

## Abstract Book

Saturday 27 August 2016				
Time	Session Code	Session Type	Speakers	Room
0800 – 0810	#A1.1	Opening of the Summit		MR 112
0810 – 0915	#A1.2	Opening Plenary	Achieving the Desired Outcomes: Realizing the Promise of CBME	MR 112
0915 -1030	#A1.3	Panel Discussion	CBME Around the World: Making it Work from Curriculum Design to Implementation <i>Chaired by: Claire Touchie</i>	MR 112
1030 -1100	Coffee Break & Poster Presentations			
1100-1230	#B1	Simultaneous Sessions	Oral Innovations: EPAs	MR 112
	#B2		Oral Research: Concepts & Frameworks	MR 111
	#B3		Workshop: CBME 101: An Introduction to Competency-based Medical Education	MR 118
	#B4		Workshop : Transforming Your Program to be Competency-Based: An Interactive Workshop to Explore Strategies and Solutions Focusing on Formative and Summative Assessment	MR 119
1230-1330	Lunch & Poster Presentations			
1330 -1500	#C1	Simultaneous Sessions	Oral Innovations: Implementing CBME	MR 112
	#C2		Oral Research: Assessment & Evaluation 1	MR 111
	#C3		Workshop: Contemporary Workplace Assessment: How Do We Link Patient Care Quality Indicators to Trainees?	MR 118
	#C4		Workshop: Using A Change Framework to Advance CBME nationally and locally: Learned lessons from a National Accrediting Body and Residency Program.	MR 119
1500 -1530	Coffee Break & Poster Presentations			
1530 - 1700	#D1	Simultaneous Sessions	Oral Innovations: Novel Approaches	MR 112
	#D2		Oral Research: Assessment & Evaluation 2	MR 111
	#D3		Workshop: Interpreting Milestones Data: Enabling Residency Programs to Implement Change	MR 118
	#D4		Workshop: Failure is Not An Option: A Developmental Approach to Assessment and Feedback in the Workplace	MR 119
1700 - 1815	#E1	Panel Discussion	Promise, Perils, & Hyperbole: A Discourse on CBME <i>Chaired by: Larry Gruppen</i>	MR 112
1830 -1945	Drinks Reception			

Sunday 28 August 2016

Time	Session Code	Session Type	Speakers	Room
0800 – 0810	#F1.1	Opening Remarks	Jason Frank (Canada)	MR 112
0810 - 0915	#F1.2	Plenary	<b>State of the Art in EPAs: The Evolution of a Concept</b> <i>Chaired by: Elaine Van Melle</i>	MR 112
0915 -1030	#F1.3	Plenary	<b>Top 3 abstracts</b> <i>Chaired by: Jocelyn Lockyer, Markku Nousiainen &amp; Larry Gruppen</i>  Programmatic Variation in Implementing CBME: Results from a qualitative study of Neurological Surgery  Combining Entrustment Scales and Standard Setting in Workplace Assessments in a Competency-Based Curriculum  A Systems Approach for Institutional CBME Adoption at Queen's University	MR 112  Nick Yaghmour (USA)  Jennifer Weller (New Zealand)  Leslie Flynn (Canada)
1030 -1100	<b>Coffee Break &amp; Poster Presentations</b>			
1100-1230	#G1	<b>Simultaneous Sessions</b>	<b>Oral Innovations:</b> CBME Across the Continuum	Various
	#G2		<b>Oral Research:</b> Progression of Competence	Various
	#G4		<b>Workshop:</b> Creating Competency Frameworks for CBME: A 12-Step Program	Jason Frank (Canada)
				MR 119
1230-1330	<b>Lunch &amp; Poster Presentations</b>			
1330 -1500	#H1	<b>Simultaneous Sessions</b>	<b>Workshop:</b> Preparing the Implementation of EPAs in Undergraduate Medical Education	Robert Englander (USA) Claire Touchie (Canada) Olle ten Cate (Netherlands) Indra Posthumus (Netherlands)
	#H2		<b>Workshop:</b> Evaluating Competency-based Medical Education Programs: It's Never too Early to Start	Elaine Van Melle (Canada) Leslie Flynn (Canada)
	#H3		<b>Workshop:</b> Continuing Medical Education/Professional Development within a Competency Based Medical Education Context	Jocelyn Lockyer (Canada) Ford Burse (Canada) Denyse Richardson (Canada)
	#H4		<b>Workshop:</b> From Opening the Black Box to Looking Behind the Curtain: How to Make More Informed Rater Judgements in Challenging Clinical Settings	Victor Lee (Australia)
1500 -1530	<b>Coffee Break &amp; Poster Presentations</b>			
1530 - 1700	#I1	Closing Plenary	<b>Reflections on the CBME Summit... Next Steps for CBME</b> <i>Chaired by: Robert Englander</i>	MR 112  Nicholas Glasgow (Australia) Steven Lieberman (USA) Young-Mee Lee (South Korea) Simon Fleming (UK) Fremen Chihchen Chou (Taiwan)

### **#A1.1 Opening of the Summit**

Time: 0800-0810

Location: MR 112 – P1

**Jason Frank\*** (Director, Specialty Education, Strategy and Standards in the Office of Specialty Education at the Royal College of Physicians and Surgeons of Canada, and Director of Educational Research & Development in the Department of Emergency Medicine, University of Ottawa, Canada)



### **#A1.2 Opening Plenary:**

#### **Achieving the Desired Outcomes: Realizing the Promise of CBME**

Time: 0810 – 0915

Location: MR 112 – P1

**Eric Holmboe\*** (Senior Vice President for Milestone Development and Evaluation, Accreditation Council for Graduate Medical Education, USA)



Despite substantial attention over the past 20 years to significant quality and safety problems in healthcare, major challenges and deficiencies persist globally. Transformation of medical education, and in fact for all health professions education, is appropriately seen as part of the solution to improve healthcare. While certainly not a panacea, competency-based medical educational (CBME) models are now being implemented to varying degrees internationally as part of the pathway to better outcomes of education and by extension improved outcomes of healthcare patients and populations receive. This opening session seeks to lay a foundation for the conference by exploring where we are and where we hope to go in medical education transformation.

### **#A1.3 Panel Discussion:**

#### **CBME Around the World: Making it Work from Curriculum Design to Implementation**

Time: 0915 -1030

Location: MR 112 – P1



**Kimberley Lomis\*** (Associate Dean for Undergraduate Medical Education, Vanderbilt University School of Medicine, USA)

**Marian Mourits\*** (Professor in Gynecological Oncology, University Medical Center Groningen, the Netherlands)

**Shirley Schipper\*** (Associate Professor, Department of Family Medicine, University of Alberta, Canada)

**Claire Touchie\*** [session chair] (Chief Medical Education Advisor, Medical Council of Canada and Associate Professor of Medicine, University of Ottawa, Canada)

CBME is evolving differently from curricular design to implementation to assessment, in different constituencies around the world and across phases of the education continuum. Our panellists, from three countries where CBME implementation is well underway, will describe their models and share their experiences, insights and lessons learned. They will address issues such as the roles of milestones, EPAs, sentinel habits; moving from a competency model to curriculum design; what a curriculum looks like; how faculty are trained; how transitions are managed; how assessment is done; the role of the clinical teacher in assessing learners; how decisions on advancement are made; and their top challenges to implementation and how they have addressing them. By the end of this session participants will be able to:

- compare and contrast various CBME models
- identify challenges to planning and implementation and propose strategies to address these
- describe different assessment strategies and how are decisions on advancement are made

#### **Who should attend?**

Educators, clinicians, program directors and learners interested in varying models of CBME; all levels

### **Coffee Break & Poster Presentations**

Time: 1030 -1100

Location: Outside Room MR 111 – P1

## **#B Simultaneous Sessions**

Oral sessions are 15 minutes each (10 minute presentations and 5 minutes allocated to questions)

### **#B1 Oral Innovations: EPAs**

Time: 1100 – 1230

Location: MR 112 – P1

#### **#B1.1 (26)**

#### **Developing and implementing Entrustable Professional Activities: the significance of context**

*Josephine Boland (Ireland)*

*Dara Byrne (Ireland)*

*Mark Knox (Ireland)*

##### Background

Entrustable Professional Activities (EPAs) offer a promising framework for the design and implementation of competency based medical training. EPAs have been adopted by postgraduate training bodies in Ireland, both in Anaesthesia and in Radiology and in the first postgraduate year that is internship.

##### Purpose

The purpose of the EPA development was to provide a framework for articulating – to varying extents – activities, competences, proficiency levels for successive milestones and criteria for successful achievement of an EPA, including work-based assessment.

##### Interventions

The processes of developing EPAs, while context-contingent, generally included convening working groups, designing a bespoke EPA template, prioritising and drafting EPAs and consulting with stakeholders including trainees. It involved aligning competences with the Domains of Good Professional Practice, mandated by the Irish Medical Council, curriculum mapping and assessment blueprinting.

##### Results/applications

Draft EPAs were developed, for internship and for priority areas in the postgraduate programmes. Our experience highlights the significance of context in terms of training programme, specialty area, stakeholder interests, resourcing, timing and receptivity to change. The significance of context reaffirms the need to localise curriculum development models in practice. Design of WBA tools needs to be congruent with the concept of entrustment which is central to the concept of EPAs.

##### Future Directions

Validation of EPAs, with stakeholders, is an essential but potentially lengthy process. In the meantime, however, draft EPAs provide a valuable basis to support the design and piloting of work based assessment, for both formative and summative assessment. These are the tools, rather than the EPAs, which will have most meaning, significance and implications in the clinical environment.

#### **#B1.2 (62)**

#### **Implementing Entrustable Professional Activities (EPAs) in Undergraduate Medical Education: Early Lessons from the Association of American Medical Colleges Core EPA Pilot**

*Kimberly Lomis (USA)*

##### Background

Given both the increased recognition in the US of gaps in the performance of early residents, and the recent implementation of competency-based approaches in graduate medical education, the Association of American Medical Colleges (AAMC) commissioned a project focused on improving the transition from undergraduate to graduate medical education (UME to GME).

##### Purpose

The vision of the pilot is to optimize safe and effective patient care by ensuring that each graduate from our medical schools is prepared for core initial duties as an intern. Interventions In 2014 the AAMC published a list of 13 Core Entrustable Professional Activities expected upon the transition from UME to GME in the US. Ten US schools were convened develop best practices for implementation. This pilot group is in its third year of collaboration around the overarching concepts of curriculum, assessment, entrustment, and faculty development, as well as focused efforts specific to each EPA.

Results/applications The pilot group has generated guiding principles that it encourages institutions implementing the EPA framework to follow in order foster consistent standards throughout the US. The group has developed a tool to support a systems-based approach to implementation. Challenges in implementation specific to UME, and potential solutions, have been identified. Early implementation is underway at the pilot sites.

Future directions The pilot group has defined key questions to address in implementation. Sites will compare the amount of performance evidence that they are able to compile on individual students and discuss their confidence in that evidence. By sharing findings among institutions, the group will explore what interventions in curriculum, assessment, faculty development, feedback, and remediation best support the entrustment process. These factors will determine the potential under current US structures to entrust graduating medical students in Core EPAs, and will identify critical elements of the entrustment model applicable in other settings.

### **#B1.3 (11b)**

#### **The Development of EPAs for Psychiatry in the U.S.: Methodological and Strategic Lessons**

*John Young (USA)*

With the emergence of the competency- and milestone-based education, training programs have been challenged to develop new assessment programs. The AAMC and a number of GME specialties in the US have embraced Entrustable Professional Activities (EPAs) as such a framework. In October, 2014, the American Association of Directors of Psychiatry Residency Training, charged a task force to develop EPAs for psychiatry in the US. The task force convened in May, 2014, and has been engaged in this work since that time.

The task force reviewed the literature on EPAs and discussed what process would best yield the desired outcome of producing a proposed list of essential, clear, and representative EPAs for Psychiatry. The task force concluded that the proposed EPA titles would be constructed best via four phases:

- Phase 1: literature review by Task Force members who then developed an initial list of proposed EPAs. Iterative nominal group process reduced the list from 65 to 25 EPAs.
- Phase 2: Series of consultations with international experts in EPAs. Reduced EPAs to 14.
- Phase 3: Modified Delphi survey of 40 US experts in psychiatric medical education. Survey participants were original members of the ACGME Psychiatry Milestones Work Group and current members of the Executive Council of AADPRT. Quantitative data includes essentialness and clarity. Written comments were also collected. The EPAs further revised.
- Phase 4: Dissemination of proposed EPA Titles for psychiatry for more general feedback.

The presentation will describe a process that has integrated scholarly methods with practical input from key stakeholders to enhance the validity, including ecological validity, of the proposed EPAs. The session will also describe several strategies that have emerged to manage the differences in local educational and clinical values and priorities that can in turn affect how EPAs are defined.

### **#B1.4 (13b)**

#### **Individualized Competency-Based Training with EPAs: Four Year Experience of Training Physician Assistants**

*Fraukje Wiersma (Netherlands)*

Background: EPAs (Entrustable Professional Activities) have been introduced as the workplace training backbone for PAs (physician assistants) at the University of Applied Sciences Utrecht.

Purpose: This retrospective study evaluated the use of EPAs in the training program of PAs University of Applied Sciences Utrecht.

Material and Method: We analyzed data of 119 students, who enrolled in the training program for PA at the University of Applied Science Utrecht in the years 2010, 2011, 2012 and 2013. We analyzed the number of EPAs per student at the start of the program and the number at the end of the program. We evaluated how many EPAs were replaced during the training period and we searched for the reason why the change was made.

Results: In total, data of 101 students was suitable for evaluation. Excluded were sixteen students who quitted the program prematurely and also excluded were two students from 2013 with study delay. The mean number of EPAs per student at the start was 6.6 (range 4-12) and at the end was 6.8 (range 3-13), respectively. During the program average 1.5 EPAs were altered per student (range 0-13). Reasons for change were most frequently; extension of the EPA package during training (n=9), not proficient enough at the planned moment of the entrustment decision (n=9) and procedures not suitable for PA alone at closer look (n=6).

Conclusion: During the PA program 2010-2013 an average 1.5 EPA changed. This flexibility of the EPA concept enables changes in the individualized course of a student, according to the competency-based nature of the educational program.

Keywords: EPA, PA, individual workplace education.

**#B1.5 (3b)**

**From Dream to Reality: Realizing time-variable, competency-based advancement from UME to GME**

*Robert Englander(USA)*

The Education in Pediatrics Across the Continuum project began as an idea in 2008. This novel approach sought to take students from early in medical school through residency to readiness to sit for the Board certifying examination based on competency assessment rather than time. We are now on the verge of our first cohort of students progressing from UME to GME in a time variable manor based on entrustment to perform the Core EPAs for Entering Residency without direct supervision and meeting their medical school's graduation requirements. This presentation would describe the origin of the concept and then explore the planning, design and implementation phases including challenges and lessons learned.

**#B1.6**

**Individualising Postgraduate Medical Training in the Netherlands using Entrustable Professional Activities and Summative Entrustment Decisions**

*Marieke Bolk & Auk Dijkstra (Educationalists, Dutch Association of Medical Specialists)*

In the Netherlands competency-based postgraduate medical training has been redesigned with entrustable professional activities (EPAs) en summative entrustment decisions to be more individual and flexible. This presentation shows animations and tools used in the project.

In 2013, the Dutch Ministry of Health, Welfare and Sports came to an agreement with the consortium of all University Medical Centres and other Teaching Hospitals to redesign the general structure of postgraduate medical training, which is predominantly financed through government funding. In order to realize individualization, the principle of a fixed training time of postgraduate medical training has been left in the Netherlands. The legislation has been adjusted accordingly. This redesign includes more flexible, individualized and competency-based pathways.

To arrive at this objective, entrustable professional activities and their certification through summative entrustment decisions for decreasing levels of supervision, have been proposed as a major backbone structure for all programs. Since 2015 all programs have been exploring this model, assisted by a national government funded project Individualising Postgraduate Medical Training. This project is executed by the Dutch Association of Medical Specialists. Supported by a team of several educationalists, almost all medical specialties in the Netherlands are rebuilding their curriculum and training methods using mainly EPA's as building blocks. Meetings, workshops and master classes have been organized to provide explanations about all related concepts and to gain support among clinical teachers and residents. There's a supportive website where one can download several tools and job-aids. Recently animated videos which help to clarify the new concept, have been added to the toolbox. Two videos have been translated in English and constitute the major part of this presentation.



At this moment three medical specialties are testing EPA-based learning and summative entrustment decision-making in practice. The project is monitoring these trials and by the end of 2016 the results will be presented. This will help other specialties to learn and to optimize their flexible, individual and EPA-based curriculum.

<sup>1</sup>Ten Cate e.a. AMEE Guidelines for Competency-based Workplace Curriculum Development based on Entrustable Professional Activities – a Matrix Mapping Approach Medical Teacher. 2015.

**#B2 Oral Research: Concepts & Frameworks**

Time: 1100 – 1230

Location: MR 111 – P1

**#B2.1 (15)**

**The evolution of competency frameworks from business to international medical education**

*Marwa Schumann (Egypt)*

*Ashley Dennis (UK)*

Background: Coming originally from the business and human resource management competency frameworks were first introduced in the field of medical education by public health scholars in the 1960s and early 1970s. However, It was not until the early 1990s that the first competency framework was developed by the Royal College of Physicians and Surgeons of Canada (RCPSC). While some countries "tailored" their national competency framework, others adapted internationally recognized frameworks in their local contexts, which is considered a controversial issue. In Egypt a set of National Academic Reference Standards (NARS) was developed based on Tomorrow's doctors as a main reference.

Research question: "What are the learning experiences of house officers and junior residents compared to the internationally based national competency framework?"

Methods: Based on social constructivism epistemology this qualitative research included focus groups and personal interviews with a total of 22 interns and junior residents from four different training and workplace locations in Egypt. The participants provided personal incident narratives about their learning experiences during the practical year. We applied qualitative framework analysis to all narratives using Atlas Ti software program.

Results: We identified a total of 51 narratives; 31 by house officers and 20 by residents. The narratives could be divided into positive and negative incidences taking place in different hospital and geographic locations.

Conclusions: There was good consensus among study participants of both groups on the usefulness, appropriateness and value of the competency framework to prepare house officers not only for the national, but also for the international labor market. However, participants had mixed views regarding some of the competences which were considered irrelevant for the practical year since house officers are not directly involved in patients' management decisions. Complexity and controversy involved in these decisions were considered to be inappropriate at this stage of the medical training.

**#B2.2 (30)**

**Defining and developing professionalism competencies in Saudi Arabia: Multi method approach**

Background: Competency-based medical education is the most significant development in medical in the last decade. However professionalism is the most neglected competency in many curricula worldwide due to difficulty in teaching and assessment. Professionalism was developed as an important competency as part of Saudi-Med national framework using multi-method approach

Summary of work: Multi method approach was used for defining and developing professionalism competencies including:- first review of international experiences such as CanMed ACGME tomorrows doctor etc. Second Delphi study including all Deans of medical schools in the Kingdom as end-users in two rounds. As a result a preliminary framework for professionalism was reached. Third, Stakeholders focus group discussions and workshops which include eight categories health professionals, Ministry of health parliament members, media and community representatives, regulatory and accrediting bodies. Fourth, international expert opinion where the framework was reviewed in its final shape

Summary of results: Twelve parameters were identified including important parameters of professionalism, such as self accountability, communication, honesty, ethical conduct, etc

Conclusion: Participatory approach for defining the attributes of professionalism was found to be effective

**#B2.3 (46)**

**Investigating the integration of three measurement concepts in medical education: Implications for CBME**

*Saad Chahine (Canada)*

*Lorelei Lingard (Canada)*

Competency Based Medical Education (CBME) is an international movement poised to reshape training programs. However, its success will be based on three key assessment concepts which the Medical Education (ME) community has identified: (1) observable professional activities, (2) interdependent structure of competencies, and (3) progressive development and growth. Approach

A systematic scoping review drawing on citation analysis techniques was used to identify how these concepts exist within ME discourse.<sup>2</sup> Original works for each key concept were identified using Google Scholar (GS), PsycINFO, PubMed, and Web of Science [WS]. Through the WS site (isiknowledge.com), citation data sets were created. ME relevant references were identified using a keyword (KW) search and hand search of titles and abstracts.

