The paper highlighted important aspects of instructional modes and environment and their relationship with the achievement of the students.

**Conclusion:** Improvement in various components of teaching and courses will not only enhance student learning but might also help them achieve better grades in exams.

**Take-home message:** Effective instructional methods in teaching, mentorship, course design and learning environment play a substantial role for students in health sciences to perform efficiently in theoretical, practical and clinical courses.

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**7HH2 (1697)**

**Competency testing of knowledge in management of emergency nephrology conditions in externs and interns indicates the need for change in the teaching process**

**Authors**

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**Background:** Externs have learned the necessary knowledge of medical practice in there preceding years while interns have gained additional experience in patient care. This study aimed to test the basic knowledge if externs and interns in management of emergency nephrology conditions before starting practice.

**Method:** A test composed of 100 point was delivered to 32 externs and 9 interns. Pretest and posttest scores were compared. The minimum passing score was set at 50 points.

**Results:** For the pretest scores, 71.9% of externs and 77.8% of interns was lower than the minimal passing level with average scores of 31.6 ± 4.2 for externs and 19.7±6.8 for interns. For the posttest scores, 71.9% of externs and 100.0% of interns passed the minimal passing level with average scores of 68.6±4.0 for externs and 66.9 ± 3.1 for interns. Both pre- and posttest scores were not different between externs and interns but posttest scores significantly positively correlated with pretest scores (p=0.015).

The low pretest scores and more than 70% of externs and interns failing the test could indicate a lack of conceptual knowledge. Even in the posttest, 28.1% of externs still did not pass the test.

**Conclusion:** Externs and interns may lack knowledge and experience in patient care which could lead to malpractice. Evaluation of their knowledge before practice may help guide attending physicians in better providing guidance to externs and interns.
Infrastructure, resources and the curriculum: An opinion at Facultad de Medicina, National Autonomous University of Mexico (UNAM)

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Background: Developments in scientific knowledge and globalization, increasingly influence medical education. In this context, Facultad de Medicina at UNAM is evaluating its competency-based curriculum and searching for balance between what we teach and the resources used to achieve students’ learning. For that purpose, one of the focuses is to identify academic leaders’ perception of the relation between the material resources used by the Facultad de Medicina, and its 2010 curricular model. This three-stage analytical research process took place from May 2017 to January 2018.

Method: First stage: National and international literature was reviewed regarding academic infrastructure and material resources in the achievement of competencies during higher education and medical education. Second stage: Compilation of data on Facultad de Medicina UNAM’s resources and infrastructure. Based on this data, a checklist was designed to identify academic leaders’ perception of the relation between infrastructure, material resources and the 2010 curricular model. Third stage: A group of academic leaders, randomly selected from department heads and education coordinators of the biomedical, clinical and sociomedical curricular areas were invited to answer several questions regarding the above-mentioned data through a Google Forms link. These answers were later contrasted and analyzed in a Microsoft Excel 2010 spreadsheet.

Results: The results showed partial congruency between the curriculum and certain material resources and infrastructure, such as the following: learning, academic staff, technological, informatics and communication resources. Material resources that showed greater congruence are bibliographic and hemerographic, administrative, cultural, recreational and sport.

Conclusion: This research will set the foundation for any future 2010 curriculum modifications, and to make sure that learning, academic staff, and technological, informatics and communication resources are appropriate for a specific curricular model.

The emergency paramedics’ viewpoints on the compliance of their curriculum with job requirements

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Background: Due to some rapid changes in medical knowledge, it is recommended that the curriculum of the health disciplines should be revised periodically. The medical care providers’ viewpoints about the compliance of their curriculum with job needs can provide first hand data for curriculum developers. This study is carried out to get the emergency paramedics’ viewpoints about their attained qualifications.

Method: This cross-sectional study is carried out on 89 Emergency Medical Services (EMS) paramedics in Mashhad University of Medical Sciences, Iran. Data were gathered by a questionnaire and then analyzed using SPSS software. The questionnaire’s validity and reliability was approved before administering it.

