year after workshop PALS skill declined significantly for total OSCE score 77.9 to 69.4 (P 0.015), immediate chest compression after defibrillation 10 to 8.9 (P 0.044) and select joules for defibrillation 8.4 to 5.2 (P 0.003). The survey revealed a decrease of student’s confidence.

Discussion: From the survey, during one year students practiced PALS in real situation average two times per student but never as a team leader. They cannot recognize all the steps and details of joules for defibrillation for PALS. That are the reasons for the less confidence in medical students.

Conclusion: Retention of psychomotor skills in PALS was declined after training in the academic year. In order to gain confidence and prepare the final year medical students to be the team leader for PALS after graduation, PALS simulation workshop should be scheduled repeated before internship.

Take-home Message: Regular re-training simulation workshops are needed for medical students to maintain resuscitation skills. Clearly, define role such as team leader is also needed to be trained in medical students.
In a bed or on the floor? – CPR training in hospitals

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Background: Hospital CPR training is often conducted with a manikin on the floor, whereas patients are often resuscitated in hospital beds. Where, up to 50% of total compression depth is absorbed by the mattress, resulting in shallow chest compressions. This is not accounted for when CPR is trained on the floor.

Summary of Work: A randomized controlled superiority study was conducted. 116 Health care professionals were enrolled and randomized to receive either CPR training with the manikin placed in a hospital bed or on the floor during a 2.5h, consisting of 1.5h lecture and 1h of practical training. Their CPR skills were subsequently tested.

Summary of Results: Data analysis included 108 participants. There was no difference in chest compression depth between the two groups for the entire three-minute test. Chest compression depth decreased significantly from the first to the third minute in both groups, P<0.0001. No difference was found in the decline in depth over time, P=0.42.

Discussion: In contrast to our hypothesis, no difference was found in chest compression depth between the two groups. Overall, chest compressions were shallow compared to international guidelines. A post hoc analysis showed that participants who optimized their working position during CPR delivered deeper chest compressions compared to participants who did not.

Conclusion: Overall health care professionals’ CPR quality must be improved, as chest compressions were too shallow, whether the manikin was placed in a hospital bed or on the floor. Post hoc analyses suggest that those who lowered or jumped into the bed performed deeper chest compressions irrespectively of training method.

Take-home Message: We stand at a crossroad regarding CPR training of health care professionals. We can choose to focus on simple and frequent training with the manikin on the floor targeting deeper compression depth, or increase the realism of the training environment, emphasizing the importance of optimized working position when performing CPR.