Results:

1. Glaser's (1963) paper introduced the notion of referencing assessment to pre-set criteria defined by curriculum or other domains. Overall it is cited 907 [GS], 200 [WS], 144[KW], however it has minimal impact (cited: n=20[KW]) in the ME literature.
2. Campbell and Fiske's (1959) paper proposed the Multi-Trait Multi-Method for convergent and divergent validity to capture the structure of complex skills. Overall it is cited 14558 [GS], 6691 [WS], 3602[KW]. While there is some uptake in the ME field (n=56[KW]), the focus is on the theoretical contribution to validity while the method to capture complex skills is largely ignored.
3. Bryk and Raudenbush's paper offers a widely cited (1553 [GS], 871 [WS], 607[KW]) methodology to capture growth. While citations vary across multiple fields including clinical research, this paper has not entered the ME field (n= 5 [KW]) despite a discussion on growth and development in CBME.

Discussion

The ME community is selective in referencing original sources for these key ideas. While these concepts have a long history in the broader assessment community, we need to revisit them in their capacity to help effectively implement CBME.

**#B2.4 (43)**

**Creating a Core Components Framework for Competency-Based Medical Education: Linking theory to practice**

*Elaine Van Melle (Canada)*

*Jason Frank (Canada)*

*Denise Stockley (Canada)*

*Eric Holmboe (USA)*

*Damon Dagnone (Canada)*

*Jonathan Shrebino (Canada)*

Background: Competency-based medical education (CBME) is rapidly being implemented across the globe. One challenge in studying CBME is that, as a complex innovation, CBME consists of many interacting components. Under conditions of such complexity it is suggested that creating a shared framework could be a useful tool to guide program design, implementation and evaluation.

Purpose of the research: The purpose of this research was to develop and validate such a framework for CBME.

Method: Creating a Core Components Framework (CCF) is a challenging task, particularly in the case of CBME where there is an absence of empirical data identifying which components may be critical. Therefore, development of a framework began with a review of the literature and written materials. Next, the framework was validated using a modified Delphi approach.

Results: A core component is defined as an 'essential and indispensable element of the intervention'. For CBME the following five core components were identified; the determination of competencies required for practice, the description of progression of competencies, appropriate learning experiences, teaching practices and a system of assessment. To complete the framework, each of the core components is organized into three layers; 'conceptual frameworks', 'principles' and 'practice'. The layers build on one another and illustrate how key underlying conceptual frameworks inform the operating principles that, in turn, shape the actual practice of CBME. This level of detail shows how the educational theories underlying CBME can serve to inform practice.

Conclusion: This framework can serve as a useful guide to design and implement a CBME program with high fidelity.

Understanding 'fidelity of implementation' is also important in program monitoring and evaluation. Developing such a framework however, is an iterative process. Future work will focus on convergent validation as the framework is applied across programs.

**#B2.5 (42)**

**Which Clerkship Grading System is Best when using a Global Rating Form Aligned with Entrustable Professional Activities (EPAs)?**

*Jorie Colbert-Getz (USA)*

*Danielle Roussel (USA)*

*Andrew Smith (USA)*

A critical aspect of ensuring entrustment is designing assessments that can accurately measure Entrustable Professional Activities (EPAs). Entrustment seems to represent a terminal either/or construct, yet the majority of clerkships in the US are graded on three (Fail/Pass/Honors) or four tiers.

**Research Question**

Is there an honors level of entrustment for clerkship grading when using an assessment aligned with EPAs?

**Method**

In 2015 the University of Utah School of Medicine implemented a required critical care clerkship for all MS 4s. The major assessment for the clerkship was a global rating form, which measured EPAs 1-3, 5, and 9 with three levels of descriptors rated as a 0, 2, or 4, respectively. Additionally, each physician rater indicated if the student was an “honors” student and described why in a free text box on the rating form. The clerkship was graded pass/fail for AY1516 and we gathered data to determine if honors should be added for AY1617. At midpoint we compared EPA ratings by honors indication- yes/no, with Mann Whitney U tests.

**Results**

We analyzed 47 EPA rating forms from July 2015-December 2016. Honors was indicated for 30 of the forms and no honors for 17. Ratings were significantly higher for Honors compared to no Honors for EPAs 1a, 5, 6, and 9 and for average ratings,  $P < 0.016$  for all comparisons. An average score of 2.9 was equated with no honors and an average score of 3.6 was equated with Honors.

**Conclusion**

Raters appear to be able to discriminate between a “passing” and “honors” student. However, there was only a half point difference, which does not translate into moving from one category to the next on the 3-point scale. Thus, it has yet to be determined if an honors level of entrustment exists for clerkship grading.

**#B3 (20b) Workshop:**

**CBME 101: An Introduction to Competency-based Medical Education**

Time: 1100-1230

Location: MR 118 – P1

*Farhan Bhanji (Canada)*

*Jason Frank (Canada)*

*Peter Harris (Australia)*

*Eric Holmboe (USA)*

CBME is increasingly popular among health professions educators worldwide, but there remains some confusion in the community about the nature of CBME. This large group session is for those new to the field, and will provide an introduction to the essential concepts involved in CBME, including:

- outcome-based education
- competencies
- milestones
- EPAs
- sequenced instruction, and
- programmatic assessment

Through a series of rapid mini-modules, participants will be able to describe all of the elements of a CBME curriculum and contrast it with traditional health professions education designs.

**#B4 (34) Workshop:**

**Transforming Your Program to be Competency-Based: An Interactive Workshop to Explore Strategies and Solutions Focusing on Formative and Summative Assessment**

Time: 1100-1230

Location: MR 119 – P1

*Karen Schultz (Canada)*

*Jane Griffiths (Canada)*

Competency based medical education (CBME) intuitively makes sense and is widely embraced as a preferred approach to health care education. We have been transforming our Canadian Post Graduate Family Medicine program to be competency-based for the last 6 years. Early outcomes are encouraging: more direct observations and performance documentation for our residents, identification of patterns of performance and developmental trajectory allowing for earlier identification of all outliers, with subsequent program modification, and upholding of program decisions when these have been appealed and scrutinized by third parties. Determining practical applications of CBME assessment principles has been interesting and challenging. This workshop will focus on strategies and solutions for CBME formative and summative assessment implementation.

**Purpose:**

To assist program and site directors, assessment and curriculum designers in their implementation of competency-based assessment in their program.

**Format:**

Following the introduction of a conceptual framework for the steps involved in CBME implementation we will focus on workplace-based assessment for formative and summative use. We will identify the facilitators, gaps and pitfalls we faced in our implementation, participants will identify how they might leverage our experience in their setting. The session will end with a large group discussion highlighting group wisdom around implementation successes and solutions to challenges.

**Intended Outcomes:**

Participants will leave with an organizational framework incorporating principles of CBME to use in furthering CBME implementation in their setting. They will have had an opportunity to discuss with colleagues different strategies and solutions to implementing daily workplace-based assessment for formative and summative use that they can then bring back to their setting.

**Level:**

Intermediate

**Lunch & Poster Presentations**

Time: 1230-1330

Location: Outside Room MR 111 – P1

## **#C Simultaneous Sessions**

Oral sessions are 15 minutes each (10 minute presentations and 5 minutes allocated to questions)

### **#C1 Oral Innovations: Implementing CBME**

Time: 1330 -1500

Location: MR 112 – P1

#### **#C1.1 (23b)**

##### **Competence By Design: A National CBME Transformation for PGME in Canada**

*Jason R Frank, Jolanta Karpinski, Elaine van Melle, Jonathan Sherbino, Farhan Bhanji, Sarah Taber, Lisa Gorman, Linda S Snell, Anna Oswald, Denyse Richardson, Sue Dojeiji, Wade Gofton, Rodrigo Cavalcanti, Nancy Dudek, Brian M Wong, Leslie Flynn, Warren Cheung, Tim Dalseg, Cynthia Abbott, Jennifer Stewart, Andre St. Pierre, Lynne Normandeau, Jane Fulford, and Ken Harris (Royal College of Physicians and Surgeons of Canada)*

**Background:** Competency-based medical education (CBME) is an emerging approach to designing medical education worldwide, including PGME. In 2012, the Royal College of Physicians and Surgeons of Canada decided to embark on a fundamental change of Canadian specialty education systems to CBME.

**Purpose:** We describe the transformation of the Canadian specialty residency education system to a unique competency-based hybrid system called Competence by Design.

**Interventions:** In collaboration with medical schools, hospitals, educators and specialty leaders we have designed a CBME system that features: postgraduate training years replaced with stages of training; flexible rotations to enable competency achievement; progression through stages based on achievement of predefined EPAs and milestones from the CanMEDS 2015 competency framework; the creation of local Competence Committees to decide promotion through stages; programmatic assessment; less emphasis on high stakes examinations, and more on workplace observations; a new outcomes focus accreditation system; a new faculty development program; a new model of bedside teaching; a national eportfolio system functioning as an assessment backbone, an archive of achievements, an analytical engine, and an educational management application.

**Applications:** Competence By Design is among the first truly national transformative CBME initiatives, in which an entire system has been reconfigured to support a new medical education system. Educators from around the world will be able to take lessons and features from this novel and bold design.

**Future Directions:** Competence By Design will roll out in cohorts of disciplines over the next few years. Future work will also develop a congruent competency-based continuing education system.

#### **#C1.2 (144)**

##### **Indigenous Health at the University of Manitoba: Reflections on the implementation of a competency-based framework in undergraduate medical education**

*Linda Diffey (Canada)*

*Barry Lavallee (Canada)*

**Background:** The First Nations, Métis and Inuit Health (FNMI) Core Competencies is a curricular framework for medical education in Canada that builds upon the CanMEDS competency framework. The FNMI Core Competencies identifies specific competencies related to working with Indigenous patients and addressing population-level health inequities. In 2013, the University of Manitoba's (UM) medical school implemented the FNMI framework as part of a larger curriculum renewal process in undergraduate medicine. The result was a mandatory four-year longitudinal course in Indigenous Health.

**Purpose:** This presentation will provide an overview of our pedagogical framework, how it relates to the FNMI Core Competencies, and the emerging outcomes from implementing the Indigenous health course.

**Interventions:** The Indigenous Health course uses an anti-racist/anti-colonial pedagogical approach that is the first of its kind in Canada. Fostering the development of medical learners' competencies, particularly the ability to critically analyze colonial impacts on health, has required the development of new and innovative teaching strategies, the engagement of regional Indigenous communities, and mentoring of instructors. In addition to outlining our development process, we will highlight specific innovations that have contributed to the course's success.

Results/Applications: The explicit intent of the Indigenous health course is to produce medical graduates who are not only strong critical thinkers, but also able to translate their knowledge into actions that will interrupt the colonial processes. This is essential to improving the health of Indigenous peoples and is at the heart of the FNMI core competencies. This approach to teaching has been accompanied by challenges, including resistance from learners and institution administrators, but also with positive outcomes, such as the emergence of student advocacy initiatives.

Future Directions: At present there is no evaluation instrument to adequately evaluate the FNMI core competency framework. In the next phase of our curricular development, we will be addressing this need.

### **#C1.3 (16b)**

#### **Continuous Process Improvement Applied to Educational Setting to Optimize Implementation of Competency-Based Medical Education**

*Christy Boscardin (USA)*

In the era of competency-based medical education and as part of the requirement under the Next Accreditation System (NAS), residency training in the US must develop a robust assessment system that monitors the progress of residents meeting the predetermined milestones using variety of assessment methods. Programs will need to find innovative and efficient ways to aggregate, analyze, display, and help monitor educational outcomes. At the trainee level, the system needs to help motivate, increase self-regulated learning, and opportunity to receive feedback and reflect on their performance. The concept of continuous process improvement used in operations research, including the utilization of dashboards and administrative tools, provides an effective framework to help structure and operationalize these goals. Personal informatics applications using tools like learning dashboards can help users to improve self-knowledge through review and analysis of their personal history. Resident's ability to monitor their own progress has many benefits, such as fostering insight, and increasing self-control. In this presentation, we will provide an overview of how continuous process improvement process framework can be adopted in the educational setting to help implement the core essence of competency-based assessments in workplace settings.

### **#C1.4 (116)**

#### **Introducing competency based medical education through faculty development and supervision in the specialist training in psychiatry – a focus group study**

*Tanja Svirskis (Finland)*

*Maija Huttunen (Finland)*

*Eeva Pyörälä (Finland)*

*Grigori Joffe (Finland)*

In 2012, University of Helsinki was still carrying out traditional teaching methods in the specialist training in psychiatry. To introduce competency based medical education in this field, supervision was chosen as one of the areas for development as supervision is a powerful tool to change behaviours of doctors in training.

#### **Purpose**

The goal of this project was to set up a faculty development program for supervisors in psychiatry in the Hospital District of Helsinki and Uusimaa, Finland, covering 30% of the Finnish population.

#### **Interventions**

As a needs assessment, a qualitative study was carried out among 1) supervisors and 2) trainees in psychiatry to study attitudes, skills, needs and satisfaction related to current supervision that was being delivered. The data gathered in focus group interviews (2-5 participants per group) was analyzed using content analysis. Furthermore, a set of workshops was created and delivered as a faculty development program.

#### **Results**

Expected goals and content of supervision were unclear for both supervisors and trainees. Supervisors had no training for delivering supervision, and supervision was usually understood to be the same as clinical consultation. Trainees reported to get very little feedback but wished to have more structured feedback on their performance. The following faculty development program consisted of three workshops about 1) How to support the learning of the trainee 2) How to give feedback 3) How to use Mini Clinical Evaluation Exercise (MiniCEX). To date, over 100 supervisors have been trained with excellent feedback on the program. MiniCEX has become an integral part of the local specialist training program.

#### **Future directions**

Following the success, more trainers are being trained now to deliver similar training in child psychiatry, adolescent psychiatry and in other parts of Finland.

**#C1.5 (104)**

**Competency based evaluation of anatomic pathology residents by use of checklists; A community hospital experience**

*Farah Moid (Canada)*

**Introduction:**

Anatomic pathology residents at St. Joseph Health Centre, Toronto, Canada spend time with 4-5 pathologists during their rotation. The site representative of the Residency Training Committee evaluates the resident at the middle and end of rotation having obtained feedback from staff pathologists and pathology assistants. The checklists are introduced for objective evaluation of residents and also to improve residents learning by self-assessment.

Checklists for two type of specimens are given to residents at the start of 2 month rotation. The residents are expected to complete gross and microscopic examination of at least three specimens of each type. The checklists consist of two sections- gross examination and microscopic examination-completed by pathology assistants and pathologists respectively. The checklists are used by the site representative to assess the progress of resident and to provide valuable feedback.

**Methods:**

A survey of six questions was sent electronically to staff pathologists (4), pathology assistants (2) and anatomic pathology residents (5) who have rotated through St. Joseph Health Centre after July 2015. The responses are based on Likert's scale and received electronically.

**Results:**

The responses from majority of residents (60%) and pathologists (60%) suggest that the use of checklists is a useful tool in anatomic pathology resident training. Pathology assistants' opinion is split on this issue.

**Discussion:**

Competency based evaluation has not been widely practiced in anatomic pathology resident training in Canada. The usefulness of checklist as a tool in residents' competency based evaluation is not yet established. In our experience, the major concern against the use of checklist is that cases with checklists are completed in longer time than cases without checklist.

**Conclusion:**

This is a small study and we plan to continue it for one year. Additional studies are needed to establish the usefulness of checklists in anatomic pathology resident training.

**#C2 Oral Research: Assessment & Evaluation 1**

Time: 1330 – 1500

Location: MR 111 – P1

**#C2.1 (39)**

**Narrative comments for multisource feedback: An approach to guiding development of CanMEDS competencies**

*Jocelyn Lockyer (Canada)*

*Joan Sargeant (Canada)*

*Lara Cooke (Canada)*

**Background:** Alberta surgeons participate in a multisource feedback (MSF) program every 5 years receiving numeric feedback from physician colleagues, co-workers (e.g., nurses) and patients. The purpose of this study was to test two different wording formats of open-ended questions to assess the numbers of comments generated by different sources (i.e., medical colleague or co-worker), wording format, question type, and CanMEDS competency.

**Method:** The assessors for 32 surgeons received format 1 questions (Q1. What is one thing this physician does particularly well; Q2. What is one thing you would have the physician target for action) whilst assessors for another 37 surgeons received format 2 questions (Q1. What does this physician do well? Q2. What might this physician do to enhance his/her practice).

**Results:** Surgeons received a mean of 10.9 responses. Format 1 generated more responses than format 2 (mean of 11.65 vs. 10.3). Co-workers provided more responses (n = 419) than medical colleagues (n = 335). There were more responses to questions that asked about things the physician did well than aspects that needed improvement (461 vs. 293). Comments could be aligned with all of the CanMEDS competencies, although aspects of collaboration, professionalism, and medical expert were most likely to be described.

**Conclusions:** Requests for narrative comments are more likely to yield more responses if the questions are specific and ask about things the surgeon does well. Co-workers are more likely to provide comments. Data will be aligned to CanMEDS competencies. Further testing of question wording is warranted. **Discussion:** Physicians and researchers have asked for narrative comments in MSF programs to explain quantitative data. This study suggests that testing different wording formats may be needed to facilitate data acquisition along with an assessment of the sources that provide the data and the content of the data provided.

**#C2.2 (47)**

**Patient handover entrustable professional activity: Validity evidence for two different structured clinical observation tools to inform entrustment decisions**

*Daniel West (USA)*  
*Joseph Lopreiato (USA)*  
*Jorie Colbert-Getz (USA)*  
*Kathleen Wortmann (USA)*  
*Robert Englander (USA)*  
*Carol Carraccio (USA)*  
*I-PASS Study Group (USA)*

**Background:**

Patient handovers at change of shift are an important source of miscommunication leading to medical errors that harm patients; however, use of the I-PASS handover method has been associated with a reduction in these errors. Accordingly, patient handovers have been identified as an important Entrustable Professional Activity in the USA. However, tools to assess handover entrustment are lacking.

**Research Question:**

Generate validity evidence for two structured clinical observation tools designed to inform handover entrustment decisions.

**Methods:**

Using a modified Delphi process, an expert panel developed the I-PASSco tool (10-items derived from I-PASS rated on 5-point frequency scale [maximum score, 50]) and the HandSCO tool (17-items derived from I-PASS and ACGME Pediatric Milestone behavioral anchors rated on 3-point scale [maximum score, 51]). In 2014-2015 trained faculty observers used these tools and a global EPA assessment item to rate 80 first-year pediatric residents during a patient handover OSCE station. We performed a generalizability study (one-facet [item]) to determine internal consistency of item scores, decision studies to determine if the items could be reduced, and linear regression to determine threshold scores for entrustment,

**Results:**

Generalizability coefficients were 0.77 (I-PASSco) and 0.87 (HandSCO). Residents accounted for 84% (I-PASSco) and 82% (HandSCO) of score variance. Twelve I-PASSco and 10 HandSCO items were required to maintain a reliability coefficient > 0.80. The regression equations (I-PASSco [R<sup>2</sup> = 0.47, Y = 25.94 + 5.8x]; HandSCO [R<sup>2</sup> = 0.50, Y = 30.33 + 5.60x]) suggested a resident would need a minimum score of 43 (I-PASSco) and 47 (HandSCO) to reach entrustment.

**Conclusion:**

I-PASSco and HandSCO scores had strong content validity and reliability. The number of HandSCO items could be greatly reduced. We identified threshold scores for entrustment for OSCE assessments; however, additional evidence is needed to determine whether these thresholds could be applied to workplace observations.

**#C2.3 (64)**

**Design and use of a simulated “Entrustable Professional Act” in orthopaedic surgery -- assessing ankle fracture management skills**

*Markku Nousiainen (Canada)*  
*Veronica Wadey (Canada)*  
*Douglas Archibald (Canada)*  
*Marissa Bonyun (Canada)*  
*Peter Ferguson (Canada)*

**Background**

Competency-based medical education requires residency programs develop valid assessment tools to demonstrate resident performance. Traditional measures to assess competencies in surgical education are noted to be subjective, evaluating trainees on segmented tasks. Entrustable Professional Acts (EPAs) represent a means of addressing these gaps in evaluation tools. This study evaluated how a simulated EPA on ankle fracture care could assess the level of competence in a junior resident cohort in a residency training program that is competency-based.

**Methods**

A simulated EPA using a standardized Likert scale was developed to assess the level of competence in junior level residents in managing patients with ankle fractures. Outcome measures included (1) structured oral examinations of pre-operative and post-operative care; (2) observed structured assessment of technical skills (OSATS) using an artificial bone model; and (3) individual interviews and focus groups to obtain feedback on the feasibility of the EPA as a valid assessment tool. The simulated EPA underwent pilot testing at the end of the resident's first year of residency (T1). The tool was then used to assess trainee competence 2 months after the first year of training (T1) and 5 months later (T2). Paired-sample T tests were used to compare scores across time periods, with statistical significance defined as p value of <math>0.05</math>.