Results: Of the participants, 52.3% had an associate degree and the others had BSc. (47.7%). Most of the participants agreed that the “Theoretical Courses” had a positive impact on their competencies, strongly. Also, the “Practical Courses” impact on job competencies were rated as 3.42±0.75 (of 5) by the associate degree and 3.56±0.83 by the BSc. degree holders. Most of the paramedics (65%) agreed that the curriculum need a revision, especially on the practical courses and some courses contents and devoted time should be extended to prepare the graduates for their actual job needs, properly. Many of the participants expressed that they had felt high degrees of stress in the emergency situations due to lack of knowledge and practical competencies, for example on disaster management and huge accidents.

Conclusion: Iran is located in an area with yearly several disasters such as earthquake and flood. It seems that some courses of emergency paramedic’s curriculum need to be paid more attention and their contents should be tailored, for example on how to act in huge accidents and manage the emergency situations.

Take-home message: Needs assessment is an important part of any instructional design. Although there are many methods to identify the learners’ needs, expressed needs by the graduates of a discipline should be considered as an important source to develop or revise any educational curriculum.
Exit interviews are a useful complement to traditional course evaluations

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Background: Written course evaluations are ubiquitous and give important information. However, what aspect of the course that resulted in a certain numeric result by the students can sometimes be difficult to understand. Short written comments are often not very informative. Exit interviews are prevalent in industry but rare in academia.

Method: The course in Clinical Medicine at our institution is 32 weeks and spans 2 semesters. At the midpoint of the course there are midterm interviews of the students performed by the course leader and another experienced educator. At the end of the course there is a comprehensive written course evaluation. In a project, starting in 2011 and continuing, we also introduced exit interviews at the end of the course after the final exam. An experienced educator with no connection to the course or prior knowledge of the students performed the interviews. Approximately 20 percent of students were randomly selected for these voluntary interviews.

Results: No student denied participation. The interviews were 20-30 min long. A structured analysis of the notes by the interviewer was performed. Clinical placements dominated the student’s impressions from the course as they did in the written evaluations. In the midterm interviews the students were more positive than in the anonymous written evaluations at the end of the course. In the exit interviews students were more nuanced than in either of the previous evaluations and made obvious efforts to discuss both positive and negative experiences of the course.

The seemingly exact results from numeric course evaluations are hard to use for course development and midterm interviews by teachers complicated by tactical considerations by students. In the exit interviews the analysis of notes showed that a few areas dominated the student’s impressions and experiences and could be discussed in a more nuanced form than in the two other forms of evaluations.

Conclusion: Exit interviews add cost and complexity but the outcome is worth the investment giving additional information for course improvement and, in our experience, was appreciated by the interviewed students.

Take-home message: Exit interviews are recommended for long clinical courses.

Applying the After Action Review (AAR) method to undergraduate medical curriculum development

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Background: In 2011, we completed a curriculum redesign for our student selected components (SSC), and subsequently implemented significant changes to student-choice, tutoring, and assessment.

After Action Review (AAR) is a reflective and structured debriefing method that is used in the military; and it has been adapted for use in emergency medicine and medical simulation. By comparing expectations of a scenario with subsequent experiences after the event, it is possible to identify operational problems and communication gaps. We used a modified AAR to gather longitudinal feedback from the first cohort to experience our revised, 4-year, longitudinal SSC curriculum.

Method: 9 students engaged in a three hour session that was facilitated by 2 faculty members. Short written comments were collected from each student and coded to describe (1) initial expectations and (2) actual experiences of the domains of the curriculum, e.g. student-selection; career planning; tutor support; formative and summative assessment; documentation; and evidence-based-medicine (EBM). Comments were paired for each individual but collected anonymously.

Results: All students provided detailed comments about their expectations and experiences for most domains. The comments about expectations were compared with actual experiences and categorised as negative (if expectations were not met); positive (if experiences were met or better than expected); or mixed (if expectations had been partially met). Paired responses indicated that reflections were domain-specific, i.e. individual students reported some positive experiences and some negative experiences across the domains. The learning gain for EBM was a particular strength, whereas documentation was noted as an area for attention. Data from the study were disseminated to academic leads to use in further curriculum development.

The structured AAR debriefing provided data to support quality improvement and to manage student expectations as appropriate. This AAR was designed to include a small voluntary cross-section of the student cohort; limiting the generalisability of initial conclusions.