#### Results

Seven residents participated in the final study. All residents were found to be competent in all outcome measures between T1 and T2; there was no significant difference between these time points. Focus groups revealed that all residents favored immediate feedback following their performance and on-going practice between times of evaluation.

#### Conclusions

This study suggests that an EPA assessing ankle fracture management skills in junior residents is a valid tool to assess level of competence.

#### Level of Evidence

A prospective cohort study design was implemented, representing Level II evidence

### **#C2.4 (139)**

#### **End-of-training EPAs for undergraduate medical education**

*Ylva Holzhausen (Germany)*

*Asja Maaz (Germany)*

*Harm Peters (Germany)*

#### Background

The concept of “Entrustable Professional Activities” (EPAs) is widely applied in postgraduate medical education, but to a lesser extent in undergraduate medical education. The Charité – Universitätsmedizin Berlin, Germany decided to define Core EPAs as integrated, end-of training outcomes for their new competency-based undergraduate medical program in a faculty-wide process.

#### Research Question

Which EPAs are students expected to be able to perform with distant supervision at the end of their medical curriculum?

#### Methods

An online Delphi-study with three rounds was conducted among 45 faculty physicians of various medical specialties. All were actively involved in the curricular development process at the Charité. As a reference point, the aim was to ascertain those EPAs which residents are expected to perform in their first days in clinic with distant supervision of a supervisor, irrespective of the medical specialty. Participants were asked to rate and modify the title, specifications and limitations, knowledge, skills and attitudes and meaning of entrustment of 12 EPAs. Consent was achieved when a Content Validity Index (CVI) of 80% or more was reached.

#### Results

The response rate was higher than 76 % in all three Delphi rounds. In the first round, six EPA descriptions received a CVI higher than 80 %. Based on participants’ feedback, EPAs were revised. In the second round, 10 EPA descriptions received a CVI higher than 80 %. Those EPAs with a lower CVI were revised and received a CVI higher than 80% in the third round. The defined EPAs show a great overlap with EPAs for undergraduate medical education defined by the AAMC.

#### Conclusions

Physicians of various medical specialties agreed on a set of overarching Core EPAs which residents are expected to perform on their first days under distant supervision. General, specialty-independent EPAs help to define meaningful end-of-training outcomes for competency-based, undergraduate medical education.

### **#C2.5 (63)**

#### **A Cost Analysis of the use of Simulation for Teaching and Assessing Orthopaedic Residents: 5 Years of Experience from the Competency Based Curriculum at the University of Toronto**

*Markku Nousiainen (Canada)*

*Peter Ferguson (Canada)*

*William Kraemer (Canada)*

*Oleg Safir (Canada)*

*Richard Reznick (Canada)*

*Ranil Sonnadara (Canada)*

*Sydney McQueen (Canada)*

*Benjamin Alman (USA)*

#### Background:

Although simulation-based training is becoming widespread in surgical education and research supports its use, one major limitation is cost. Until now, little has been published on the costs of simulation in residency training. At the University of Toronto, a novel Competency-Based Curriculum (CBC) in Orthopaedic Surgery has been implemented for training selected residents which makes extensive use of simulation. Despite the benefits of this intensive approach to simulation, there is a need to consider its financial implications and demands on faculty time.

#### Purposes:

This study presents a cost analysis of implementing simulation in the University of Toronto's novel CBC program compared with historic costs of running simulation.

Methods:

All invoices for simulation training were reviewed to determine the financial costs of simulation before and after implementation of the CBC. Faculty hours dedicated to simulation were also evaluated.

Results:

The costs of using simulation to teach and assess all residents in the CBC and regular stream programs (CDN 155,748.01) was fifteen times higher than the cost of using simulation to teach residents before implementation of the CBC (CDN 10,088.90). Faculty hours spent teaching and assessing trainees increased over three times.

Conclusions:

Although the cost of widespread simulation in the CBC curriculum is significantly higher compared with the regular stream of training, we suggest that this cost is offset by improved and more efficient learning outcomes.

Clinical Relevance:

The higher costs and demands on faculty time associated with implementing simulation-based training may be a necessary price to pay for enhanced surgical training.

## **#C2.6 (150)**

### **How do newly qualified doctors (FY1s) evaluate the use of Competency-Based Education in their first year of practice?**

*Luke Forster (UK)*

Background

Worked based assessments are an integral part of postgraduate medical education in the UK. There are minimum compulsory numbers that need completion on an electronic portfolio by newly qualified doctors (FY1s). These consist of DOPs, CEX, CBD and competence in 'core procedures'.

The educational experience of junior doctors in the UK is usually evaluated using quantitative questionnaires. These identify issues but often don't provide useful information to improve the educational programme.

This is a formative, qualitative evaluation of the educational experience of surgical FY1s and in particular the use of competence-based learning to enhance their learning.

Methods

This pilot study involved 3 focus groups (total 25 FY1s) evaluating their experience of competence-based learning in a UK teaching hospital. Potential improvements were proposed. Thematic analysis was performed with results contextualised with the existing literature.

Results

FY1s reported varying experiences of competency-based assessments as an educational tool: responses ranged from 'very useful' to 'tick-box exercises'. On-calls involved clerking patients, receiving feedback from colleagues, performing practical skills under supervision and participating in consultant-led post-take ward rounds. The experience was challenging and stressful but was an excellent opportunity to improve and assess their competencies under supervision. They did report difficulties in getting consultants to complete such assessments.

'Normal days' had less educational focus with the workload they and their senior colleagues experienced restricting opportunities for work-based assessments and supervision.

Conclusions

Doctors had varying experiences of competency-based learning. Best learning occurred from registrar assessments during on-call shifts. Consultant assessments were variable, less frequent and often less rewarding. Normal ward shifts were less educational.

Additional benefits of competency based learning were building relationships with trainers and reward for additional/overtime work.

Proposed improvements to competency based learning included immediate completion of assessments, appropriate training for educators and the inclusion of detailed and personalised feedback.

**#C3 (35) Workshop:**

**Contemporary Workplace Assessment: How Do We Link Patient Care Quality Indicators to Trainees?**

Time: 1330-1500

Location: MR 118 – P1

*Daniel Schumacher (USA)*

*Mark Rosenberg (USA)*

*Anne Pereira (USA)*

*Robert Englander (USA)*

**Background**

The goal of outcomes-based education is to define and ensure outcomes for trainees that meet the current and emerging needs of the populations they serve both during and after training. Entrustable professional activities (EPA) provide an ideal framework for defining and assessing such educational outcomes. However, current EPA and other work-based assessment efforts have minimally explored the association between performance assessment and patient care quality. This link is central to ensuring safe, effective patient care.

**Purpose**

This session seeks to explore how we can link trainee performance assessment to patient care quality indicators.

**Format**

After framing the main question of consideration, most of the session will be spent in small group problem-solving focused on discussing these key questions:

- 1) Quality indicators are often used to evaluate faculty performance. Of those measures you have seen used, which ones would work for trainees as well?
- 2) Not all performance measures used among faculty are the right fit for the tasks that trainees complete. What additional quality care indicators might exist for trainees?
- 3) For those measures you identified in question 2, which ones are feasible and acceptable to determine for all trainees in a program in your local environment? For those measures not deemed to be feasible or acceptable, what are the barriers to using them and how could these be overcome?
- 4) How should quality care indicator data for individual trainees be incorporated into summative assessment decisions? What weight should it be given when compared to other assessment and performance data collected and reviewed?

**Expected Outcomes For Participants**

At the end of this session, participants will be able to discuss the use of patient care quality indicator data in trainee performance assessment, including possible measures that could be used as well as barriers to overcome in this effort.

**#C4 (6b) Workshop:**

**Using a Change Framework to Advance CBME Nationally and locally: Learned lessons from a National Accrediting Body and Residency Program**

Time: 1330-1500

Location: MR 119 – P1

*Ivy Oandasan (Canada)*

*Keith Wycliffe-Jones (Canada)*

Over the last 6 years, The College of Family Physicians of Canada (CFPC) has led the change to competency-based training in all 17 Canadian Family Medicine (FM) Residency Programs. This workshop provides participants opportunities to consider internal and external drivers for the change to competency-based education, viewed from the perspectives of a national accrediting body (CFPC) and a local FM Residency training Program. The use of Kotter's change framework in national and local implementation will be demonstrated, along with lessons learned, to allow participants to develop their own purpose statements and potential strategies around CBME implementation suitable to their own contexts.

**Coffee Break & Poster Presentations**

Time: 1500 -1530

Location: Outside Room MR 111 – P1

## #D Simultaneous Sessions

Oral sessions are 15 minutes each (10 minute presentations and 5 minutes allocated to questions)

### #D1 Oral Innovations: Novel Approaches

Time: 1530 - 1700

Location: MR 112 – P1

#### #D1.1 (50)

#### **Training Anaesthetists in the use of the Advocacy Inquiry Framework for Feedback in the Clinical Workplace**

*Rebecca Fanning (Ireland)*

*Eva Doherty (Ireland)*

*Sinead Galvin (Ireland)*

*Karen Tan (Ireland)*

*Patrija Ecimovic (Ireland)*

*David Moore (Ireland)*

*Joesphine Boland (Ireland)*

#### Background:

Striking a balance between formative and summative assessment remains a challenge in implementing competency based medical education. Effective feedback is critical to supporting the achievement of competence over successive milestones. A number of tensions exist, however, that influence provision of and receptivity to feedback. The Advocacy Inquiry (A-I) model addresses many of the sociocultural and interpersonal elements that are at play.

#### Purpose:

The aim of this initiative was to enhance the quality of feedback practice amongst consultants and trainees in anaesthesia, using the A-I model. This innovative model for providing, receiving and responding to feedback was adopted by the Competency Framework Working Group of the College of Anaesthetists of Ireland, in light of its potential for changing practice and for generating evidence of achievement of competence.

#### Interventions:

Training of 'champion' consultant supervisors and trainees from pilot hospital sites was provided by a clinical psychologist, an educationalist and anaesthetists. Interactive workshops included role-plays which provided material for subsequent development of e-learning resources. A cascade model was employed to induct peers in the practice, by sharing expertise and resources, whereby champions engaged peers in effective feedback practices.

#### Results/applications:

Consultants are interested in receiving support with their feedback skills. In a busy clinical setting, accessible learning resources are essential to disseminating the concept. A collaborative approach to the development of materials in response to expressed needs proved effective and timely. A number of enabling and constraining conditions can be identified in the dissemination of good practice which have relevance to other contexts.

#### Future directions:

The success of the cascade model employed for the dissemination of a novel model of feedback provision has relevance for other such initiatives. Following analysis of this pilot stage of development it is hoped to generalise this model of training and initiation on a national scale.

#### #D1.2 (97)

#### **An international collaboration to develop a competency-based physician leadership curriculum in postgraduate medical education**

*Ming-Ka Chan (Canada)*

*Anne Matlow (Canada)*

*Deepak Dath (Canada)*

*Jamiu Busari (Netherlands)*

*Jordan Bohnen (USA)*

*Maureen Topps (Canada)*

*Melchor Sánchez-Mendiola (Mexico)*

*Diane de Camps Meschino (Canada)*

#### Background / Purpose

The CanMEDS Framework describes seven Roles (domains of competencies) for physician education. Designed for postgraduate medical education in Canada, the framework is also widely used internationally. The 2015 CanMEDS revision

changed the “Manager” Role to the “Leader” Role, challenging programs to develop their learners’ leadership competencies. The opportunity exists to harness international experience and expertise to propel broad system improvement by developing a shared, locally adaptable curriculum for everyday physician leadership in postgraduate education.

#### Interventions

Originating from the CanMEDS 2015 review process, the University of Toronto and Royal College (Canada) collaborated on two international summits on leadership education for physicians. These summits brought together patients, learners, educators, and medical, health professional, and business faculty engaged in physician leadership development worldwide. The first summit in 2014 led to a commitment from a growing international community of practice to work on a postgraduate leadership curriculum. The curriculum embeds the five pillars of the LEADS leadership framework (Lead Self, Engage Others, Achieve Results, Develop Coalitions and Systems Transformation) into the CanMEDS competency-based medical education (CBME) framework.

#### Results/Applications

Ten modules of a CBME postgraduate leadership curriculum developed for release on September 27th 2016, at the 3rd Toronto International Summit on Leadership Education for Physicians (TISLEP) in Niagara Falls, Canada. Two modules will be presented for each LEADS pillar.

#### Future Directions

Initial efforts to develop an international shared physician leadership curriculum have attracted and engaged a community of practice to create the first in a series of curricular modules. As more modules are developed, they will be integrated with leadership curriculum development in undergraduate medical education and across other healthcare professions to ensure that all healthcare practitioners, regardless of title, exercise leadership to optimize care. Broader international and cross-sectoral collaboration, innovative implementation, strategies for assessment, program evaluation, and ongoing scholarship are anticipated.

### **#D1.3 (146)**

#### **Competence Assessment Practices and a Novel Visualisation Tool for Pharmacy Interns: A Case Study Using Activity Theory and Semiotics**

*Michelle Flood (Ireland)*

*Brett Bligh (UK)*

*Paul Gallagher (Ireland)*

*Natasa Lackovic (UK)*

**Background:** The role of competency-based assessment is being prominently debated in the health professions/medical education literature and among policymakers and regulators. All appear to recognise the challenges associated with assessing students against lengthy and complex competency frameworks, and the potential for subsequent difficulty in utilising the data to facilitate intern development. While the empirical literature to support this is sparse, this concern is reflected in our experience with the National Pharmacy Internship in Ireland, where pharmacy interns self-assess and are assessed by their tutors while in practice against 178 behaviours at least three times per year, resulting in a minimum of 1068 data points per intern.

**Purpose:** The purpose of the novel visualisation tool is to allow the visualisation of the data from tutor and intern evaluations of current competence in an accessible and flexible way (e.g. by competency framework domain). The aim was to support the provision of specific feedback around intern performance and development as mapped to the pharmacy regulator's national standards for pharmacists' competence, namely the Core Competency Framework for Pharmacists. **Interventions:** In order to assist pharmacy interns and tutors use assessment data to make decisions and plan the intern's development, a novel, Moodle-based (open source) visualisation tool (Compass) was designed and developed and implemented nationally.

**Applications/Results:** Using a multi-case study approach with Activity Theory and Semiotics as theoretical frameworks, we considered the developmental potential of the visualisation tool on workplace-based competence assessment practices of pharmacy interns and tutors. We observed that the visualisation tool enabled interns and tutors to approach the appraisal in different ways, and facilitated a focus on the 'bigger-picture' rather than simply granular behaviours.

**Future Directions:** The novel visualisation tool has demonstrably impacted on competence assessment processes in the assessment of pharmacy interns that can be straightforwardly translated to other disciplines.

**#D1.4 (117)**

**Is there a consensus about the most suitable parameters? A Delphi-Study with German-Speaking Experts Concerning Possibilities to Evaluate Competency-Based Medical Education**

*Volkhard Fischer (Germany)*

*Silke Biller (Switzerland)*

*Thorsten Schäfer (Germany)*

*Jerome Rotgans (Germany)*

In the past years a task force of the German Society for Medical Education (GMA) tried to detect those parameters, which are most broadly agreed upon to detect differences in educational quality between classical and reformed medical degree programs in Germany. Four special symposia and several contributions to national conferences were the visible output of these activities. In between two on-line Delphi-surveys generated data as starting point for the development of a catalogue of parameters.

The first Delphi-survey collected 25 parameters, which can discriminate between medical degree programmes (2013) and sorted them into 16 clusters. The most suitable for discrimination were: (i) student attrition rate, (ii) self-rated practical learning, and (iii) performance after the licensure examination.

Re-categorization of the 25 parameters resulted in 17 more homogenous clusters, which initiated the second Delphi-study (2014). In this round a slightly greater sample of German-speaking experts in medical education from the majority of the medical faculties in Germany and Austria joined. Four clusters were selected: (i) objective theoretical learning outcome in assessments, (ii) objective practical learning outcome, (iii) evaluation of the students by their first employers, and (iv) the structure of the compared degree programmes.

Last year GMA finalized the "National Competence Based Catalogue of Learning Objectives for Undergraduate Medical Education" (NKLM) after more than five years of discussions. Because this catalogue will have an impact on the federal government's "Master Plan 2020 on Medical Education" we decided to start a third Delphi-survey in February.

- In this study we brought the 17 parameter clusters of the second study in contingency table relation to the four competence levels of the NKLM.
- We asked our experts whether these clusters are suitable to evaluate competence gain during a degree programme. The results will be presented for the first time in Barcelona.

**#D1.5 (122)**

**The use of an OSCE station to assess procedural skill log books at program completion**

*James Fraser (Australia)*

Medical graduates commencing postgraduate practice are expected to demonstrate competence in the decision making processes and performance of common procedural skills. Accrediting and registration bodies include this as a core outcome for medical programs. In 2012 the Medical Deans of Australia and New Zealand (MDANZ) Medical Graduate Competency Framework mapped expected the expected competencies and levels of achievement to the Australian Junior Doctor Framework for graduates from Australian and New Zealand medical programs. In a large distributed cohort undertaking clinical rotations across multiple metropolitan, regional, rural and international sites there can be challenges documenting and analyzing student's completion of log books, with additional challenges in assessing learning.

Method:

This paper will present the development and implementation of a digital log book based upon the MDANZ framework which was undertaken during the clinical immersion phase of the program.

The assessment of student's completion, understanding of selected diagnostic and procedural skills was introduced as an OSCE station during the final year OSCE.

Results:

Our reflections and results from two successive cohorts will be analyzed and presented.

**#D1.6 (142)**

**5D Modelling of Competency-based Clinical Supervision in Health Professions**

*Tabassum Zehra (Pakistan)*

**Background**

Clinical supervision is diverse and multidimensional. Effective clinical supervision is expected to result in competent healthcare providers resulting in provision of improved quality of healthcare. Competency based clinical supervision is attracting attention with more discussions around it. However, the competency-based supervisory models are vulnerable by the complexity of outcomes. So what are the different dimensions to base today's competency-based effective clinical supervision?

**Intervention**

A cross section study was conducted at Aga Khan University; Karachi, Pakistan with Postgraduate Medical Education residents that proposed a five dimensional model which can be used for competency based clinical supervision in health professions. This is based on Social-cognitive Learning Theory.

**Application**

The proposed model has five dimensions

First Dimension: Learner Self Efficacy

Second Dimension: Outcome Expectations

Third Dimension: Socio-Structural Factors

Fourth Dimension: Supervisor Competence

Fifth Dimension: Supervisory Relationship

The process of clinical supervision itself entails the monitoring process, the support process and the learning process. There is a dearth of literature in competency-based clinical supervision with respect to health professions.

**Future Direction**

Another study is under way to determine the relationship of the factors that contribute to effective competency based clinical supervision in health professions. This further development is based on Kolb's Experiential Learning, Gagne's Learning Theory, Skinner Operant Condition Theory and Transformation Learning Theory. This study uses the five dimensions to build a theoretical based working model of competency-based clinical supervision in health professions.

**#D2 Oral Research: Assessment & Evaluation 2**

Time: 1530 - 1700

Location: MR 111 – P1

**#D2.1 (67)**

**Validating Competency-based Milestones in Undergraduate Medical Education**

*Kimberly Lomis (USA)*

**Background**

To generate meaningful performance evidence for medical student portfolios, we implemented developmental milestone descriptors for key competencies, detailed enough to inform personalized learning plans yet inclusive enough to apply across required courses.

**Research Question**

Are the competency milestones we drafted valid in reflecting the performance of medical students?

**Methods**

**Population**

Medical students in the pre-clerkship and clerkship phases at a single US institution over 2 years were included in the study.

**Data Collection**

Individual assessments were continually captured in a digital learning portfolio as students completed required coursework, within the context of a larger curricular revision. Aggregate assessment data was viewed within the portfolio platform and exported into Excel spreadsheets for additional analysis.

**Analysis**

We reviewed the distribution of milestone levels 1) for an individual student across competencies; 2) for a given competency across students within one training level; 3) by an individual assessor across students within one training level; and 4) for a given competency to students across advancing training levels. Qualitative input was gathered from assessors and students.

**Results**

A normal distribution of performance levels among students was found for most competencies. There were some competencies in which all students were assessed at similar levels. Most assessors utilized a spectrum of milestone levels, with similar distributions among assessors. For some competencies, aggregate patterns in performance were atypical; qualitative analysis

revealed that some milestones were worded poorly or competencies were measured in a setting in which there was insufficient opportunity for learners to display a full range of performance.

Conclusions

Preliminary findings indicate that the milestones are meaningful to assessors and help to discriminate among levels of student performance. A variety of improvements in the milestones have been undertaken targeted to specific issues identified in our analysis.

### **#D2.2 (158)**

#### **Milestones and Entrustable Professional Activities: The Key to Practically Translating Competencies in Interprofessional Education?**

*Susan J. Wagner (Canada)*

*Scott Reeves (UK)*

Background:

Competency-based education and practice have become foundational for developing IPE and interprofessional collaboration (IPC). There has been a plethora of competencies developed in these areas recently, both at individual institutions and nationally, however, their effective integration and thus potential has not been fully realized educationally. Milestones and entrustable professional activities (EPAs) are new concepts and assessment approaches from medical education that provide a way to functionally use and maximize competencies to ensure that competency is attained. They are applicable to learning activities both within the classroom and the clinic, as well as to lifelong learning.

Research Question:

Can EPAs be developed for IPE and how can they and milestones aid in translating competencies?

Methods:

The study uses a sequential mixed methods approach. The first phase utilizes a modified Delphi technique to identify possible EPAs based on existing competencies and milestones from a large university. The second phase will begin to create specific EPAs for the IPE curriculum to provide a robust approach to assessment using focus groups of international experts.

Results:

It is expected that this study will generate a series of EPAs appropriate for the effective assessment of IPE learning activities. Future work will involve applying the EPAs where they are typically used in student-based simulated and clinical education settings. This will allow a better understanding and functional use of both competencies and milestones that will enable the alignment of actual learning with assessment.

Conclusions:

Realizing how EPAs can be applied in IPE across the continuum may well be transformative to optimize collaborative practice across the system for the ultimate benefit of clients/patients and families. In this way, attainment of competencies will be ensured and accountability for interprofessional standards of practice thus accomplished.

### **#D2.3 (12b)**

#### **Competency-based medical education implementation: How are we shifting assessment culture?**

*Jane Griffiths (Canada)*

*Nancy Dalgarno (Canada)*

*Karen Schultz (Canada)*

Introduction: Competency Based Medical Education (CBME), the curricular approach utilized by Queen's University Department of Family Medicine (DFM), represents a paradigm shift from the traditional time and process based education training approach to one that requires postgraduate medical trainees to demonstrate their evolving abilities. To meet the requirements of CBME, the DFM implemented the Portfolio Assessment and Support System (PASS) (electronic portfolio platform that includes field notes, learning plans, case reflections, procedure logs and other assessment data, reviewed with Academic Advisors (AAs) quarterly). The purpose of this study was to determine how the implementation of CBME changed the culture of assessment in the DFM.

Methods: This is a qualitative study, based in phenomenology, that included interviews with nine AAs and two focus groups with residents (n = 12) to understand their perspectives and experiences in a CBME environment. Data analysis included an emergent design that identified three main themes: recognition of the importance of a robust assessment system; use of criterion-referenced performance standards; and early identification of residents in difficulty leading to better support of individual needs.

Conclusion/implication: The study findings indicate that the culture of assessment has changed. AAs recognize PASS as valuable for informing competency decisions. They now focus on criterion-referenced performance standards that include Entrustable Professional Activities. This assessment process allows for early identification of residents in difficulty and subsequently, better support of individual needs. Our findings will have broad implications for DFM faculty development needs and specialty programs implementing CBME.

**#D2.4 (2b)**

**Assessment using the Competency-Based Achievement System (CBAS): Examining quantity and quality of assessment information before and after implementation**

*Shirley Schipper (Canada)*

Traditional medical education assessment approaches tended to focus on measuring medical knowledge and procedural skills. Competency-based assessment approaches carry with them an underlying assumption that while static knowledge and procedural skills are important, the ability to apply knowledge, communicate effectively, practice patient-centred care, and conduct oneself in a professional manner are also essential elements that must be assessed. In 2009, we implemented the Competency-Based Achievement System (CBAS). Our goal in switching to CBAS was to broaden the assessment of our residents to capture all competencies of an effective physician. In this study, we compared assessment data before and after implementation of CBAS, to evaluate whether assessment information post-CBAS is:

- 1) more detailed and informative,
- 2) addresses multiple competencies beyond medical knowledge and procedural skills, and
- 3) shows evidence that residents had an opportunity to self-assess; as compared to pre-CBAS assessment information. Using secondary data analysis, we looked at assessment information contained in resident files for 4 years pre-CBAS and 5 years post-CBAS.

We found that CBAS facilitated the collection of better assessment information about residents than was found before implementation. The emphasis shifted from medical knowledge to a broad assessment of all competencies identified by our program as essential. CBAS also shifted the focus from rankings to narrative about resident competence, which provided greater information about resident strengths and weaknesses. Finally, an emphasis on guided self-assessment encouraged residents to self-assess using the assessment evidence in CBAS.

**#D2.5 (21b)**

**Early Intervention Saves Careers: Experience with a Clinical Competence Committee in a CBME Era**

*Jason Frank (Canada)*

*L Thurgur (Canada)*

*K Sampsel (Canada)*

*S Choi (Canada)*

*A Murnaghan (Canada)*

**Background:** Competency-based medical education (CBME) is an approach that focuses on a systematic, stepwise approach to acquiring and assessing competence. Clinical Competence Committees (CCC) are a technique to synthesize data on learners' progression of expertise across multiple assessments. We describe our initial experience implementing a CCC to assess learner progress in a residency (PGME) program.

**Methods:** The University of Ottawa Emergency Medicine specialist training program is a 5-year curriculum with 49 trainees, and with a curriculum of traditional and competency-based elements. In 2014, we implemented a CCC meets a minimum of four times per year to review the progress of every learner in the system. For each learner assessment data is reviewed, synthesized, curated and presented from multiple sources, including: end of rotation reports, a national practice exam, the American Board of Emergency Medicine practice exam, an annual simulation-based OSCE, quarterly quizzes, and submitted narratives from supervisors (classified as kudos, comments, or concerns). Each learner is assigned a status based on the data and discussion: "progressing as expected", "not progressing as expected", "excelling", or "failure to progress". A summary of each case, the proposed status, and the suggested intervention (none, modified learning plan, formal remedial program) are presented at the Residency Training Committee for decision.

**Results:** Over the first 3 years of the CCC, we have completed approximately 350 reviews, and identified 300% more junior trainees than previous who warranted intervention. 100% of these were successfully remediated, and their assessments approached those of their peers within 1 year. Senior trainees who were identified required greater intervention and, in one case, formal remediation with extension of training.

**Conclusion:** The CCC is a powerful technique to synthesize large amounts of assessment data on the progress of trainees. Our initial experience suggests that CCCs are superior for recognizing junior trainees who are falling off expected competence curves, allowing successful remediation.

**#D2.6 (170)**

**Mini-CEX as an assessment tool to assess clinical skills of Ophthalmology residents**

*Kavita Bhatnagar (India)*

**Background:** There has been a growing concern that trainees are infrequently observed, assessed, and given feedback during their workplace-based education. This has led to an increasing interest in a variety of assessment methods that require observation and offer the opportunity for feedback.

**Methods:** This observational study was conducted on 24 post-graduate students who were assessed on clinical skills, communication skills, professionalism and ethics in different clinical settings using a validated mini-CEX global rating scale. Student and faculty feedback was obtained on their experience with mini-CEX. Descriptive statistics and qualitative methods were used for analysis.

**Results:** A total of 516 encounters were observed and rated. Mean score and maximum improvement was seen for Humanistic qualities/professionalism. 100% residents found mini-CEX exercise useful. Faculty feedback was more useful than multiple encounters being observed. The mean score for faculty satisfaction with mini-CEX was 5.33 and for the students it was 5.48.

**Conclusion:** Mini-CEX is an examination tool which permits evaluation based on a much broader set of clinical settings and patients. It also gives an opportunity to observe and communicate with the students in real life settings. It can be used as a tool to identify and highlight deficient areas in individual performance for further improvement.

**#D3 (66) Workshop:**

**Interpreting Milestones Data: Enabling Residency Programs to Implement Change**

Time: 1530 - 1700

Location: MR 118 – P1

*Stanley Hamstra (USA)*

*Eric Holmboe (USA)*

An important component of competency-based medical education (CBME) in several countries is Milestones. In the US, the ACGME has recently implemented the Next Accreditation System (NAS), which shifts the emphasis of accreditation from purely assurance to continuous quality improvement. A central component of NAS are the Milestones, which were developed to guide training programs for residents, (i.e. post-graduate trainees). Since July 2013, the ACGME has collected Milestones data from over 80 specialties, representing over 117,000 residents, for evidence of competency achievement. We will review some of these results, but focus the workshop on strategies for data interpretation and development of guidelines to assist stakeholders in enhancing residency education. Key processes include cross-checks for data validity and strategies for interpretation and implementation. The ultimate goal is to work with program directors as partners to improve the quality of decisions about resident advancement. An important issue to consider at this early stage of data analysis is to carefully attribute patterns of variation in the data to appropriate factors, whether it be curriculum content and design, cultures and practices around rating and scoring, or how Milestones language is interpreted by both residency program committees and the specialty organizations which guide those committees. Additional issues will include change management and qualitative methods for deeper insights into decision-making at the program level.

**#D4 (72) Workshop:**

**Failure is Not An Option: A Developmental Approach to Assessment and Feedback in the Workplace**

Time: 1530 - 1700

Location: MR 119 – P1

*James Kwan (Australia)*

*Suhba Ramani (USA)*

**Background**

Work-based assessment (WBA) targets the highest level of Miller's pyramid- the "does" level, yet clinicians find it challenging to perform meaningful assessment of trainees in actual patient care settings. A developmental approach to defining learning outcomes helps in determining whether the trainee is on an appropriate "trajectory." Moving towards a developmental assessment system requires comprehensive faculty development for assessors to learn a shared framework and understand what competence looks like at different levels of training

**Purpose**

In this workshop, we will reflect on the challenges of assessment of trainees in the clinical environment, discuss strategies for designing a developmental WBA and feedback system and approaches to designing faculty development.

**Format**

We will use a combination of educational strategies to maximise interaction and engagement of participants:

- Brainstorming- WBA challenges and solutions
- Mini-didactic presentations
- Small group exercises- List skill domains for a specific clinical activity (EPA) and design a developmental scale for one domain (milestones)
- Skills practice - frame of reference training using video scenarios
- Role-play - framing feedback conversations using a developmental approach

Workshop participants will:

- Reflect on the challenges of assessing the performance of trainees in the clinical workplace
- Discuss principles and their application to a developmental model for workplace assessment
- Learn and practise strategies for rating clinical performance
- Understand and apply best practices for providing meaningful feedback to trainees after a patient encounter in the workplace

## #E1 Panel Discussion:

### Promise, Perils, & Hyperbole: A Discourse on CBME

Time: 1700 - 1815

Location: MR 112 – P1



**Jason R. Frank\*** (Director, Specialty Education, Strategy and Standards in the Office of Specialty Education at the Royal College of Physicians and Surgeons of Canada, and Director of Educational Research & Development in the Department of Emergency Medicine, University of Ottawa, Canada)

**Brian D. Hodges\*** (Executive Vice President Education, University Health Network; Professor, Department of Psychiatry, Faculty of Medicine, University of Toronto; Richard and Elizabeth Currie Chair in Health Professions Education Research, Wilson Centre for Research in Education; Senior Fellow, Massey College; and Lead, AMS Phoenix Project: A Call to Caring, Canada)

**Larry Gruppen [session chair]** (Professor of Learning Health Sciences and Director of the Master of Health Professions Education Program, Department of Learning Health Sciences, University of Michigan Medical School, USA)

Competency-based medical education, as an emerging approach to health professions education, has attracted zealots, innovators, and naysayers. Those enamoured with the promise of CBME highlight its inherent focus on achievement of competencies, logical sequencing of learning and renewed focus on workplace assessment. Those concerned about CBME have expressed their distrust of an unproven approach, the burden on teachers, and the risk of education spiralling into meaningless check-boxes. Those in-between can be forgiven for feeling occasionally bewildered by the passionate debate. This session tries to bridge the gaps between two perspectives through a dialogue on recurring themes in the CBME discourse. Brian Hodges will bring his thoughtful ideas about CBME and some of the risks of its misuse, such as runaway reductionism. Jason Frank will share his anecdotes from CBME pioneers and his understanding of the constructivist goals of the CBME movement. Using provocative questions as a starting point, facilitator Larry Gruppen will challenge the speakers and the audience to weigh in with wisdom and clarity. Without a doubt, there will be points of contention. This session is not to be missed for medical educators.

## Drinks Reception

Time: 1830 -1945

Location: Banquet Hall – P2

## #F1.1 Opening Remarks

Time: 0800-0810

Location: MR 112 – P1

Jason Frank\* (Royal College of Physicians and Surgeons of Canada, Canada)



## #F1.2 Plenary:

### State of the Art in EPAs: The Evolution of a Concept

Time: 0810 – 0915

Location: MR 112 – P1



Olle ten Cate\* (Professor of Medical Education and Director of the Centre for Research and Development of Education, University Medical Center Utrecht, the Netherlands)

Elaine Van Melle [session chair] (Education Scientist at the Royal College of Physicians and Surgeons of Canada, Canada)

Entrustable Professional Activities (EPAs) have become popular in many countries across the world. While EPAs may be a way forward in competency-based graduate and undergraduate education, the concept is not always applied the way it was originally conceived. 'EPAs have become a label de jour for almost everything' one early adopter recently sighed.

This presentation will focus on the evolution of the concept, variations that may be acceptable, and what may blur the concept to an extent that it no longer serves its purpose. Examples of its use will also be discussed.

## #F1.3 Plenary:

### Top 3 abstracts

Time: 0915 -1030

Location: MR 112 – P1



[Session co-chairs]:

Jocelyn Lockyer\* (Senior Associate Dean of Education, and Professor, Department of Community Health Sciences, Cumming School of Medicine, University of Calgary, Canada)

Markku Nousiainen\* (Assistant Professor, Department of Surgery, University of Toronto, and Program Director, Division of Orthopaedic Surgery, University of Toronto, Canada)

Larry Gruppen\* (Professor of Learning Health Sciences and Director of the Master of Health Professions Education Program, Department of Learning Health Sciences, University of Michigan Medical School, USA)

## Programmatic Variation in Implementing CBME: Results from a qualitative study of Neurological Surgery

Nick Yaghmour\* (Accreditation Council for Graduate Medical Education, USA)

Implementation strategies of the competency-based Milestones framework in the United States has varied widely, even within specialties. Neurological Surgery programs, in particular, reported varying responses to the Milestones, utilizing different strategies of integration into respective curricula, and differing levels of impact on the assessment process.

### Background

Beginning in July of 2013, the field of Neurological Surgery in the United States began utilizing specialty-specific Milestones to evaluate and report the educational progression of individual residents. In 2015, a qualitative study was conducted to evaluate the impact of this CBME implementation.

### Research Question

The study explored how the Milestones informed the assessment process as well as what implementation strategies were being employed.

### Methods

Program directors and/or Clinical Competency Committee (CCC) chairs from 17 Neurological Surgery residency programs in the US were interviewed, and two residents (post graduate year levels 2-5) were interviewed from 17 programs, with 14 programs having both faculty and residents interviewed. Interviews were 20 minutes in duration. Interview transcripts were analyzed using a grounded theory, line-by-line coding process.

### Results

Some programs managed to integrate Milestones, using the framework to identify curricular gaps and add targeted didactics for residents. In a few programs, Milestones-driven learning goals were set before procedures and referred back to in post-procedural feedback.

Other programs layered the framework onto their existing curricula and processes, only referring to the framework during bi-annual meetings. Certain faculty and residents complained that the previous system was sufficiently preparing neurosurgeons for practice and that the framework simply increased the workload of the faculty.

Program Directors and CCC Chairs also varied in their preparation for CCC meetings, with some compiling evaluations prior to meeting and others compiling evaluations during the meeting, leading to variable amounts of discussion time. Committee membership varied by program, with some only including a small number of faculty and others including virtually all faculty as well as nurses, coordinators, and other non-physicians.

#### Conclusion

Milestones implementation in Neurological Surgery varied by program, particularly with respect to integrating the framework into curricula and assessment as well as CCC preparations and membership.

### **Combining Entrustment Scales and Standard Setting in Workplace Assessments in a Competency-Based Curriculum**

*Jennifer Weller (University of Auckland, New Zealand)*

We used an entrustability scale for mini-CEX assessments in anaesthesia, and combined this with a standard setting exercise, to determine expected levels of entrustment with types of cases at each level of training. Using a large online data set of over 4000 cases we demonstrated this was feasible and reliable, with considerable potential to identify trainees performing below expected standards of competence.

Background: Mini-CEX is compulsory for Australia and New Zealand College of Anaesthetists trainees. Supervisors score trainees on a 9-point entrustment scale comprising 3 categories of supervisory requirement (SR): trainee needs assessor in theatre suite; trainee needs assessor in hospital; distant supervision required. Scores are submitted online. Generalisability analysis of 7687 mini-CEX assessments demonstrated G co-efficient = 0.8 with 8 assessors scoring 2 cases. However, the SR score requires interpretation against case difficulty.

Research question: Is the SR score, corrected for expected supervisory requirement, feasible and defensible for high-stakes decisions on workplace competence?

Methods: To determine expected SR, three experienced supervisors reviewed details of 340 mini-CEX cases and independently generated expected SR for each case for a trainee at each level of the program. Mean expected supervisory requirement scores were calculated and cases grouped into common operations. We used these scores to calculate "observed minus expected" scores for these common operations from the online data base using generalisability analysis.

Results: Analysis of 4181 assessments yielded G co-efficients > 0.8 when > 9 assessors scored > 3 cases. 95% Confidence Intervals around scores of <math>0.02</math> on a 9 point scale further supported feasibility.

Observed minus expected scores showed a normal distribution with mean of 0.02 above expected level on the 9 point scale.

Around 1900 trainees fell below this. Trainees scoring more than 2 standard deviations below expectations could be identified as underperformers with considerable certainty.

Conclusions: Mini-CEX assessments using an entrustment scale corrected against an agreed standard generate a reliable measure for trainee performance and a defensible score for high stakes decisions on competency. Feasibility can be improved with fewer mini-CEX required from trainees well above or below the cut point, focusing efforts on the borderline group.

### **A Systems Approach for Institutional CBME Adoption at Queen's University**

*Leslie Flynn (Queen's University, Canada)*

Queen's University in Kingston, Ontario, Canada has been granted approval by the Royal College of Physician and Surgeons of Canada to embark upon an institution-based accelerated path (July 2017) to competency-based medical education (CBME) for all of its 29 postgraduate specialty programs. This session will describe our systematic approach to this implementation, the implications of embarking on this type of system-wide change, and our path forward.

The Royal College of Physicians and Surgeons of Canada (RCPSC) has begun the transition to Competency by Design (CBD). By 2022, all Canadian specialty programs are anticipated to have completed the CBD cohort process. Queen's University has been granted approval by the RCPSC to embark upon an accelerated path (July 2017) to competency-based medical education (CBME) for all 29 postgraduate specialties.

#### Purpose

This accelerated path allows us to take an institutional approach for CBME implementation and ensure all of our specialties are part of a system-wide change that is supported. Our unique approach to CBD is the first of its kind across Canada.

#### Interventions

From both a theoretical and practical perspective we have approached CBME using a systems approach to build the foundation, implement the change, and plan for sustainability. To date, it has been essential part of our strategy to develop a broad community that is invested in CBME implementation. This has created opportunities to bridge the various programs involved in the implementation of CBME at Queen's.

#### Results/Applications

Through the Queen's CBME community we are addressing the core needs of transition to CBME. This includes: revisiting traditional faculty development models, developing an approach to comprehensive curricular review, facilitating programs with the development of specialty-specific EPA's and milestones, assisting programs with assessment options appropriate to their

needs and the central development of tracking tools such as an eportfolio. In addition, we will be providing centrally derived funding support, creating an institutional CBME community of scholars, and developing explicit strategies to ensure the perspectives of multiple stakeholder (including the patient voice) are taken into account.

Future Direction

Over the next year we will continue to set the foundations for an institutional approach to CBME. We continue to advocate, support, and document this change and the impacts on our postgraduate specialities.