Conclusion: The efficient AAR method provided rich, qualitative data that complemented our annual student evaluations of teaching. This method allowed a thorough debriefing between faculty and medical students at the end of a significant redesign of the SSC curriculum at NMS.
7HH7 (1630)
What’s the CATCH? Evaluation of a Curriculum Designed for Physicians to Capture and Translate the Learning from the Review of Adverse Events and ‘Near Misses' in Hospital Settings

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Background: Clinical case reviews (traditionally known as morbidity and mortality rounds) have the potential to serve as an effective quality improvement tool as the culture of medicine shifts towards greater expectations of accountability, continuous learning and translation of learning to practice. A review of case review models reveals a lack of standardization.

Method: We aimed to create, deliver and evaluate a curriculum to facilitate the review of in-patient cases where an adverse event or “close call” had occurred. We called the new curriculum “CATCH”: Case Analysis and Translation to Care in Hospital. We incorporated specific strategies to promote: 1) a safe, supportive environment, 2) a culture of professional learning, 3) mentorship of case presenters, 4) input from physicians involved, 5) a framework to support case analysis and discussion and, 6) synthesis of tangible actions to improve clinical care. The curriculum consisted of 3 components: 1) an introductory workshop, 2) a podcast & mentor meeting for presenters, and 3) monthly CATCH rounds. Impact of the educational intervention was assessed by pre/post participant surveys of the CATCH intervention, individual sessions, presenter and physicians involved and feasibility. Paired t-tests and thematic analysis were used to analyze quantitative and qualitative differences.

Results: Twenty-one physicians and 4 mentors participated in the 16 month study. Preliminary results reveal: i) a preference for the CATCH model vs. previous case review model, ii) high levels of satisfaction with CATCH sessions, and iii) positive presenter, physicians involved, and mentor experiences. Participants report the CATCH conference model is feasible, engaging, promotes a supportive environment for professional learning, facilitates awareness of tools for case analysis and provides opportunities for translation of learning to clinical practice.

Conclusion: Physicians seek to deliver optimal patient care yet recognize that this does not necessarily go as planned. When presented with a safe, supportive, predictable atmosphere and specific tools to objectively analyze cases, motivation is high to learn, develop new insights and synthesize specific strategies to translate this learning to practice.

Take-home message: The CATCH conference curricular model has significant potential to transform clinical case reviews in hospital medicine.

7HH8 (74)
The more difficult subjects on biggest Med School in Mexico

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Background: Medical School is complicated and demanding because medicine is a science that requires greater dedication to study its extensive content. At UNAM Med School in Mexico, as well as in other parts of the world, first year is the most complex because not all students can pass certain subjects.

Method/Results: Final grades of all subjects were analyzed from first to fifth year, school cycle 2010-2011 (School population 1,085 students). Most difficult subjects were identified. In the first year, half of the subjects have a high rate of non-approval: Histology (49%), Anatomy (44%), Embryology (38%) and Biochemistry (28%). In the second year, a quarter of the subjects have a higher rate of non-approval: Physiology (3%) and Microbiology and Parasitology (3%). In the clinical cycles the phenomenon of failure is almost not observed, since third and fourth years of Med School reach an approximation of 1% of non-approval. Only 0.2% of students do not approve fifth year (Premed clerkship).

Subjects with higher rate of non approval are those having greater number of hours (higher curricular value): Histology, Anatomy, Embryology and Biochemistry. The subjects that are most approved are those that have less number of hours (lower curricular value) as Basic-Clinical Integration and Biomedical Informatics. Basic cycles’ subjects have a higher rate of non-approval compared to clinical cycles subjects. First year may be the most difficult due to the number of hours that students must devote to the study of those subjects among other factors.

Conclusion: More work must be done to avoid the high rate of failure in the first year. Qualitative studies are needed to better define the problem.
**7HH9 (2495)**
Course alignment in a distributive model: student and preceptor expectations of clinical pharmacology knowledge and skills in a veterinary medical curriculum

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**Background:** Veterinary medical graduates are expected to be competent in clinical pharmacology. During clinical training, the assessment of student knowledge and skills in pharmacology is performed by third party preceptors. Understanding how students perceive these assessments is essential to maintaining course alignment and ensuring appropriately trained graduates. An earlier study explored how preceptors assess student competency in pharmacology.

The purpose of this study is to explore the STUDENT EXPERIENCE of being assessed in pharmacology. Are the students aware of what actions/behaviors preceptors use to assess pharmacology knowledge/kills? Do the students understand the expectations that are equated with competence? Students completed a survey regarding their expectations and experiences in pharmacology during Year 3 of the curriculum.