## Coffee Break & Poster Presentations

Time: 1030 -1100

Location: Outside Room MR 111 – P1

## #G Simultaneous Sessions

Oral sessions are 15 minutes each (10 minute presentations and 5 minutes allocated to questions)

### #G1 Oral Innovations: CBME Across the Continuum

Time: 1100 – 1230

Location: MR 112 – P1

#### #G1.1 (9b)

#### The Generalizability of CBME Principles: A Competency-Based Master's Program in Education

Larry Gruppen

Although competency-based medical education (CBME) has been widely adopted as an educational framework for medical students and residents, it has not been used to guide the advanced educational competencies of health professions faculty. In an effort to determine the generalizability of CBME principles to a different domain (education) and audience (health professions faculty), we developed and implemented a Master's degree program to embody core principles of CBE: focus on outcomes, emphasis on skills and abilities, de-emphasis on time-based training, and promotion of learner-centeredness. The resulting University of Michigan Master of Health Professions Education (UM-MHPE) is a unique program that identified 12 educational competencies and 20 educational entrustable professional activities (EPAs) that served as the vehicle for both learning and assessment. The focus on learning rather than teaching led to distinct faculty roles as assessors, mentors, and subject-matter experts. Learner-centered individualized learning programs were developed to reflect the interests and opportunities of each learner.

Program implementation identified several challenges to rigorous adherence to CBME principles. The major challenge was fitting CBE into a traditional time-based university administrative structure of tuition, credits, courses, and financial aid. Rigorous assessing of educational competence was facilitated by the use of EPAs, but the variability of individual implementation of these EPAs required the assessment committee to distinguish between core elements and variable contexts. As an asynchronous and highly individualized learning program, promoting community required explicit attention and intervention. The program demands considerable levels of self-regulated learning, which may or may not be a strength of individual learners. Finally, the integration of learning in the program with learner's efforts fulfill their professional work responsibilities required logistical and educational coordination.

The UM-MHPE is just one of several configurations for adopting a CBE framework for advanced education for health professions faculty members.

#### #G1.2 (147)

#### Identifying optimal competency-based education in health professions: A protocol for a mixed-method, integrative, review

Tanya Horsley  
Richard Reznick  
Ken Harris  
Farhan Bhanji  
Eric Holmboe

Kevin Imrie  
Stan Hamstra  
Christina Godfrey  
Ayelet Kuper  
Christina Nowik

Elaine Van Melle  
Walter Tavares  
Andrew Padmos  
Nick Busing  
Craig Campbell

Jason Frank  
Alex Clark  
Patricia Elliott-Miller  
Barbara Foulds  
Francine Lemire

Genevieve Moineau  
Allan McDougall  
Mandy Lowe  
Chris Hood  
Sarah Jeffrey

Issue: Research demonstrates that educational approaches constructed exclusively on time-based paradigms are inadequate for meeting the education and assessment needs of health professionals (Carraccio et al., 2002; Holmboe, 2015) and the social

accountability mandates of health professional training programs. (Iglehart, 2012; Nasca et al., 2012) In the face of increasing health system complexity, health professional education leaders in Canada and abroad argue that meaningful improvements to local and international population health will occur from the integration of competency-based education (CBE) in undergraduate training, postgraduate apprenticeships, and continuing professional development. (Frank et al., 2010a; Irby, Cooke, & O'Brien, 2010; Kalet et al., 2010; Gruppen, Mangrulkar, & Kolars, 2012; Reznick, 2014)

What is CBE? CBE promotes a shift in educational focus from what learners should 'know' to what learners should be able 'to do' and has been taken up as an organizing framework in medical education. CBME is 'an approach to preparing physicians for practice that is fundamentally 1) oriented to graduate outcome abilities and 2) organized around competencies derived from an analysis of societal and patient needs'. (Frank et al., 2010b)

The question(s) or issue(s) being addressed: What is the effectiveness of CBE for health professionals across the continuum of medical education compared to other education models (e.g. patient care outcomes)? What factors appear to mitigate the effectiveness of CBE models for whom, in what circumstances, in what respect, how, and why? (Pawson & Tilley, 1997) & What are key perspectives and experiences of health professionals associated with CBE models of education and training (e.g. as learner, educator, administrator)?

Relevant research approach: A mixed-methods research synthesis. (Sandelowski, Voils, & Barroso, 2006) This approach develops segregated systematic reviews of quantitative & qualitative information and aggregates findings at the synthesis-level aimed at deriving recommendations of greater use within practice and policy decision-making.

### **#G1.3 (165)**

#### **Preclinical competency based medical education: a new approach to biomedical science learning**

*Steven A Lieberman (USA)*

##### Background

Competency based medical education is increasingly common in clinical learning environments. In the preclinical realm there is tremendous potential—as yet unrealized—in using CBE to move closer to truly personalized, adaptive learning in the health sciences.

##### Purpose

To convert a baccalaureate biomedical science degree from traditional, classroom-based instruction to a hybrid (online and face-to-face) program based on CBE with the use of advanced technology and other modern pedagogies.

##### Interventions

Competency frameworks from multiple sources were reviewed, adapted to degree requirements, and mapped to curriculum. The curriculum structure consists of sequential 8-week “missions” comprising longitudinal “trajectories” (e.g., biomedical science, social sciences). Missions consist of weeklong units comprising online study followed by face-to-face group activities and assessments. The program’s platform, “Total Educational Experience (TEEx),” collects data on student progress and paths for subsequent analytics. Online learning includes videos, interactive modules, and readings curated by instructional designers with final selection by faculty. Students demonstrate mastery of each topic through online quizzes before proceeding, and all topics must be mastered before participation in group activities. Students have access to online collaboration with instructional facilitators, peers, and faculty while studying. Progress is displayed graphically for monitoring by students and coaches, who help students identify strengths, overcome challenges, and set goals, in addition to providing feedback and career guidance.

##### Results/applications

The first cohort of students has entered the second semester. In its first semester, the TEEx platform collected over 2 million data points, enabling research on successful paths to mastery. In this historically high-attrition premedical program, progression from the first to second term increased by approximately two-thirds, while passing scores in first-term chemistry increased by three-fourths.

##### Future directions

The curriculum content is being reconfigured for use in any premedical curriculum and mapped to multiple health professions' curricula to facilitate interprofessional health education.

### **#G1.4 (15b)**

#### **A system of faculty development to support Competency based medical education: An example from Canada**

*Cheri Bethune (Canada)*

*Sudha Koppula (Canada)*

*Michel Donoff (Canada)*

*Allyn Walsh (Canada)*

*Theresa van der Goes (Canada)*

Background: The Competency based education initiatives in Canadian family medicine are integrated into a program of assessment that focuses on the expertise of the supervising clinical preceptor. Assessment is built on multiple observations of learners doing the actual work of the discipline. Authentic workplace based assessment relies on clinical teachers to confidently

assess learners' competence which is achieved through an extended and respectful relationship between the clinical teacher and learner. The Fundamental Teaching Activities Framework (FTA) created by the College of Family Physicians describes those skills our teachers need to achieve quality assessment for and of learning. One emerges from and complements the other.

Purpose: This session has been developed as a collaboration of two working groups of the College of Family Physicians of Canada to integrate the concepts of programmatic assessment with the necessary skills of our clinical teachers as described in the FTA framework.

Format: Through an interactive presentation, participants will become familiar with the concepts of programmatic assessment achieved through continuous reflective assessment by learners with their clinical teachers. The skills needed by clinical teachers to engage in this process are made explicit through the fundamental teaching activities framework.

Expected Outcomes: By the end of the session, each participant will have created an action plan for teacher development designed to enhance competency based assessment.

### **#G1.5 (24b)**

#### **Transitioning to a competency-based CPD system for maintenance of certification for physicians: Implications for learners, CPD provider organizations and the health system in Canada**

*Suzan Schneeweiss*

*Shahid Ahmed*

*Amer M. Burhan*

*Craig Campbell*

Physicians, as part of a self-regulated profession have a fundamental ethical responsibility to engage in continuing professional development (CPD) to continuously enhance their knowledge, skills, and attitude. A transition from the current 'for credit' participation in maintenance of certification in Canada to a competency framework will serve to facilitate the alignment between engagement in appropriate learning and assessment activities to identify and address professional practice gaps across the CanMEDs roles. The Royal College of Physicians and Surgeons of Canada held an invitational International Summit in 2015 on competency-based CPD as a forum to engage all stakeholders in a dialogue for the transition to a competency-based CPD model for lifelong learning. Key stakeholders were a broad representation of CPD administrators, health authorities and regulators, CPD educators and scholars and health professionals with the ability to inform the future of competency-based education. White paper recommendations with implications for individual physicians, CPD providers and health systems were developed as follows:

1. Physicians will be expected to develop and implement a CPD plan to address personal, patient and population health needs to align learning and assessment activities. Physicians will also engage in a variety of assessment strategies using data and feedback for learning.
2. CPD provider organizations will facilitate the identification of gaps in performance to drive practice improvement and expand learning opportunities for self-assessment, direct observation and feedback.
3. Health Systems will facilitate workplace and team-based learning with the provision of trustworthy data to enable physicians to continuously assess and enhance their performance and health outcomes. Healthcare institutions, in collaboration with CPD provider organizations and provincial medical regulatory authorities, will provide a safe environment that supports physicians to seek and use data to address gaps in quality or safety of care and contribute to continuously enhancing the health systems in which they work.

### **#G2 Oral Research: Progression of Competence**

Time: 1100 – 1230

Location: MR 111 – P1

#### **#G2.1 (133)**

##### **Supervision and preparedness of medical students from two different curricula**

*Josefin Bosch (Germany)*

*Asja Maaz (Germany)*

*Tanja Hitzblech (Germany)*

*Harm Peters (Germany)*

Background. Clerkships offer important workplace learning activities to acquire and consolidate medical competencies. Based on the frameworks of Entrustable Professional Activities (EPAs) and socio-cognitive theory, we investigate how medical students from an integrated, competency-based and a traditional, discipline-based medical curriculum differ in their clerkship experiences regarding supervision level and preparedness for professional activities. Factors influencing these clerkship experiences are identified.

Research questions. Does an integrated, competency-based curriculum prepare medical students better for their clerkships than a traditional, discipline-based one? Are students from an integrated, competency-based curriculum working more independently?

Methods. In a pooled cross-sectional analysis, medical students from two curricula (N=930; integrated, competency-based and traditional, discipline-based medical curriculum) of the Charité – Universitätsmedizin Berlin, Germany were invited to provide feedback about their clerkship experience via an online questionnaire. Hierarchical regression analyses were applied to investigate factors influencing preparedness and supervision level.

Results. Data of n=342 students was obtained. Statistical analyses reveal a similar pattern of activities in both curricula. Students from the integrated competency-based curriculum (n=158) are more often allowed to work under distant supervision and perceive their university teaching as more helpful compared to students of the traditional, discipline-based curriculum (n=184). Preparedness is influenced by self-efficacy and activity specific factors. Supervision level is influenced by activity specific factors and general perceived supervision quality. The clerkship environment does not predict preparedness or supervision level.

Conclusions. Students from the two curricula execute a comparable range of professional activities during clerkships. An integrated, competency-based curriculum seems to enhance preparedness. This is related to a higher level of independent work, as reflected in more frequent distant supervision.

### **#G2.2 (7b)**

#### **How we radically changed residency training: 7-Year Outcomes of CBME in the University of Toronto's Division of Orthopaedic Surgery**

*Markku Nousiainen*

This presentation will outline the lessons learned from 7 years' experience of running the Competency-Based Curriculum in the Toronto Orthopaedic Surgery training program. The presentation will discuss issues related to: developing the appropriate infrastructure to implement a CBME paradigm; creating a new curriculum and assessment tools that support a CBME paradigm (which include the use of simulation); resident and faculty development; and financial considerations of implementing and supporting a new training paradigm.

### **#G2.3 (18b)**

#### **Concordance of Clinical Competency Committee and Program Director Recommended Supervision Categorization**

*Daniel Schumacher*

Background: Milestones-based assessment is required for Accreditation Council for Graduate Medical Education accredited programs in the United States. Many specialties are now looking beyond this to further elucidate the relationship between milestones-based assessment and supervision/entrustable professional activities. In these efforts, the relationship between clinical competency committee (CCC) member recommended supervision categorization and that same categorization by program directors is not known. This relationship between those who often perform a more extensive review of residents (CCC members) and those who ultimately make decisions (program directors) is important to understand.

Aim: Determine the concordance between CCC member and program director supervision categorization following semi-annual performance review and milestone assignments in pediatric residency programs.

Methods: Categorical pediatric residents in twelve pediatric residency programs in the United States had CCC member as well as program director supervision categorizations made in conjunction with their semi-annual performance review and milestone assignments at the mid-point of the 2015-2016 academic year. CCC members and program directors were independently asked to categorize residents as follows: 1) may serve as a supervisory resident in all settings, 2) may serve in a supervisory role as a resident in all settings, but is just above the borderline/marginal mark for serving in this role, 3) may serve in a supervisory role as a resident in some settings, but is just above the borderline/marginal mark for serving in this role, or 4) may not serve in a supervisory role as a resident.

Results: 215 residents had supervision categorizations determined by both CCC members and program directors. Concordance between CCC members and program directors across all categorizations was strong (Krippendorff's alpha = 0.88), as shown in the figure. In the 22 instances that the decisions were not concordant, program directors assigned a lower level (n=17) more often than a higher level (n=5) compared to CCC members. Program directors offered multiple explanations when adjusting categorization down, including training level/experience of the resident, performance being below peers, demonstrating less proficiency in higher acuity settings, not being at milestone levels they believe match ability to supervise, lack of demonstration of supervision ability, and underdeveloped clinical skills. When they adjusted categorizations up, program directors offered these justifications: previously demonstrated ability as a supervisor, training level, and possible data entry error by the CCC member in one instance.

**Concordance of PD and CCC recommendations**

(Krippendorff's alpha=0.88)



Conclusion: In general, the concordance between CCC member and program director supervision categorization is strong, supporting the validity of these decisions. Where decisions were not concordant, it seems that program directors may be privy to important information about resident performance not available to CCC members that is helpful in making supervision decisions. When feasible, including this information in CCC member reviews could strengthen the depth and quality of data considered for making milestone level as well as supervision categorization assignments.

**#G2.4 (19b)**

**Key Factors Driving Supervision Categorization of Pediatric Residents by Clinical Competency Committee Members**

*Daniel Schumacher*

Background: Milestones-based assessment is required for Accreditation Council for Graduate Medical Education (ACGME) accredited programs in the United States. Clinical competency committee (CCC) members play a central role in determining resident milestones reported to the ACGME. Many specialties are now looking beyond milestones to further understand the relationship between milestones-based assessment and supervision/entrustable professional activities. Given the central role of CCC members in determining milestones, further understanding of how they would parse residents into supervision categories based on their review of performance data and subsequent milestone level assignments is important.

Aim: Determine the key factors that determine supervision categorizations by CCC members following semi-annual performance review and milestone assignments for first- and second-year categorical pediatric residents in a three-year residency.

Methods: Across twelve pediatric residency programs in the United States, CCC members completed resident forms that included milestone assignments and supervision categorizations. These forms were completed at the time of semi-annual performance review and milestone assignments at the mid-point of the 2015-2016 academic year. CCC members were asked to categorize residents as follows: 1) may serve as a supervisory resident in all settings, 2) may serve in a supervisory role as a resident in all settings, but is just above the borderline/marginal mark for serving in this role, 3) may serve in a supervisory role as a resident in some settings, but is just above the borderline/marginal mark for serving in this role, or 4) may not serve in a supervisory role as a resident. They were then asked to provide the key factors driving their categorization. If they did not indicate that a resident may serve as a supervisor in all settings, CCC members were asked additional questions about their decision-making.

Results: Sixty-nine CCC members completed 370 resident forms that included milestone assignments and supervision categorizations. Each CCC member completed forms for an average of 5.4 residents, with a range of 1-19.

The majority of forms categorized residents as being able to supervise in all settings (n=190). CCC members cited the following as the most common key factors used in making this decision: 1) clinical experience (n=45), milestone level (n=43), fund of knowledge (n=34), clinical skills (n=30), leadership skills (n=29), help seeking behaviors (n=27), clinical judgement (n=26),

discernment/known limitations (n=23), trustworthiness (n=23), qualitative feedback/data (n=20), and good communication/interpersonal skills (n=20).

For forms categorizing residents as able to serve as a supervisor in all settings but just above the borderline/marginal mark for this role (n=30), CCC members cited the three most common key factors driving this decision: medical knowledge concerns (n=6), milestone level assignments below desired level (n=5), and the program desiring that residents have a pediatric intensive care unit rotation before serving as a supervisor (n=5). The most common evidence that CCC members would need to have categorized these residents one level up (able to supervise in all settings) were: demonstrated improvement in areas of previous concern (n=13), increased clinical experience (n=11), and resolution of previous concerns (n=8). The most common evidence that would have led CCC members to categorize these residents as unable to supervise were professionalism concerns (n=11) and lower milestone level assignments (n=7).

For forms categorizing residents as able to supervise in some settings but just above the borderline/marginal mark for serving in this role (n=68), the most common key factor driving this categorization was level of experience (n=44). CCC members would have moved these residents up to able to supervise in all settings but borderline/marginal for that role most often if the residents had more experience (n=49). The three most common reasons they would have moved them down to unable to supervise are: lower medical knowledge (n=18), less self aware (n=15), and lower milestone level assignments (n=14).

Finally, 67 forms categorized residents as unable to serve in a supervisory capacity. The most common key factors driving these categorizations were: inadequate experience (n=54), residents still developing their own clinical skills (n=22), lack of systems understanding (n=16), and lack of procedural skills (n=15). Additional experience (n=44) was the most likely factor that would have led CCC members to raise the categorizations of these residents to borderline/marginal.

Conclusion: Despite using a competency-based framework of milestones and supervision levels, CCC members often cited level of experience as important in their supervision categorization of residents. Use of milestone levels was more common when placing residents in one of the “able to supervise in all settings” categories. Several important key factors previously noted in supervision and work-based assessment studies were noted in the decision to entrust residents with the ability to supervise in all settings without qualification: help seeking behaviors, discernment/known limitations, trustworthiness, and qualitative feedback/data. These findings add further validity evidence to the importance of these categories in resident entrustment decisions.

## **#G2.5 (14b)**

### **Entrustable Professional Activities for undergraduate medical education: lessons learned in Utrecht**

*Olle ten Cate*

*Indra Posthumus*

Starting September 2016, Entrustable Professional Activities (EPAs) will serve as a framework for clinical rotations in undergraduate education at University Medical Center Utrecht. To guide the development of competence, supervisors will entrust students with several professional activities at a designated level of supervision based upon observed performance. Every graduate is to be qualified for five core EPAs with indirect supervision, i.e. without the supervisor in the room, but quickly available when needed and with key findings and procedures checked afterwards. While EPAs were originally conceived for postgraduate training, we developed, in an iterative process over two years using existing frameworks such as the 13 AAMC Core EPAs for Entering Residency and the Dutch Blueprint of Objectives for medical training, a final framework of five broad UME core EPAs, that integrate several smaller, nested EPAs. To gain experience two of these were piloted during 3-month period in 2015-16 with 36 junior students. Several lessons were learned during the development of the EPA framework and the first application. These will be the focus of the presentation.

**#G4 (22b) Workshop:**

**Creating Competency Frameworks for CBME: A 12-Step Program**

Time: 1530 - 1700

Location: MR 119 – P1

*Jason Frank (Canada)*

**Background:**

Educators around the world are using "competency frameworks"—a method of organizing the desired abilities of graduates of curricula for CBME. However, many still struggle with how to create logical, defensible, needs-based, competency frameworks to guide teaching, learning, and assessment. This session will show you 12 steps to your own elegant competency framework.

**Intended Outcomes:**

By the end of this session, each participant will be able to begin the development of their own competency framework and describe the 12-step process to others in their own program.

**Structure:**

This session will be highly interactive. In 12 steps, we will walk through the core considerations in designing an effective framework. For each step, we will discuss considerations, techniques, and pitfalls, then apply them to your own context. With 20 years of experience in this area, I will use many examples of various approaches to defining these frameworks.

**Who should attend:**

Any educator interested in using competencies to design curricula or assessment blueprints.

**Level:**

Introductory

**Lunch & Poster Presentations**

Time: 1230-1330

Location: Outside Room MR 111 – P1

## #H Workshops

### #H1 (5b) Workshop:

#### **Preparing the Implementation of EPAs in Undergraduate Medical Education**

Time: 1330 -1500

Location: MR 112 – P1

*Robert Englander (USA)*

*Claire Touchie (Canada)*

*Olle ten Cate (Netherlands)*

*Indra Posthumus (Netherlands)*

This collaborative workshop with educators from the USA, Canada and The Netherlands deals with implementation issues of Entrustable Professional Activities. In 2014, the Association of American Medical Colleges identified 13 EPAs for entering residency, which are currently being formally piloted in 10 US medical schools and reviewed in many other schools. The Association of Faculties of Medicine of Canada recently completed a similar consensus procedure to arrive at a set of 12 EPAs, to be implemented in all 17 schools across the country. In the Netherlands, a planned redesign of the undergraduate curriculum at University Medical Center Utrecht included a local procedure to arrive at 5 EPAs for graduation, with a number of smaller EPAs nested within them. This curriculum starts August 2016.