**Method:** A mixed methods approach was used to analyze the survey results and compare to previously developed themes. Student responses were highly variable on questions regarding actions and behaviors associated with competence. Students were also unaware of course and discipline expectations. Student and preceptor expectations were in alignment with how students were assessed (through rounds). But alignment was lacking in other areas.

**Results:** Student confusion on expected behaviors is consistent with the gaps discovered in our previous study. With only general guidance from course syllabi and inconsistent guidance from preceptors, it is no surprise that students are confused about expectations in pharmacology knowledge and skills. The results from this study provide foundational information that will be used to inform a systematic evaluation of the pharmacology program assessing the effectiveness of the current curriculum. Ultimately this will inform changes and improvements in the delivery of pharmacology content and development of clinical pharmacology skills.

**Conclusion:** Aligning assessment with course and curricular objectives optimizes student learning. This study demonstrates the negative effect malalignment has on student perceptions. It also emphasizes the need to include student perceptions in systematic curricular reviews to gain a fuller picture. By understanding the student experience, curricular designers and course leaders can maintain course and curricular alignment. This survey approach can be adapted to other disciplines and used as a routine part of curricular review.

**7HH10 (3406)**
Medical Students Perception of the Quality of their Medical Education. A change is necessary?

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**Background:** Evaluation is an essential and critical aspect of any learning process, acquiring more relevance when referring to medical curriculum design. A medical curriculum should constantly adapt in response to the needs of students, institutions and society. The purpose of the present study was to evaluate the student’s opinion towards the current curriculum in “Luis Razetti” School of Medicine, as a part of the Curriculum Evaluation System that we are developing.

**Method:** In order to collect data from students, we used a validated questionnaire (electronic survey), designed to evaluate the curriculum. The survey was anonymous and included a total of eleven (11) Likert-scale-type questions related to the student's perceptions of the program, as well as satisfaction with their learning.

**Results:** 46 questionnaires were completed by recent graduate medical doctors from the “Luis Razetti” medical school. Respondents indicated strengths and deficiencies in the current curriculum that also related to its competence. 52% of students considered that the quality of their formation was good overall. Overall positive feedback was obtained in subjects like parasitology (97.8%), histology (91.27%), and surgery (80.4%). In contrast, we obtained negative feedback in subjects like public health (82.6%), legal medicine (71.7%), pathological anatomy (60.86%) and radiology (62.5%). We also observed difficulties acquiring skills in some areas. 73.9% of the students considered that the obtained education has allowed them to perform adequately during their practice. However, 86.7% also believe that a change in the current curriculum has to be made.

Students consider that the quality of their formation is good, allowing them to perform in an adequate way as medical doctors. This is supported by the strengths the current curriculum has. However, there are deficiencies related to acquired knowledge and skill acquisition in various subjects, this is why a significant proportion of students consider that a change is required in order to improve the actual curriculum program.

**Conclusion:** Continuous curricular evaluation provides valuable information on strengths and weaknesses, which will guide future efforts to optimize it, in order to improve the quality of the professionals that graduate from our school.
Factors influencing students’ satisfaction: results of 10 years follow up

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**Background:** As a provider, it is essential for the university to have a valid teacher evaluation system, what -besides it’s quality assurance role- a great opportunity to map the student’s expectations. The main goal of this study is a data-mining approach of the students satisfaction based on an educational inventory and to provide educational management with an adequate tool as well.

**Method:** An in-house 16-items inventory was created to evaluate students’ satisfaction. Altogether 21338 anonym questionnaires were processed by a multi-language questionnaire at the Medical Faculty. 13 568 items were analyzed after data cleaning and balancing based on academic years and programmes. First, a statistical validity analysis was used by Confirmatory Factor Analysis. Secondly, an Item-Response Theory (IRT) and CHAID decision tree models were created.

**Results:** Statistically valid (77-84%) models were created. Significant differences were found between the preferences of the first-year and the second-year students. In the first year, quality of the lectures and motivation for independent thinking were the most important influencing factors compared with that of the second year students who preferred the general quality of subject. This tendency remains unchanged in the third year. In the clinical modul of education, the quality of the practices is the predominant factor.

**Conclusion:** IRT and decision tree models whit an adequate questionnaire can be an efficient tool to explore the components influencing students’ satisfaction. These factors change dynamically through the academic years. Based on the results, our method is a valid predictive and descriptive tool for measuring students’ satisfaction concerning education.

**Take-home message:** It is feasible to develop statistical models that can help us to find optimal modifications in education to increase the students’ satisfaction.
7HH3 (3483)
Dynamic patterns in student assessment outcomes in Algarve Medical School: Cohort Study

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Background: Medical schools and other education institutions are increasingly looking for methods of assessing their teaching and at same time the students learning. Integrated Master in Medicine of the University of Algarve (MIM-UAlg) is a recent and innovative course in the Portuguese context that has been in operation since 2009, open exclusively to people already with a degree. The evaluation system is based on the best evidence: the theoretical knowledge is evaluated in PPI (Personal Progress Index, McMaster), and by PBL assessments focused on the objectives of the clinical problems studied. Practical skills assessed through Objective Structured Clinical Examinations in all years of the course and through Case Based Discussions in the last two years by hospital clinicians. Attitudes and communication are evaluated weekly in the first and second year by tutors in Primary Care. This work focus on the characterization of the dynamics of student evaluation and academic achievements in this Medical School as prospective study for implementation of teaching and learning assessment methods.

Method: In this study, was analyzed the pattern of student’s academic performance using statistical data visualization techniques on medical students’ academic data of University of Algarve. The main purpose is to perceive, understand and characterize the dynamic process of academic achievements.

Results: In both learning areas, knowledge and clinical skills, the students’ academic output showed an increase of performance throughout the curriculum but a relative homogeneous profile among all cohorts. Exception was the observation of a general increase of student clinical skills performance from 2013 cohort, which coincides with introduction of three evaluation moments instead of a single one.

Conclusion: With relatively simple statistical data visualization techniques, we were able to characterize student academic patterns and conclude that, key areas of medical student instruction are being assessed homogenously since the beginning of Medical School in University of Algarve, opening the door to the implementation of a learning performance assessment.

Take-home message: Techniques for statistical data visualization are suitable to understand student academic output data structure and an approach method to start monitoring student-learning performance.

7HH4 (2907)
How good was our curriculum? Sixth year students’ self-assessment of their theoretical knowledge and practical experience when starting their internship

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Background: Are medical schools’ curricula well-adjusted and efficiently taught, so that young doctors have the required knowledge (TK) and practical experience (PE)? We aim to identify whether recently-graduated doctors learnt what their medical school aimed to teach them and if what they were taught matches what they need the most, now that they have started their practice.

Method: Following a 6th year pilot study presented at AMEE_2017 conference, all 350 first-year residents (FYR) were asked to self-assess their TK and PE, when they first started working, as well the number of opportunities for skill practice offered in 6th-year curriculum clinical rotations.

Results: Evaluation of TK was higher than PE in all rotations. Paediatrics skills were reported as the best known and most practiced (55% reported high TK / 38% reported high PE); Surgical skills were the worst rated in both domains (49% reported low PE and 61% reported low TK). Paediatrics was also the area in which students had more opportunities to practice the defined curriculum skills (44% had more >10 opportunities to practice) while Internal Medicine was the area in which a higher
percentage of students had no opportunity to practice the respective skills. Students considered they gained high TK on Internal Medicine, Emergency Medicine, Paediatrics, Obstetrics-Gynecology, and General Practice (reported by 10-55%, depending on the area). However, there is a gap between what PE students are expected to acquire and what they end up with (high PE reported by 8-38%, depending on the area).

**Conclusion:** The identified gap from curriculum in paper versus in practice needs to be addressed. Students feel more confident about their knowledge than about their practical experience, especially in General Surgery, with all students considering this problem is crucial due to the lack of opportunities to practice.

**Take-home message:** All students felt they did not have enough opportunities to gain the practical experience they were supposed to. Since most Paediatrics’ practice goals are met, a similar teaching-learning process could be used as a model for other weak curricular rotations, particularly General Surgery and Emergency Medicine.