The workshop will elaborate on similarities and differences in EPA frameworks and will show how all three perspectives cover the general objectives of undergraduate education. In addition, a series of issues will be discussed that are critical when designing and implementing EPAs, including specific assessment procedures. The objectives of the workshop include:

- A detailed understanding of EPAs in the context of undergraduate medical education
- Appreciation for various EPA frameworks that all serve a similar purpose
- The understanding of a number of critical issues to be aware of

The format of the workshop includes:

- Four short presentations (general and country-specific)
- Small group discussions on implementation issues and
- A plenary discussion about lessons learned

### #H2 (44) Workshop:

#### **Evaluating Competency-based Medical Education Programs: It's Never too Early to Start**

Time: 1330 -1500

Location: MR 118 – P1

*Elaine Van Melle (Canada)*

*Leslie Flynn (Canada)*

#### Background

With an emphasis on defining competencies required for practice, competency-based medical education (CBME) is rapidly being adopted across the globe. Consequently, we are in an unprecedented position to evaluate if CBME is making a difference. Unfortunately, evaluating the effectiveness of an innovation is often left as the last step in the cycle of design and implementation. To provide meaningful results however, an evaluation should be threaded through all phases of design and implementation: it requires a thorough needs assessment, well-defined goals and objectives and a clearly articulated theoretical framework(s).

#### Purpose

In this workshop we will present a simple but comprehensive logic model that focuses on these common elements; elements that set the stage for an effective, scholarly, robust evaluation of CBME. This logic model will be used to discuss the range of possible evaluation questions and methods. Consideration will also be given to resources required and strategies for building capacity to support evaluation initiatives.

#### Format

This workshop will be highly interactive. Participants will work in small groups. The workshop will begin with a brief orientation to program evaluation. The particular challenges in evaluating competency-based medical education programs will then be discussed. A logic model will be introduced as a useful tool to aid in evaluation efforts. Using this logic model, participants will be guided through a series of small group exercises leading to the design of an evaluation initiative. The workshop will conclude with a discussion regarding resources and strategies required to build capacity for program evaluation.

#### Expected Outcomes

By the end of the session participants will be able to:

1. Apply a logic model to the evaluation of CBME programs;

2. Engage in program evaluation at any stage in their design and implementation of CBME;
3. Build capacity for program evaluation of a CBME program.

### **#H3 (51) Workshop:**

#### **Continuing Medical Education/Professional Development within a Competency Based Medical Education Context**

Time: 1330 -1500

Location: MR 111 – P1

*Jocelyn Lockyer (Canada)*

*Ford Bursey (Canada)*

*Denyse Richardson (Canada)*

*Craig Campbell (Canada)*

Competency-based medical education (CBME) is critically important in continuing professional development (CPD) as at any other stage in the MD career. The principles of CBME have the potential to revolutionize CPD (1) the health needs of the populations served should drive education; (2) learner outcomes should be the primary focus of education and training; and (3) the formation of a physician is a continuous progression of expertise. However, transitioning to CBME-based CPD will require a culture change to gain commitment from physicians, their employers and institutions, CPD providers, professional organizations, and medical regulators. It will require that learning be aligned with professional and workplace standards. Practitioners will need to develop the expertise to systematically examine their own clinical performance data, identify performance improvement opportunities and possibilities, and develop a plan to address areas of concern. Health care facilities and systems will need to produce data on a regular basis and to develop and train CPD educators who can work with physician groups. Stakeholders, such as medical regulatory authorities who are responsible for licensing physicians and other standard-setting bodies that credential and develop maintenance-of-certification systems, will need to change their paradigm of competency enhancement through CPD.

This workshop will enable participants to explore the practicality and feasibility of the principles of CBME in a CME/PD context, consider the resources required to obtain data about population needs, develop regular assessment and feedback systems for physicians, and identify approaches to physician formation that ensure physicians to learn throughout their careers. Participants will be able to describe how they might transform their CME/PD systems and programs to align with CBME principles.

From: Lockyer J, Bursey F, Richardson D, Frank J, Snell L, Campbell C, for the International CBME Collaborators. Competency-based medical education and continuing professional development: a conceptualization for change. *Med Teach*. In press.

### **#H4 (55) Workshop:**

#### **From Opening the Black Box to Looking Behind the Curtain: How to Make More Informed Rater Judgements in Challenging Clinical Settings**

Time: 1330 -1500

Location: MR 119 – P1

*Victor Lee (Australia)*

*Jenepher Martin (Australia)*

#### **Background**

Clinician educators are increasingly being asked to juggle patient care needs and direct observation of their trainees in many competency-based medical education (CBME) programmes. How do busy clinician educators provide informed judgements and meaningful feedback to their trainees in such challenging workplace settings? Our original research identified four factors impacting on Mini-CEX rater judgements in the Emergency Department context: assessor factors, assessment factors, contextual factors and feedback factors.

#### **Purpose**

To explore the impact of cognitive and contextual factors on your own rater judgements using direct observation within your clinical context.

To illustrate a pragmatic framework of how to make more informed and meaningful direct observation rater judgments for your trainees.

This workshop is intended for clinician educators who utilise workplace-based assessments to evaluate their trainees in busy clinical settings.

#### **Format**

This interactive workshop will involve small group discussions to explore participants' perceptions of factors impacting on their judgements using direct observation within their own clinical setting. We will then describe a holistic framework for rater judgements using direct observation and discuss its potential utility in participants' own practice.

#### **Expected outcomes**

- To reflect on and collectively explore the real world factors impacting on your direct observation judgements in your own clinical setting
- To describe a holistic and pragmatic framework for rater-based judgement when using direct observation
- To evaluate the potential utility of this framework on your workplace-based assessment practice and setting.

### **Coffee Break & Poster Presentations**

Time: 1500 -1530

Location: Outside Room MR 111 – P1

### **#11 Closing Plenary:**

#### **Reflections on the CBME Summit... Next Steps for CBME**

Time: 1530 - 1700

Location: MR 112 – P1

**Nicholas Glasgow** (Australian National University, Australia)

**Steven Lieberman** (University of Texas Medical Branch, USA)

**Young-Mee Lee** (Korea University School of Medicine, South Korea)

**Simon Fleming** (Barts and the London School of Medicine and Dentistry, UK)

**Fremen Chihchen Chou** (China Medical University Hospital, Taiwan)

**Robert Englander\*** [session chair] (Associate Dean for Undergraduate Medical Education, University of Minnesota School of Medicine, USA)



Have you ever left a conference with more questions than you arrived with, wishing you had just one more opportunity to speak with the “experts”? Or have you ever wondered what you were missing in all the other rooms-what the key lessons learned were, what questions were emerging, who seemed to have the best solutions?

In this final plenary, we try to respond to those needs as we invite reflections on our two days together. We will explore prominent themes that emerged during the scheduled events and through our social media outlets. We will also invite a panel of “reflectors”- one from each continent represented at the conference - to provide some brief reflections on the unique perspective, successes and challenges they have faced in their countries as they have grappled with the implementation of CBME.

Finally, we will open the discussion using a town hall format to invite any remaining burning questions and engage the many resources in the room to begin conversations around the answers, before returning to our homes or joining the larger AMEE conference.

## Poster Presentations

Location: Outside Room MR 111 – P1

The following posters will be presented during coffee and lunch breaks. Presenters are welcome to present their poster at any of the assigned coffee and lunch breaks. It is advised presenters should include contact details on their posters in the event a delegate wishes to make arrangements to discuss the poster further.

### **Poster: CBME Innovations**

#### **Sequential spiral curricular design in outcome-based education (27)**

*Masahiro Tanabe (Japan)*

*Mayumi Asahina (Japan)*

*Shoichi Ito (Japan)*

*Kazuyo Yamauchi (Japan)*

*Daniel Salcedo (Japan)*

*Kentaro Itami (Japan)*

**Background:** Since the implementation of a nationwide medical school accreditation system based on the WFME global standards there has been an increased interest in outcome-based education (OBE) throughout Japan.

**Purpose:** In 2008 a new outcome-based curriculum was implemented at Chiba University School of Medicine, which defined a comprehensive set of competency requirements upon graduation as well as a 3-tier milestone system to measure them. The effects of the new curriculum on teaching and learning have been systematically monitored and analyzed.

**Interventions:** Students' opinions and ratings of quality of educational experience and competency development were obtained through a graduation questionnaire. Data obtained between 2013 and 2015 (post implementation of the OBE curriculum) was analyzed and compared to data obtained in 2012 prior to implementation.

**Results:** Students opinions about the new curriculum were generally positive, yet there were some comments during the early implementation stages suggesting that the curriculum was excessively complex and that the desired level of competency had not been fully attained, particularly in the domains of public health and scholarship.

**Future directions:** Further research is necessary to fully determine the cause of lower competency development in the specific domains identified in this study and a curricular revision must be implemented to address those issues.

#### **Trauma and Orthopaedic Competency Attainment in the UK Training Program (40)**

*Simon Fleming (UK)*

*Jonathan Beard (UK)*

*Catherine Molyneux (UK)*

*Olwyn Westwood (UK)*

##### **Background**

In 2006, a new postgraduate Trauma and Orthopaedic (T&O) competency-based curriculum was approved. This evolved into the Intercollegiate Surgical Curriculum Program (ISCP). There are defined work-based assessment (WBA) and operative targets which must be achieved to demonstrate attainment of competency in the generalities of T&O. There is minimal evidence supporting these targets, or to show factors affecting attainment and maintenance of competence.

##### **Purpose**

This study aims to describe competency attainment levels and operative experience of T&O trainees in the UK throughout Specialty Training (ST3-8) and at Completion of Training (CCT), using two linked databases; ISCP and eLogbook. There are currently no studies describing by region, gender and training stage, the number of procedures and WBAs required, since the introduction of ISCP. This study will explore when competency is attained, whether there is evidence of maintenance and whether targets are fit for purpose. It will suggest robust evidence for benchmarking competencies and may demonstrate the Orthopaedic learning curve.

##### **Interventions**

This study will analyse UK T&O trainee data. Data will be collected from 2007 to the present. We will study the achievement levels in Procedure Based Assessments (PBA), through 12 "index procedures" set out in the T&O Curriculum as well as operative experience for these. We will analyse variation by gender, age, region and stage of training using STATA.

##### **Results/Applications**

This study will use assessments and operative experience to describe the levels of competency achieved at each training stage and to identify an orthopaedic learning curve. It will establish accurate targets which will be used to demonstrate T&O competency. We will explore whether surgical competence can be predicted, and if its maintenance can be demonstrated.

##### **Future Directions**

This project will provide valuable data which will influence UK Orthopaedic training and will be key to developing the next iteration of competency targets.

### **Osler – procedural certification management system (53)**

*Todd Fraser (Australia)*

#### Background

Ideally, junior healthcare staff should learn unfamiliar procedures in a structured, supervised fashion until they have attained a pre-defined standard, before performing them independently.

Inadequate staffing, 24 hour rosters, unpredictable opportunities and inadequate clinical processes conspire against this key governance principle and lead to the well-recognized and unacceptable phenomenon of “watch one, do one, teach one”.

#### Purpose

Osler serves to structure procedural learning despite these conspiring factors, utilizing a mobile-enabled learning and assessment framework. This provides clarity around the procedural competency of both individuals and the workforce, and prevents patients being exposed to the risk of hazardous procedures being performed by inadequately trained staff.

#### Interventions

Learners access e-learning modules designed to teach the essential information required to perform the skill for the first time under supervision.

Osler’s digital, evidence-based assessment checklists are used by supervisors on their own mobile devices at the bedside, providing learners with consistent assessment and immediate feedback.

Learners continue to record supervised procedures until they are performing at independent practice standard, when visible and reportable certifications are issued.

Sophisticated reporting tools allow individuals and clinical managers alike to access performance data.

Access to refresher material, and ongoing logging of activity and outcomes allows users to maintain their certifications.

#### Results/applications

Over 300 nurses, doctors, paramedics and students across multiple specialties and 5 continents currently use Osler as part of 4 hospital trials and 1 individual trial version.

#### Future directions

In addition to procedural competence, Osler’s assessment framework can be applied to a variety of high-risk tasks, including equipment use, patient assessments, mandatory training and policy awareness. Ongoing use of Osler enables the self-audit and guided CME fundamental to revalidation. Collection of de-identified outcome data will enable further research into understanding how procedural competence is achieved in the real world for a wide variety of tasks.

### **The Development of a GI Motility Curriculum Using an Entrustable Professional Activity (EPA): A Novel Process Template for Creating Competency-Based Medical Education Driven Curricula (65)**

*Paul Menard-Katcher (USA)*

*Courtney Pigott (USA)*

*Janet Corral (USA)*

#### Background:

With the ACGME reporting milestones, graduate medical programs continue transitioning towards competency-based medical education (CBME). As the Internal Medicine (IM) subspecialty milestones are not specialty-specific, entrustable professional activities (EPAs) were developed to describe the knowledge, skills and attitudes reflecting the desired outcome of a subspecialty trainee. To date, there are no examples of IM subspecialty EPA-driven curricula.

**Purpose:** To create, implement, evaluate and disseminate a novel CBME-based GI motility curriculum using an existing Gastroenterology (GI) EPA (GI EPA 3: Manage common gastrointestinal motility disorders).

#### Interventions:

Using Kern’s six-step approach to curriculum development, we conducted general and local needs assessments and used GI EPA 3 to drive curriculum goals and specific learning objectives. Specific task-oriented knowledge, skills and attitudes detailed in GI EPA 3 were mapped to existing fellow experiences and identified gaps were targeted for curricular content. Educational strategies were determined based on the EPA component being addressed. Fellow assessment tools linked to milestones were created.

#### Results:

General needs assessment revealed no formalized motility curriculum at 8 US academic medical centers. Current or recent fellows were surveyed as part of the local needs assessment. Gaps in fellow exposure to GI EPA 3 components were identified and a scholarship map was created linking EPA components to timely learning objectives, educational content, and competency based assessments. Learning objectives were linked to Miller’s pyramid of clinical competence.

#### Future Directions:

This work uses an academically regarded curriculum design process to develop an EPA-based GI motility curriculum. This curriculum will successfully implement CBME into an area of educational need within our fellowship and with dissemination, to other training programs. Furthermore, this curriculum provides a process template for using EPAs to drive curriculum

development and innovation. This template can be used to design other EPA-driven curricula in GI, other IM subspecialties, and other medical disciplines.

### **Competencies in Physiology- towards CBME : a pilot trial in a group of medical schools of India (73)**

*Rituparna Barooah (India)*

#### Background:

The North Eastern region of India comprise of eight states have eleven medical colleges; six in Assam (govt); two each (one govt and private) in Tripura and Manipur; one (govt) in Meghalaya and Sikkim (private) each catering to a population of more than 200 ethnic tribes with their unique lifestyle and physiology.

Summative assessment in all the medical colleges is done by four assessors, two from the host medical school (internal examiners) and two external examiners from among the rest of the medical schools.

#### Purpose:

Need for introduction of CBME in Basic Sciences was perceived in order to standardize the assessment and educational process involving basic science over the region and an effort was exercised to identify the specific competencies and relevant teaching learning methods and assessment tools.

#### Intervention:

A validated questionnaire was used to collect data from the faculty involved in teaching of Physiology regarding need of CBME, specific competencies, relevant teaching learning methods and activities, specific tools for assessment and development of competent faculty etc.

Result /application: Preliminary analysis demonstrated the competencies could be grouped in three categories:

Conceptual comprehension of the fundamental mechanisms of the functions of the human body with practical demonstration

Development of professional competencies and personal intelligence

Critical analysis and appropriate application of knowledge of physiology in clinical setting

Formative assessment and group formative feedback were recognized as facilitating factor for CBME along with short term research projects, assignments, seminars and portfolio. Both small group and large group teaching were advocated for specific competencies. Self and peer assessment and learning, group activities and faculty development workshops, horizontal and vertical integration are few areas stressed upon.

#### Future direction:

1. Integration of the curriculum (horizontal) in Basic Science;
2. FDP, Workshops & training on CBME, Integration, Assessment;
3. Structured orientation module of Professional competencies

### **The Successful Experience of an Innovative Competency-based Communication Curriculum at Tzu Chi University in Taiwan (78)**

*Jen-Hung Yang (Taiwan)*

*Li-Chuan Kuo (Taiwan)*

*Ying-Wei Wang (Taiwan)*

Poor communication has been acknowledged as one of the most important problems in healthcare. It has also been examined that approximately 70% of medical lawsuits was due to poor doctor-patient communications in Taiwan. Good interpersonal relationship and communication skill is a core competency of a competent physician. The core value of Tzu Chi University is to cultivate a competent and humanistic physician to serve the patients and the society. We developed an integrated curriculum "Communications and the Patient-Physician Relations" for medical students from the 1st to the final 6th year longitudinally since 2011. The objective of the curriculum is to educate our students being competent to communicate with patients in an empathic way to provide a safer healthcare and better patient's outcome.

Implementation of the curriculum: The curriculum was designed structurally from theory to practice throughout the preclinical years (M1-M4) and the clinical years (M5-M6 clerkship). We recruited medical educators (2), faculty of humanities (2), physicians, and standardized patients (SPs) as instructors and facilitators responsible for the curriculum. We videotaped the interactions of students with SPs and patients in the courses of "practicing with SPs", "case studies", "keeping reflective diaries" and "critical reflective composition training". Subsequently, faculty discussed with students in small group and provided feedback to the students to provide an opportunity for a higher level learning of communication.

The Effectiveness of the Curriculum: We evaluated the effectiveness of the courses at different stages with multiple assessment methods, including pencil-test, essays, questionnaires, qualitative interviews, and reflective composition, etc. The students were satisfactory (4.5/5-point Likert scale) and responded positively to the curriculum, and our effort has been proved to be a successful competency-based curriculum, which was welcomed by students and has won a highly appreciation by the TMAC (Taiwan Medical Accreditation Council).

**Medical Emergencies Simulation for New Foundation Doctors at Induction - Delivering the Learning Objectives (88)**

*Dominic Harrison (UK)*

**Background**

Simulation-based learning (SBL) is known to be an effective and acceptable methodology for undergraduate and postgraduate learners. All new foundation doctors starting work at one of three major acute teaching hospitals in southeast Scotland take part in a half-day SBL session, during induction, prior to their first full day of clinical practice. The scenarios cover common ward-based medical emergencies, including sepsis, major haemorrhage and hypoglycaemia. The learning objectives for sessions focus on highlighting the use of local protocols, and tools for managing these medical emergencies.

**Methods**

All 131 candidates attending SBL at induction in August 2015 completed a post-session feedback questionnaire, which combined 'yes/no' questions and statements relating to aspects of the session which were rated using a standard five-point Likert scale. There were also opportunities to provide qualitative feedback on the forms.

**Results**

Thematic analysis of free-text responses showed the importance of early escalation in medical emergencies to be the candidates' key learning point from the session. Other key themes included where to find protocols and "Hypo boxes". 100% (n=131) of candidates answered 'yes' when asked if the session would positively affect their practice with respect to patient safety. 97% (n=127) 'agreed' or 'strongly agreed' that the session met their learning needs, and 98% (n=128) 'agreed' or 'strongly agreed' that the scenarios were relevant to their clinical practice. The candidates also valued the opportunity to work with their new colleagues.

**Key messages**

Simulation-based learning effectively prepares newly qualified foundation doctors for approaching common medical emergencies in a new environment, and should be standard practice at induction.

Further work will try to assess if in-situ simulation sessions on the appropriate wards are feasible at induction in August 2016.

**Developing a Roadmap for Successful Curriculum Redesign in Veterinary Medical Education (111)**

*Kristin Chaney (USA)*

*Maria Macik (USA)*

*Jacqueline Turner (USA)*

*Kenita Rogers (USA)*

*Jodi Korich (USA)*

*Elizabeth Scallan (USA)*

*Debra Fowler (USA)*

*Lisa Keefe (USA)*

**Background/Purpose:** Curricular redesign is considered a necessary component for growth and enhancement of academic programs, but is a time-intensive endeavor requiring energy, creativity, and persistence from both faculty and administration. A comprehensive redesign effort involves ensuring the presence of or developing programmatic learning outcomes, mapping of the existing curriculum, and thorough curricular review including stakeholder data collection. In educational literature, there are various models established to guide the process of curricular redesign, however, there is a paucity of support or guidelines available for this process in veterinary medical education. Additional challenges for program redesign in veterinary medicine include the lack of in-house expertise in curriculum design within many veterinary colleges, the faculty time commitment necessary to drive the process of curricular evaluation, and the consideration of the many stakeholder groups involved within veterinary education.

**Results/Applications:** With these constraints and unique challenges in mind, the faculty and administration at Texas A&M College of Veterinary Medicine & Biomedical Sciences (TAMU) utilized both college and university resources to create a faculty-driven, data-enhanced curricular redesign process. This process involves leveraging pedagogical expertise, creating a committee of faculty dedicated to the redesign initiative, ensuring the presence of program outcomes, mapping the current curriculum, and collecting and analyzing data from relevant stakeholders. This oral presentation describes the innovative design of a process for comprehensive program redesign in veterinary medical education.

**Future directions:** The final phases of program redesign include the development of rubrics to ensure program outcomes are achieved and the creation of an I/R/D matrix to define how outcomes will be introduced, reinforced, and demonstrated within the curriculum. Examples from TAMU will be shared.

### **Engaging Faculty in Curriculum Redesign for Programs in Veterinary Medical Education (112)**

*Kristin Chaney (USA)*

*Maria Macik (USA)*

*Jacqueline Turner (USA)*

*Kenita Rogers (USA)*

*Jodi Korich (USA)*

*Elizabeth Scallan (USA)*

*Debra Fowler (USA)*

*Lisa Keefe (USA)*

**Background:** Routine curriculum redesign is a vital process that ensures continued alignment between veterinary educational programs and the evolving needs of the profession. The faculty of Texas A&M University College of Veterinary Medicine & Biomedical Sciences (TAMU) recently embarked on a comprehensive curriculum redesign effort. The redesign initiative included developing program learning outcomes, mapping the existing curriculum, and performing a thorough curricular review including comprehensive stakeholder data collection. However, an additional component of program redesign that is understated yet vital for success is faculty buy-in and support for the process. Without faculty engagement, implementation of data-driven curricular changes stemming from program evaluation may be challenging. The methodology for encouraging faculty engagement through the redesign initiative and the lessons learned by TAMU will be described.

**Results/Applications:** To increase support for the redesign initiative in addition to seminars, retreats, individual faculty and departmental meetings, a series of faculty workshops were designed to promote faculty engagement. Faculty from different departments were appointed to work alongside TAMU curriculum committee members to review stakeholder data and generate creative solutions in response to stakeholder feedback. The innovative use of facilitator-mediated data analysis workshops to review stakeholder data promoted faculty engagement and resulted in unique faculty relationships that enhanced support for curricular change and the redesign initiative.

**Future directions:** The analysis team workshops empowered faculty in a variety of ways. The time commitment for workshop participation encouraged faculty to develop a vested interest in the redesign process and to view the curricular initiative as a positive opportunity for the college. Through review of the data, faculty were allowed to cultivate their own ideas about what changes would be necessary to satisfy results obtained from data analysis and to be able to willingly support the redesign effort among colleagues within their department and across the college.

### **The Making and Testing of a Question Guide to Stimulate Medical Students' Self-reflection on a Community-based Learning: An Experimental Study (129)**

*Ratih Yulistika Utami (Indonesia)*

*Mora Claramita (Indonesia)*

*Yayi Suryo Prabandari (Indonesia)*

**Background:** Self-reflection question guides can help students to go through a process of reflection step by step training them to better reflect and increasing the depth of self-reflection.

**Purpose:** The authors' objectives of this study were to create a self-reflection question guide that stimulates medical students' self-reflection and critical thinking within community-based learning; to test the newly developed self-reflection question guide; and to compare the level of self-reflection between the students who were given the newly question guide and those who were given the old one in their assigned portfolio writing.

**Interventions:** This was a double blind experimental study with a post-test only control group design. The authors conducted intervention for 100 minutes as follows: giving an explanation about the purpose, benefits and procedures of the research and seeking approval from the students to become the subjects of study; providing an explanation of self-reflection, benefits and examples of self-reflection; giving an explanation of the newly question guide and providing time for the subjects to write reflection based on these questions; and finally closing.

**Results:** There was a significant difference in the levels of self-reflection in general in the control group and the intervention group with a p value of 0.000 (< 0.05). As demonstrated, the self-reflection question guide can stimulate the reflection and critical thinking skills of medical students in a context of a community-based learning.

**Future directions:** As researchers, we should also be aware that using the question guide to write a self-reflection can be a challenging, boring activity and time consuming, so examining factors that can affect students' reflections and finding more effective ways to stimulate students to retain learning enthusiasm by properly reflecting on their experiences are still the main challenges in the overall health professions educational programs.

**Abstract 132**

**Withdrawn**

**The flipped classroom model for teaching physical examination skills - impact on student learning and competency-based assessment (134)**

*Margo Lane (Australia)*

*Daniel Park (Australia)*

*James Fraser (Australia)*

**Background**

UQ School of Medicine is the largest medical school in Australia with 530 students admitted per year. Year 1 clinical skills, including physical examination, are taught in small groups of 10 students with a clinician tutor per group. Whilst this course currently receives excellent student evaluations, course learning resources and standardization of clinical skills assessments were identified as areas for improvement.

**Purpose**

The purpose of the innovative online resources are twofold. Firstly, there was a need for students to have additional resources which directly modelled the UQ standard for physical examination techniques and aligned with their assessment to assist their learning. Secondly, improved standardization of the clinical skills teaching and assessments was identified as an area for development, given the number and diversity of Year 1 clinical skills tutors.

**Interventions**

In early 2016, student volunteers were filmed whilst performing the standard UQ physical examination of the five major body systems studied in Year 1. The completed videos were uploaded to the Learning Management System allowing access for both students and tutors.

**Results/applications**

Data from student and tutor surveys, system module assessment results and course evaluations from 2015 and 2016 will be analysed and the results will be presented.

**Future directions**

Future directions may include application to other areas of the medical program, with the aim of improving clinical assessment standardization and cohort competency in clinical skills.

**'What I wish I knew in Final Year'- Near Peer Teaching in an Irish University Hospital (149)**

*Niall O'Mara (Ireland)*

Background: Near-peer teaching (NPT) occurs where a trainer one or more years senior to a student assists that student in obtaining further knowledge (1, 2). NPT was launched in University Hospital Waterford (UHW) in August 2015 and consisted of a competency-based approach to foster and hone clinical skills and knowledge of final year medical students via the milieu of cognitive congruency (3). This study outlines the feasibility and value of NPT in a teaching hospital.

Methodology: Over five months, weekly NPT sessions were delivered by medical interns. These sessions were designed to enhance the core clinical examination skills and knowledge of Final Year Medicine students. All students were asked to outline their experience of NPT and perceived worth and benefit of NPT to their competencies. These responses were gathered via an anonymous questionnaire.

Results: A cohort of 76 students participated in NPT, with a 100% attendance rate.

Student feedback revealed:

- 84% of students strongly agreed and 16% agreed that the tutorials were relevant to them.
- 79% of students strongly agreed, 16% agreed and 5% disagreed that enough opportunities to ask questions were provided.
- 74% of students strongly agreed, 26% agreed that tutors provided clear explanations.
- 88% of students strongly agreed, 12% agreed that tutors were approachable and helpful.
- 76% of students strongly agreed, 24% agreed that tutors made the tutorial interesting.
- 84% of students strongly agreed, 26% agreed that tutors had good knowledge of the subject presented.

Conclusion: Core curriculum and clinical skills were conveyed to students in a stimulating and unique manner. Students value NPT as a positive learning tool that provides a safe learning environment. NPT represents an effective and novel modality in medical education. Future studies will identify the impact of NPT upon student's academic performance, professional development of NPT tutors and its acceptability to patients.

**Bridging the gap for knowledge and performance improvement in paediatric emergency procedural sedation: A 4-year review of the impact of 10 courses (160)**

*Suzan Schneeweiss (Canada)*

*Savithiri Ratnapalan (Canada)*

*Jonathan Pirie (Canada)*

Paediatric emergency procedural sedation is a distinct practitioner skill set that has not gained mandated formal certification status and as such practice varies. We developed an interprofessional continuing professional development course to promote safe sedation practices in children. Educational materials and multiple methods of learning were used to facilitate reflection and practice change. Methods for knowledge and performance assessment including multiple-choice questions, direct observation and feedback using high-fidelity simulation were used to assess individual and team-based competency in procedural sedation.

The purpose of this study was to evaluate a competency-based continuing professional development program to improve knowledge and performance of safe sedation practices in children.

Methods: A 1-day interprofessional continuing education program was developed to address the need for increased knowledge and performance of paediatric emergency procedural sedation. High-fidelity simulation scenarios with debrief sessions were used to allow participants to practice skills and receive feedback in a team-based environment. Predisposing (70-page manual), enabling (interactive case-based lectures) and reinforcing (sedation card and record) methods were used to enhance learning. Participants completed a 30-item multiple-choice examination for learner self-assessment at the end of the program.

Results: From July 2012 to September 2015, there were 10 courses with 225 health professionals completing the programs. Evaluations indicated high learner engagement to meet learner needs (mean score 4.55/5). The simulation sessions enhanced learners' problem-solving ability and decision-making skills (mean score 4.54/5). All participants achieved a minimum score of 70% on the multiple-choice test. Seventy-nine percent of participants reported a plan to make changes in their practice as a result of the program. Qualitative description of changes in practice includes increased confidence to perform procedural sedation, utilization of new knowledge and skills and commitment to implement sedation programs.

Future directions include survey to past participants to understand successes and challenges to implementing changes in practice.

**New strategies to open teachers mind about competency-based learning (161)**

*Marta Menezes (Brazil)*

*Marília Gusmão (Brazil)*

*Valdes Bollela (Brazil)*

*Ieda Aleluia (Brazil)*

*Ligia Vilas-Boas (Brazil)*

*Monica Oliveira (Brazil)*

The Escola Bahiana de Medicina e Saúde Pública (EBMSP) implemented since 2012 a competency-based learning (CBL) model lesson plan. On this model it is important to define the expected competencies, to create the needed learning conditions and to evaluate the process to confirm if the objectives were reached. Even though the school provided a lecture about CBL, the implementation of this model was not effectively incorporated.

This time, we decided to try a different educational approach, the team based-learning (TBL), so the teachers could better understand CBL. The training activity was held in an institutional Educational Conference at EBMSP. On the first part of the activity we offered a text about CBL, followed by an individual quiz, small group discussion, group answering of that same quiz and a final discussion on the subject with all groups. On the second part, each group applied the knowledge acquired on this experience by creating a CBL model lesson plan that was presented to everyone for discussion.

After a week an online survey was answered by the participants about their impressions on that activity. Among the 40 people that answered the survey, 32 (80%) were teachers and 20 (54%) had more than 10 years teaching experience, 26 (65%) already knew the TBL method. They also answered Likert scale questions about the activity. More than 90% of the participants agreed or strongly agreed that this activity provided better knowledge and skills for building CBL model lesson plans. They also pointed that they were motivated by team work, and will share that experience with co-workers.

This activity was well accepted by all participants, and they made suggestions to improve it.

We intend to incorporate this educational approach on our teacher development program.

**Competency-Based Education for the Management of Respiratory Failure and Oxygen administration (164)**

*Ida Ryland (UK)*

*Nicola Garner (UK)*

**Background**

The recognition of Respiratory Failure and the need for prescribing of Emergency Oxygen Therapy is poor (BTS, 2013). Identifying the underlying causes of this lack of knowledge is required in order to improve health practitioners' clinical decision making and thus enhance patient outcome.

**Purpose**

The aim of this competency-based education package is to address the knowledge gap in the recognition of respiratory failure and management of oxygen by health practitioners in the acute hospital setting.

**Innovation**

A questionnaire approach was utilised to establish the subject knowledge baseline of 100 practitioners (Nursing 36%, Medical 50% and Allied Health Professional 14%) in order to identify specific educational needs.

Data was analysed using SPSS version 20.

**Results**

The majority (75%) of participants correctly interpreted Type 1 respiratory failure yet only 38% recognised Type 2 failure. 72% participants admitted to receiving some prior training on oxygen administration however 44% had received no formal education on oxygen prescribing. Despite 92% recognising oxygen as a drug only half the cohort acknowledged the Venturi device was a controlled oxygen system.

**Application**

The study participants engaged in a presentation highlighting the dangers of oxygen mis-use specifically in relation to respiratory failure. This was followed by completion of a competency-based educational package based on the recognition of respiratory failure and the management of oxygen therapy. To establish if the participants' baseline knowledge had improved a competency-based quiz was provided.

**Future Directions**

In recognition of this important issue the Trust have set a requirement of 80% achievement as a mark of competency in the quiz in order for practitioners to gain permission to use the Trust's Patient Group Direction (PGD) for the administration of oxygen.

**Conclusion**

Investing in competency-based education relating to the recognition of respiratory failure and oxygen administration empowers staff to enhance patient safety and improve outcome.

**Exploring an evidence-based model for feedback and coaching in competency-based medical education (17b)**

*Joan Sargeant (Canada)*

Recent studies show that residents and other learners do not always readily engage in and use performance feedback for improvement, for various reasons. This is especially concerning within the evolving CBME context where it is expected that learners will receive more frequent performance feedback to help them progress from one level to the next, and where effective feedback and coaching will be essential in maintaining their appropriate learning trajectory. One feature of the assessment and feedback process within CBME is having regularly scheduled progress/ feedback sessions (eg every 3-6 months) with their supervisor or coach to review their formal assessments for that period and from these develop a plan for further learning and improvement. In response, we developed and tested an evidence and theory-based feedback and coaching model, to enable supervisors to facilitate residents' engagement in and use of their assessment data and feedback, and coach them for further development. It is a 4-stage feedback model (R2C21): building relationships, exploring reactions, exploring content, coaching for change, and has been well received by a number of competency-based programs. The objectives of this workshop are for participants to be able to describe the model and its 4 phases, practice using the model with simulated assessment and feedback scenarios, and critique the model for use within the CBME context generally and in their own setting specifically.

References:

1. Sargeant J, Armson H, Driessen E, et al. Evidence-informed facilitated feedback: the R2C2 feedback model. *MedEdPORTAL Publications*. 2016; 12:10387. [http://dx.doi.org/10.15766/mep\\_2374-8265.10387](http://dx.doi.org/10.15766/mep_2374-8265.10387)

**Leading Change: The Origins of the International CBME Collaborators (ICBME) (23b)**

*Jason Frank (Canada)*

Competency-based Medical Education (CBME) is an emerging approach to health professions education worldwide. In 2009, the International CBME Collaborators (ICBME) was founded to advance the field in medical education, provide a community of practice for those working in CBME, and to provide a "home" for the movement to change training. We describe the origins and agenda of the ICBME at this time.

The ICBME was founded when the Royal College of Physicians and Surgeons of Canada embarked on its own CBME transformation and conducted a systematic review of published CBME definitions. Realizing that CBME would benefit from a consensus conference, 25 authors were invited to come to an unprecedented meeting in Ottawa, Canada. The resulting meeting became a landmark event for the movement to promote and adopt CBME, and resulted in the first, highly cited, ICBME paper series (*Medical Teacher*, August 2010).

The ICBME group continued to meet monthly via international teleconferences. The discussions led to an expansion of membership and activities. ICBME now includes 80 members from 5 continents, with majority of participants from Canada, the USA, Australia, and Europe. Members are researchers, policy makers, clinicians, PhDs, and senior administrative leaders. The ICBME went on to identify additional work via a Delphi process. This led to the second CBME consensus conference in 2013, and the second ICBME paper series 2015-2016. The First World Summit on CBME at AMEE 2016 and the ICBME webinar series are both products of the ongoing work of the network.

The ICBME is an example of an international community of practice, research collaborative, change network, and sociological home for a movement for medical education change.

**How competency based medical education has driven health care reform: A case report from a Dutch Caribbean setting (8b)**

*Jamiu Busari*

Current practice shows that to achieve value-based health care systems, the competencies of health care providers and the quality of the health care system needs to be assured. As a result, it is important that health care systems focus on service and manpower development both during and after formal (postgraduate) medical training. Curaçao is one of the Caribbean islands belonging to the Kingdom of the Netherlands. With an estimated population of 150.000 inhabitants, the island is characterized by a relatively high aging population, a high prevalence of chronic diseases (e.g. diabetes, obesity), and a suboptimal health care system portrayed by fragmented, unsynchronized and inefficiently functioning primary, secondary and tertiary health care levels. The St. Elisabeth Hospital (SEHOS) is the major general hospital on the island. It provides health services in all the key clinical specialties and also serves as an affiliated teaching hospital for a number of tertiary medical institutions in the Netherlands. Over the past decade, the hospital's objectives have included the successful implementation of the revised Dutch postgraduate curriculum on competency-based medical education within its teaching setting. In this report, we share the practical outcomes and experiences from a decade of implementing CBME in a resource-limited environment and the impact it has also had both on the quality of health care.

References:

- Medical education in the new millennium – a Caribbean perspective” J.O. Busari, M. Vervoort, S.M. Hermans, & J.R. Blom. (2001) *Medical education*, 35; 7, 703-706
- “Implementing a competency-based residency curriculum in a resource-limited environment: a Caribbean perspective” J.O. Busari, A.E. Verhagen, F.D. Muskiet & A.J. Duits, *Medical Teacher*, 2008, 30(9-10): e 189-95
- “The influence of the cultural climate of the training environment on physicians’ self-perception of competence and preparedness for practice”. J.O. Busari, A.E. Verhagen, F.D. Muskiet, *BMC Medical Education* 2008, 8:51 (21 November 2008)
- “The strategic role of competency based medical education in health care reform: A case report from a small scale, resource limited Caribbean setting. J.O. Busari, A.J. Duits, *BMC Research Notes*, (2015) 8:13 DOI 10.1186/s13104-014-0963-1
- “A case study of the implementation of a competency based curriculum in a Caribbean Teaching Hospital” J. Koeiejs, J.O. Busari, A.J. Duits (2012) *West Indian Medical Journal* 61(7): 1-1

**Poster: CBME Research**

**Developing a “Clinical Manifestation” In Medicine Clerkship Curriculum (20)**

*Narges Saleh (Iran)*

*Azim Mirzazadeh (Iran)*

*Mohammad Shariati (Iran)*

The purpose of the study was to determine CCM that all students are required to master in approaching them.

Methods:

We used a combination of methods including, qualitative and quantitative approaches. Triangulation method was used in the first phase; literature review, a survey of experts from different clinical disciplines and a survey of general practitioners. In this phase initial list of common clinical manifestations was prepared. The second phase of the study was characterized by identifying clinical presentation of the patients who were visited by family physicians and gathered via the health system network. We have used this information in finalizing the CCM list. Finally, information extracted from phase I and II were available to the experts and finalized in an expert panel.

Results:

After these phases, we obtained a list of 100 CCM (such as palpitations, fever, and nausea, etc.) as the most important content to be included in a minimal clerkship core curriculum in undergraduate medical education. Based on the finding, we have classified this list into different disciplines and allocated them to core clinical departments.

Discussion:

Our process can benefit medical schools that offer outcome-based medical education, especially for clinical clerkship course. They will be able to focus on topics chosen by the Iranian expert panel as being the most important issues in such a situation to drive effective clerkship, a supportive system including assessment should be implemented.

**Assessment of the clinical outcomes of interns in Family Medicine using milestones and Entrustable Professional Activities: a curricular proposal (25)**

*Adrián Garduño-Vera (Mexico)*

*Alicia Hamui-Sutton (Mexico)*

*Uri Torruco-García (Mexico)*

*Ana María Monterrosas-Rojas (Mexico)*

*Araceli Arrijoja-Ramirez (Mexico)*

Background. The Association of American Medical Colleges has put forth a set of Core Entrustable Professional Activities for Entering Residency that provide a road map for milestones (Santen, 2015). However which skills should interns be expected to perform at Family Medicine health centers hasn't been determined yet.

Research question. What must be present on a curricular proposal for Family Medicine interns, so that they outperform the threshold of pre-entrustable trainees?

Methods

Population and data collection. Four focal groups were conducted in May of 2015 to explore the core activities that an intern has to develop in Family Medicine rotation; two focal groups were with Family Medicine Professors and two with social service students. Thirteen specific activities were identified and three levels of milestone performance were constructed.

Analysis methods. Family Medicine milestones for interns were validated through an electronic three round Delphi survey between November and December of 2015. Thirteen Family Medicine academics from three public primary health centers participated in the validation process.