**7HH15 (2879)**

**Student evaluation of medical semiology practical teaching at Faculdade de Medicina da Universidade de Lisboa (FMUL): Implications for future teaching**

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**Background:** Medical semiology is a pivotal teaching area in student transition to the clinical years. Taught in the 3rd year under the subject ‘Introduction to Clinic’ in 2017-2018 this curricular area underwent a significant reform in terms of study guides, examination protocols, teaching structure, student-teacher ratio, etc.

**Method:** The evaluation of the curricular reform was proposed by one IC student who designed the first draft of a written questionnaire to be filled by all students (n=353). With the supervision of the IC Coordinator and Medical Education Department, a final survey was designed to identify how students perceived the implemented changes namely: Preparatory study guide sent to students before the practical classes; More opportunities to skills practice during the practical classes; Students’ self-evaluation after the practical classes; Teachers’ evaluation (global performance).

**Results:** The allotment of additional class time exclusively dedicated to the practical training as well as the participation of patients and student monitors (peer-teaching) were the major strengths reported by students while the reformulation of some of preparatory material was the major suggestion for improvement.

The introduced changes were globally well perceived, namely the reduction of lecture time to increase practical training as well as the opportunity for higher teacher-student interaction. The lack of time given to skills practice was the strongest criticism in previous years while more patient intervention was the main request, because it’s now accepted that students should have contact with patients as early and as frequently as possible, regardless of eventual logistic difficulties. The weakest aspects relate to some specific themes namely with some study guides needing objectives and content reformulation, to match students’ expectations. Future maintenance of these changes was confirmed by the Coordinator.

**Conclusion:** A student-led initiative triggered the evaluation of a newly implemented reform highlighting its strong and weakest aspects. The support given from the Coordinator is essential to guarantee further improvement of IC curriculum.

**7HH16 (445)**

**Measuring the educational environment across the curriculum in Physiotherapy: A Mixed Methodology approach**

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**Background:** The educational environment (EE) has become relevant in the past decades due to its impact in learning process, social life and future professional work of the students. Our aim was to measure the perception of the EE among Physiotherapy undergraduate students at the Pontificia Universidad Católica de Chile (PUC).

**Method:** Mixed methodology was used. Quantitative component: Dundee Ready Educational Environment Measure (DREEM) questionnaire was applied to 1º to 4º year students. Postgraduate Hospital Educational Environment Measure (PHEEM) and Ambulatory Care Learning Educational Environment Measure (ACLEEM) were applied to 5º year students (clinical clerks). Qualitative component: based in two-open-questions in each instrument related to EE strengths and aspects to improve and focus group including 5º year students (clerkship).

**Results:** 334 students (83% of total universe) answered the questionnaires. The global mean of DREEM questionnaire was 135.7±19.15 revealing an EE “more positive than
The major strength was the perception of the teachers’ quality (73%) and the domain with lowest perception was the atmosphere (63%). Clerkship: PHEEM questionnaire was 105.55±20.19 (mean±SD) showing EE “more positive than negative, with room for improvement”. The best evaluated domain was social support perception (69%) and worst evaluated was teaching perception (63%). ACLEEM questionnaire showed a mean of 152.87±16.71 revealing excellent EE perception. The best evaluated domain was clinical skills (86%) and the worst were protected time and clinical supervision, 62% each one.

Qualitative results gave specific information about basic science-profession relationship, homogenization of assessment criteria, expensive transfer between campi and students’ threatening by some tutors (clerkship). There were no differences in EE perception depending on student’s sex.

Conclusion: EE measurements showed strengths and room for improvement depending on the different student curriculum stages allowing us to implement real actions on each step. Qualitative data complemented and enriched results with new topics like “professionalism”, “curricula”, “alumni profile” and “research”.

Take-home message: A better EE will allow Faculty to form better Physiotherapist from professional and human point of view and this is fundamental for patients’ care.

7HH17 (341)
Evaluation of the educational environment of a Singaporean Internal Medicine Residency program

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Background: The educational environment has been shown to be positively associated with better learning within residency programs. The Postgraduate Hospital Education Environment Measure (PHEEM) is a reliable and validated measure for evaluating the educational environment amongst junior doctors. Poor educational environments have been shown to be linked to burnout and a study showed residents in Singapore have higher burnout rates than those reported in Western literature. Therefore, we aimed to determine the educational environment amongst internal medicine residents (IM) in Singapore to investigate possible areas for improvement.

Method: We applied PHEEM to measure the learning environment of Singaporean IM residents across 3 teaching hospitals within Singhealth. Residents’ perception was compared between gender, level of training, years of working experience and posting hospital. Internal reliability was assessed using Cronbach’s alpha coefficient

Results: 136/153 (88.9%) of IM residents completed the questionnaire (51% male, 31% R1/37% R2/ 32% R3). PHEEM showed high internal consistency with Cronbach’s alpha of 0.946. The educational environment was deemed more positive than negative, with room for improvement (mean PHEEM 112.2 ± 16.7). No significant differences in total scores or subscales were detected between gender, level of training, years of work experience or posting hospital. Although mean PHEEM scores were good, several significant differences in responses to specific questions were found between groups, and these offer unique opportunities to intervene. Examples include: Females perceiving less opportunities to acquire practical procedures p=0.03, R3 more likely to perform inappropriate tasks than R1 p=0.009, R1 perceiving less access to educational programs compared to other residency levels p=0.01, R1 perceiving receiving less feedback than other residency levels p=0.01, doctors ≥ 5 years training perceiving less blaming culture compared to less experienced doctors p=0.002, Singapore General Hospital doctors receive more inappropriate calls, p=0.03). Singhealth IM residents generally have a positive perception of the educational environment. However, differing responses to specific questions between groups highlight areas that could be improved.

Conclusion: This study highlights areas within a Singaporean IM residency educational environment that are suboptimal. These deserve further qualitative evaluation, offering potential interventions to improve the educational environment and possible burnout.

7HH18 (1144)
Journeys in Change Management: Two Differing Medical Educational Experiences

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Background: Change management in a medical curriculum can be considered as an oxymoron! The range of factors that exist are often complex, culturally and historically problematic and the sheer ability to change at the individual, team and organisational levels can be highly problematic and personally daunting. Through survey work of academic staff and preclinical year students, this work aims to develop a conceptual and useful way to consider and describe change in a medical curriculum.

Method: Based on student comment, together with academic staff interview and personal reflection, various key factors were identified for the process of successful change to take place. Both driving and resisting forces were considered. Two main change initiatives were investigated: Health and wellness and Ethics Integration. These two areas have been developed over the last three years at Notre Dame with varying results, and were chosen because they allowed for exploration of key change influences.

Results: Initial results suggest key individual, team and organisational factors need to be considered prior and during the change process. These include personal attributes, leadership and executive support, perceived relevance of course material, training provision for...
academic staff deliverers and the method of employed the change process itself.

**Discussion & Conclusion:** The complexity of change in a medical curriculum is worthy of major discussion and clarification. It is not feasible to simply have a good ideas but rather to understand the importance of the change process itself. The study survey initially points to key factors that support or hinder curricula change. Force field analysis and similar conceptual models can help in the identification of such factors. Importantly initial results provide a meaningful set of discussion points focusing on change in areas of health/wellness and ethics.

**Take-home messages:**
1. Involvement of key stakeholders including the executive is vital. Expertise of actual deliverers with appropriate resource provision is key to successful implementation.
2. Perceived course material relevance is central for actual student engagement.
3. A clear change model can guide and shape change effectiveness.

**7HH9 (1993)**

Unidimensionality, goodness-of-fit, and differential item function test of Korean version of Dundee Ready Education Environment Measure (DREEM) questionnaire

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**Background:** Dundee Ready Education Environment Measure (DREEM) questionnaire is a tool to evaluating teaching and learning environment of educational institute by students. It consisted of 50 items of 5-point Likert scale including 5 categories developed in 1997. In 2013, survey with Korean version was done in 40 medical schools. It aims at evaluating psychometric properties of the Korean version of DREEM questionnaire such as unidimensionality, goodness-of-fit, and differential item function by gender based on item response theory for more stable application of the measurement tool.

**Method:** A total of subject was 12,035. Out of them 9,096 students responded to survey. Out of them incomplete data that contained equal to or greater than 10 missing items were removed. Number of responses included in the analysis was 8,975. We tested unidimensionality of whole items and items of each 5 categories with POLYDIM. Goodness of fit and differential item function by gender were tested with Winsteps where partial credit model was applied.

**Results:** P-value of unidimensionality test of whole 50 items was less than 0.0001. Those of 5 categories were more than 0.99. Infit means square of goodness of fit test of 50 items were all more than 0.5 and outfit means squares were all less than 2.0. At the test of each category, two items’ outfit mean square value exceeded 2.0; however, the values were less than 2.01. There was no differential item by gender in the test of 50 items and each category. Although unidimensionality of whole 50 items were rejected, that of each category was accepted. Goodness of fitness test results were all in acceptable range. Above psychometric properties of DREEM Korean version showed that it can be adopted to medical schools in Korea with concrete psychometric stability.

**Conclusion:** One thing we should consider is that survey itself is not unidimensional; therefore, the presentation and interpretation of simple total score should be cautious. The interpretation according to the result of each category is recommended.

**7HH20 (2044)**

Why we need mixed methods to explore the construct validity of scores from learning environment (LE) assessment tools: the UCEEM as a case-example

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**Background:** Reviews of tools for assessing LE’s in medical education suggest that only a subset of validity evidence is utilized to explore the construct validity of scores. We applied a mixed methods (triangulation) design to examine the construct validity of scores from the Undergraduate Clinical Education Environment Measure (UCEEM).

**Method:** We conducted tests of internal structure of UCEEM-scores from clinical placements (at affiliated hospitals of a Swedish medical program) and analyzed data from focus groups and interviews with various stakeholders to examine response processes, the relations of scores to other variables (assessing similar domains), and the consequences of use.

**Results:** We found evidence based on internal structure, response process and relations to other variables supporting previous results of a high degree of construct validity of UCEEM-scores. However, qualitative data suggested that the stakeholders interpreted scores in different ways, and the consequences of use were sometimes inconsistent with what was intended.

**Discussion & Conclusion:** The UCEEM is currently used to measure clinical LE’s in several medical education settings in Europe and Asia. Our study illustrates the need for continuous psychometric evaluation in the different settings with appropriate and varied methods as well as
contextual information when making inferences about the 
construct validity of scores.
The literature on LE assessment tools seldom presents or 
discusses evidence of response process, relations to other 
variables or consequences of use. Our study illustrates 
why mixed methods designs are necessary for examining 
construct validity of scores. More research is needed to 
understand how to turn scores into meaningful feedback.

Take-home message: A mixed methods study design is 
necessary for understanding response processes, the 
discourses around the feedback provided by LE 
assessment tools and the many facets of consequences of 
use. The extent to which measurement scores are valid is 
an epistemological issue as well as a matter of 
psychometric adequacy.

7HH21 (2046)
No such thing as a silly question: Overcoming the 
perception of humiliation in the learning environment for 
medical students. Does providing a safe environment for 
medical students to ask questions improve the learning 
environment?

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Background: Teaching by humiliation is an approach that 
has been recognised since the 1980s and some doctors 
continue to use it to this day. This culture can create a 
negative learning environment with many studies 
suggesting that such an environment can result in adverse 
consequences on both health and confidence. 
The aim of this study is to assess different methods of 
creating a safe learning environment whereby medical 
students can ask questions anonymously in order to 
reduce the possibility of humiliation and improve the 
student-teacher relationship. The objectives of this study 
are to assess first and second year medical students’ 
confidence in asking questions during teaching sessions 
and their perception of the learning environment. 
We will be conducting plan, do, study, action (PDSA) 
cycles.

Method: The first method we will use involves creating a 
box that students can post questions into anonymously. 
Each month we will run a panel-style meeting that medical 
students can attend, where their questions will be 
answered. The second method we will assess involves 
setting up a meeting with faculty members and using 
interactive technology to allow the medical students to 
ask anonymous questions and receive answers in real time 
Currently, there does not appear to be a validated tool 
available that can be used to assess medical student’s self- 
confidence. Therefore, we have created a questionnaire 
using Bandura’s 13 concepts of self-efficacy.

Results: Results are pending, ethical approval has been 
sought.

We hope that we can provide a platform through which 
students who normally do not feel confident asking 
questions in the learning environment can ask questions 
comfortably. We hope that this platform can be replicated 
across other medical schools.

Conclusion: A culture change is required in terms of the 
teaching approaches used with medical students, and 
effort should be made to create environments in which 
medical students feel they can safely ask questions.

“Teaching by humiliation” and mistreatment of medical 
students in clinical rotations: a pilot study. The Medical 
Journal of Australia, 203(4), 185.