Results. We developed a curricular proposal with thirteen entrustable professional activities and three levels of performance for Family Medicine interns. The thirteen activities are: attend like first assistant in vasectomy, application of immunizations, antenatal and postnatal birth control, attention of infectious diseases, attention of epidemiological surveillance diseases, advice and application of contraceptive methods, health control of infants under age 5, screening of cervical cancer, control of metabolic syndrome, elaborate a family diagnosis, screening or frequent neoplasms, screening of breast cancer and control of skeletal muscle diseases.

Conclusions. The present research is the first proposal of Family Medicine milestones for interns at Mexico. What is new to the field for undergraduate medical education is a pedagogical plan that combines the AAMC Core Entrustable Professional Activities for Entering Residency with the curricular themes in Family Medicine for interns.

### **Emotional Intelligence and Job Motivation of Member Faculties in Medical Sciences Universities (33)**

*Ali Morad Heidari Gorji (Iran)*  
*Mansur Ranjbar (Iran)*  
*Morteza Darabieniya (Iran)*

**Background:** One of the important issues of the organizations is how to motivate their staff to work and get more exploitation. Concerning motivation and promoting via training emotional intelligence is associated with higher efficiency and exploitation in an organization, so the researchers aimed to study the relationship between emotional intelligence and professional motivation among faculty members of Mazandaran University of medical sciences.

**Methods:** This is a descriptive study which included 120 of the faculty members of MUMS via stratified randomized sampling. The participants measured by standard emotional intelligence and professional motivation questionnaires. Data analyzed via software SPSS 16 using Pierson correlation method.

**Results:** The findings of this study showed that there is a significant correlation between total score of emotional intelligence and professional motivation. Also there is a significant correlation between the total score of emotional intelligence and each variables of the professional motivation questionnaire. The average total score of motivation in the faculty members was 173.76 and the average total score of emotional intelligence was 116.52.

**Conclusion:** Enhancement of emotional intelligence results to higher professional motivation, so promotion of emotional intelligence skills effects motivation level, professional progress, functional progress and finally exploitation and more profit. Companies and organizations can identify the reducing factors of the motivation in the faculty members and determine the ways to get rid of them.

### **The Interprofessional Skill Lab in the Simulation Centre: An Experience of Communication between the medical-nursing team and family members (59)**

*Annamaria Bagnasco (Italy)*  
*Sue-Anne Maruffi (Italy)*  
*Gianluca Catania (Italy)*  
*Giancarlo Torre (Italy)*  
*Loredana Sasso (Italy)*

**Introduction:** Interprofessional competency consists of four domains: values/ethics, role and responsibility, interprofessional communication, teams and teamwork. This study aimed to promote the culture of interprofessional collaboration through an interprofessional educational session with nursing and medical students in a centre of simulation at the University of Genoa.

#### **Methods**

To build the interprofessional educational session, we used:

- Role play (to develop relational competences);
- Briefing & debriefing (to share information about the event);
- Semi-structured interviews based on the literature and the role-play script;
- Guided reflection (to analyse the contents of this experience).

The session was recorded and verbatim transcribed to extract main concepts and constructs from what students said.

The setting was the Centre of Simulation of The School of Medical and Pharmaceutical Sciences at the University of Genoa.

The sample was a non-probabilistic convenience sample of 11 nursing students and 8 medical students.

**Results:** The interprofessional educational session was rated positively in terms of: teaching method; educational materials; and educators.

The main themes that emerged from this study were:

- Meaning of interprofessional team;
- Different and mutually-completing roles; physician/nurse primus inter pares;
- Things done at different moments;
- Feeling of 'loss' in terms of quality of care for patients when interventions are not jointly agreed;
- Recognise the need for specific training in terms of interprofessional teamwork;
- Need to be educated for integration: knowing one another, sharing, and collaborating;
- Having a common vision centred on the patient.

**Discussion:** The purpose of this study was achieved. The mix of teaching methods selected for the interprofessional education session were effective in launching a course of interprofessional education.

**Conclusions:** Students became more aware of the four domains of interprofessional competence and about the need to learn how to work in synergy as an interprofessional team in the future to meet patients' healthcare needs and improve their outcomes.

**Using OSAR model to assess the reflective process in Critical Incidents reported by Chilean Medical Students (76)**

*Debora Alvarado (Chile)*  
*Patricia Perez (Chile)*  
*Cristhian Perez (Chile)*  
*Patricia Villaseca (Chile)*  
*Fernanda Perez (Chile)*  
*Daniela Plaza (Chile)*

Introduction: Learning based on critical incidents (CI) has been introduced in medical education as an useful tool for improving the quality of teaching, error prevention, and key competencies development such as reflection skills. Critical incidents are unexpected events that require a quick and instinctive response. They have been used since 2008 in the internship of Public Health at the University of Concepcion, Chile. Critical incidents seek to promote a reflective practice by improving knowledge from action. In order to classify their reflection level, an OSAR (Observer-System-Action-Results) model was employed. The highest level in OSAR model is the transformational learning, when a profound change happen in the beholder.

Objective: To analyze the reflective process in the Critical Incidents reports of Medical students in their last year of undergraduate training process.

Methodology: Using thematic content analysis, Critical Incident reports from 124 Medical students in their last year of undergraduate training process were reviewed. 70 (56.5%) were female. Each report was analyzed by a teacher and an assistant independently. Then, learning level showed by students in their reports were classified in five levels according to the OSAR model. The Kappa statistic Cohen showed an appropriate level of inter-rater agreement.

Results: The students usually stay in the passive acceptance of the context (n=22; 17.7%), in a basic analysis of the situation (n=29; 23.4%), or in a first level learning (n=50; 40.3%). There are some students who reach a second or third level of learning, but they are rare.

Conclusion: Despite the effort of their Medical School for intentionally promote higher levels of reflection in them, students tend to a situational and poor analysis of the context. In this situation, their reflexive processes rarely reach a level that really help them to change.

**Critical Reception of Competency-Based Medical Education (CBME) Discourse (81)**

*Victoria Duque (Spain)*  
*Rosa Magallon (Spain)*  
*Jose Mari Miguelena (Spain)*  
*Cruz Bartolome (Spain)*

**Background**

Institutional medical education discourse evolved from the concept of doctors as managers of knowledge towards doctors as producers of quantified health outcomes. Under this behaviourist model the core concept of medical competence permeates normative texts addressed to medical teachers and students. The shared framework in CBME discourse is a standardised, global learning model focused on assessing future doctors according to their performance and outcomes. But critical voices are denouncing that the competency-based curriculum overemphasises a mechanical model that produces “hidden incompetency” as a side-effect.

**Summary of work**

Relevant medical education texts are studied under a functional perspective looking for tensions within the text or among different texts. Critical Discourse Analysis (CDA) methodology shows how these tensions continue undermining an apparently uniform educational framework, especially concerning standardisation and assessment. Different approaches for texts analysis are used, as tag clouds, Parker’s framework, Foucauldian CDA and Performative Narrative Analysis.

**Results and Discussion**

Medical competence is an unstable concept undermined by different approaches. Globalisation theory considers free movement of people, ideas, technology and capital and works towards some kind of meta-accreditation but other voices are against this “neo-colonial” influence that does not fit in all contexts. Identity-formation theory represents medical education as a process by which people seek to integrate their various statuses and roles, as well as their diverse experiences, into a coherent image of self. Cognitive theory supports the higher-order skills necessary to be a holistic professional who manages social and cultural contexts to impact on the environment producing desired health results.

**Conclusions**

Tensions in CBME discourse reflect how physicians are trying to recover their lost empowerment moving to a multifaceted, global, interdisciplinary identity. Legitimation of a contextualised practice inspires a more complex postmodern identity and consensus among social actors.

**“A Picture Tells a Thousand Words”: Pictures explaining CBME (82)**

*Victoria Duque (Spain)*

*Rosa Magallon (Spain)*

*Jose Mari Miguelena (Spain)*

*Cruz Bartolome (Spain)*

Background. Medical competency is the core concept of contemporary Competence-Based Medical Education (CBME) framework. Definitions have evolved from doctors as managers of knowledge to doctors as producers of quantified health outcomes. Under this outcome-based model, the abilities and attitudes required in a graduate could be standardised and assessed. To explain it, some pictures have been added to CBME discourse in institutional texts and papers.

Summary of Work Studying the evolution of CBME framework in the main institutional documents and papers we can show the strength of institutional values, their inconsistencies and their power dynamics. Iconographic representations of medical competency enhance our understanding of the tensions inherent in current educational discourse.

Summary Of Results

The stairway of levels (Bourgoyne, 1993) => Time-based model.

Miller’s pyramid (1990) => Behaviourist model

The CanMeds daisy (2005-2015) => Conceptual model

The Irish diagram “Noughts & Crosses” (2011) => Conceptual model revised

The light that illuminates practice (Jolly, 2012) => Postmodernist model

Discussion. As a consequence of the ambiguity and conceptual instability of the term, medical competency has suffered a categorisation where competence is better than knowledge, but inferior to performance, which requires competence adaptation to real settings. Pictures reflect this changes incorporating the importance of social context in medical education together with cultural and economic needs.

Conclusions. Medical education is conceived as a process that has moved from a knowledge-based paradigm to a performance-based paradigm. Competence cannot only be the possession of knowledge, skills, and attitudes, but also the ability to use these in the clinical environment to produce desired health results for patients.

Take-Home Message. As medical institutions show in pictures, doctors’ image is moving to a multifaceted, global, interdisciplinary identity.

**OSCE as a formative tool for doctors and nurses (84)**

*Cruz Bartolome (Spain)*

*Melus Elena (Spain)*

*Magallon Rosa (Spain)*

*Victoria Duque (Spain)*

Methods:

A new OSCE, used not only as an assessment tool but as a formative tool including ethical and communicative skills, was designed by our team. Common stations were created for doctors and nurses. Unsolved clinical problems and new communicative situations to learn were analysed to design a formative OSCE focused in outcomes. The project included a provisional test and new stations and then, a validation questionnaire was done.

Results:

Most valuable items were:

Organisation: 85% tutors vs 83% residents.

Identifying and defining priority of needs: 100% tutors vs 67% residents.

Outcome assessment (American Board of Internal Medicine model and MINI-CEX): 100% tutors vs 67% residents.

Material resources: tutors 85% vs residents 100%.

Finally a new OSCE was designed with clinical cases proposed by tutors and residents and their suggestions were included. Global validation was good.

### **Death and Dying: Competent to Care? (94)**

*Janice Turner (UK)*  
*Hannah Hesselgreaves (UK)*  
*Clare Tucker (UK)*  
*Hazel Scott (UK)*  
*Gemma Sullivan (UK)*  
*Rebecca Northridge (UK)*

#### **Purpose:**

The purpose of this poster abstract is to provide an overview of a completed systematic literature review and the interpretation of its findings into the subsequent development of a medical educational competency based framework in relation to death and dying.

#### **Interventions:**

After undertaking a rapid literature review which confirmed our initial hypothesis, we analysed current UK medical curricula to examine how competency in handling the relevant range of death situations per specialty would be developed and assessed. In addition, we analysed trainee views on their experiences and preparedness for this area of practice

#### **Results and Application:**

Deficiencies exist in the competencies, provided by current training, needed to provide satisfactory care at the time of death. However, measures to address these can be readily integrated into undergraduate, foundation and specialty training. Additionally, we have identified significant training needs for many specialty areas of training, especially in relation to sudden death contexts. Gaps exist between what is intended as competency outcomes and what is delivered.

#### **Future Direction**

Clinical training regarding death and death-related communication needs to take account of the varying situations in which specialty practice occurs. Therefore, in response to our results, we are now developing a Scottish medical training framework for all career stages to support attainment of competencies, relevant to clinical practice and we have created new training resources to foster understanding.

### **What Kind of Teaching Perspective Do Medical Teachers Have? (100)**

*Yera Hur (South Korea)*  
*A Ra Cho (South Korea)*  
*Sun Kim (South Korea)*

**Background:** The study focused on the analysis of medical education classes through the evaluation of medical teachers' perspectives of their classes in general.

**Research questions:** Three overarching questions were discussed; 1) Do the belief and intention of teaching effect on the action of the teachers? 2) What are the dominance and recessive teaching perspective? 3) Do the teaching perspective differ according to medical teachers' gender and rank?

**Methods:** Pratt & Collins' (1989) 'Teaching Perspective Inventory (TPI)' was used for analysis. TPI consists of 45 item questionnaires which categorize the perspectives into five; transmission, apprenticeship, developmental, nurturing and social reform. We analyzed these five perspectives with three sub categories (believe, intention, action: BIA) where the Cronbach's alpha coefficient was .92 among five perspectives and .89 among BIA. Two medical school's faculties were involved and 73 online TPI results were used in the study. Generalized linear model, descriptive analysis, ANOVA, and independent t-test were performed.

**Results:** 1) Belief and intention do effect the action of the medical teachers. Especially the highest significance was shown in teachers with Nurturing perspectives (B:  $t=4.72$ ,  $p=0.0001$ / I:  $t=4.34$ ,  $p=0.0001$ ). 2) The dominant teaching perspective was Apprenticeship (54.9%) type and the next came Transmission (14.3%). The most recessive perspective was Social reform (44.0%), followed by the Development perspective (25.0%). 3) These teaching perspectives did not differ according to the rank, but it showed difference in Transmission type ( $t=2.897$ ,  $p=0.005$ ) and Apprenticeship ( $t=2.002$ ,  $p=0.049$ ).

**Conclusions:** Medical teacher's belief and intentions of teaching does affect how he/she acts in class. TPI inventory allows the teachers to reflect on their teaching perspectives of classes, and these evaluations may be used in development of the curriculum itself or to guide the future direction of the faculty development programs.

### **Learning Curve in Segmentation for 3D Reconstructions (102)**

*Gianluca Sampogna (Italy)*

*Francesco Rizzetto (Italy)*

*Francesco Cigognini (Italy)*

*Niccolò Cassina (Italy)*

*Maurizio Vertemati (Italy)*

*Marco Elli (Italy)*

Medical students learn anatomy principally studying books and atlases of 2D images based on the most common anatomical variations. When they start their clinical activity, they have to face with inter-individual anatomical variability and translate their knowledge into a 3D space.

Recent developments in computer graphics and improvements in medical imaging have allowed to perform 3D reconstructions starting from patient-specific cross-sectional imaging, like CT scan or MRI, through a process called "image segmentation".

The advantages of preoperative surgical planning by 3D visualization of patient's anatomy are well-known and have been elongated for many years. However, segmentation is not a widespread skill among doctors and 3D reconstructions are rarely employed in routine clinical settings. Probably, it is due to consistent initial difficulties with the learning phase of segmentation.

The aim of our research was to analyze the learning curve to evaluate whether segmentation could be realized easily, stimulating its diffusion.

We enrolled 12 medical students who passed the Anatomy exam and decided to attend a 4 hour course to learn how to realize virtual 3D reconstructions. An open-source software, called 3D Slicer, was employed to analyze radiological images. All participants used the same notebook, the 13.3" Apple MacBook Air.

At course completion, the students were asked to segment the same abdominal CT scan, adopting a work-flow focusing on the following organs: bones, aorta, liver, spleen and both kidneys.

All of them completed the abdominal 3D reconstruction within an adequate time for clinical settings: the mean time was 24 min (range: 16-36 min).

According to our experience, we consider that segmentation is an easy skill to learn, which should be part of the third millennium surgeon's armamentarium. We suggest MD curriculum should include this task which requires a minimum investment of resources.

### **Clinical Apprenticeships: a unique learning opportunity for medical students (105)**

*Marguerite Hill (UK)*

*Clive Weston (UK)*

Background: The Clinical Apprenticeships, extended placements working with medical teams in secondary care, are a unique feature of the Swansea University Medical School (SUMS) Graduate Entry Medical (GEM) curriculum starting in the first year of the course. Students work with a range of specialities with the primary learning outcome of developing their clinical skills and professional identity as opposed to knowledge of the specialty itself.

Research question: How well are the clinical apprenticeships meeting the students' needs and how could their learning be enhanced?

Method: Informal focus group discussions with final year Swansea GEM students and clinical teachers. Review of student reflections on their placement.

Results: GEM students valued the opportunity to work with a clinical team without the distraction of formal teaching and felt well prepared for their placements. Although students were encouraged to spend time with the consultant, this was dependent on the engagement of the senior clinician and students spent most of their time with junior doctors. Five weeks was felt to be optimal time for apprenticeships unless they were working for predominately outpatient based specialities or specialities with a low rate of patient turn-over. The students felt they didn't receive sufficient feedback on their performance and clinicians were uncertain about the standards that the students should be attaining by the end of the placement. Areas of good practice were identified by students and clinical teachers and will be disseminated / implemented over the next academic year.

Conclusions: Early patient contact is valued by medical students and clinical teachers. Enthusiastic involvement of the students by all members of the clinical team is crucial if the students are to have a positive learning experience. Areas for faculty development, such as the delivery of feedback, have been identified.

**OSCE to mastery: challenges in assessment of procedural skills (126)**

*Patricia Green (Australia)*

Historically, students undergo assessment of procedural skills (e.g., indwelling catheterisation, IV cannulation, IM injection) during OSCE examinations. OSCE format however, provides limited sampling from the programmatic blueprint and restricts the number of skills assessed each pre-clinical year of the medical curricula. We wanted to ensure all students were competent in all procedures prior to their clinical years of training. We undertook a mastery approach to teaching procedural skills. Mastery was defined as a level of expected proficiency (and safety), such that students undertook continual assessment (at a pass or fail level) to demonstrate achieved 'mastery'. Assessment involved demonstration of skill proficiency using 1:1 simulated patient encounters with written (i.e., checklist, anecdotal etc) and oral feedback provided by experienced tutors. Students: students were assessed on a 1:1 basis in a time allocated session and discussion was allowed during the assessment. Faculty: to align staff variations in learning and teaching approaches, the local health authority guidelines were referred to and adhered to. The variability of clinical practice was accommodated with criterion-referenced standard setting on the pass/not yet competent standards prior to the assessment. We established this mastery approach to teaching procedural skills during 2013 in our medical program, and less than 2% of students have required repeat attempts to demonstrate skill proficiency. Further, students have reported that mastery assessments are less stressful than OSCE, and the personalised approach to teaching makes them feel competent and more confident. Mastery approach to procedural skills provides a collaborative approach to teaching, learning and assessment and ensures students are confident and proficient with procedural skills prior to clinical placements. The mastery approach to teaching procedural skills provides consistent and transparent assessment processes and encourages collaboration rather than competition.

**Changing Teachers Role: Facilitator (137)**

*Gulshat Kemelova (Kazakhstan)*

*Raushan Dosmagambetova (Kazakhstan)*

*Vilen Molotov-Luchanskiy (Kazakhstan)*

*Lilit Najaryan (Kazakhstan)*

**Research questions**

Changing attitudes of teacher's role as facilitator after training by CPD program based on the core competencies.

**Methods**

Medical teachers of Karaganda State Medical University have been suggested to answer Questionnaire "The 12 roles of the teacher" to training and after training, which should reflect the roles of the teachers, its importance for faculty and results reflected in educational process. The CPD program in KSMU based on the 6 core competences of teacher, which considered independent learning modules and included in total 324 hours. The duration of program is 2 months after completion every teacher writes reflective essay. In research were included 60 teachers of different departments who have experience less than 5 years.

**Results**

According to results noticed that mean rating for role "Mentor, personal adviser or tutor to a student or of group of students" to training was 3.8 and after training this index was increased to 4.4 and for the role "Learning facilitator" ranged from 3.6 to 4.4. This numbers showed the increasing interest in these roles by the young teachers.

**Conclusions**

In order to support and motivate young teachers to develop their evaluating and facilitating skills, it is essential to provide faculty development that defines core competences of medical teacher, including competence "Facilitator" and make a friendly environment for young members of faculty to improve their teaching roles.

**Assessing interns and residents knowledge of data collection and Physician Patient Relationship during the examination (153)**

*Atena Rahmati Najarkolai (Iran)*

*Leila Sabzmakan (Iran)*

*Leila Bahramkhani (Iran)*

*Alireza Mollai Yazdanabad Oliya (Iran)*

*Farideh Bahramkhani (Iran)*

*Ebrahim Akbari (Iran)*

Background and research question: Proper strategies for Physician Patient Relationship, dramatically impact on patient satisfaction, treatment outcomes, medical costs, and even complaints against physicians. Evidences suggest that many physicians have not communicated effectively with their patients due to the lack of knowledge. A review, declares that, the Physician Patient Relationship skills and data collection is not included in medical education curriculum in Iran. Present study aimed to investigate residents and interns' knowledge of data collection and Physician Patient Relationship during the examination.

Methods: This cross-sectional study sample was consist 47 interns and residents .The tool was 15 item questionnaire retrieved from training handbook. The questionnaire parts: data collection and Physician Patient Relationship=7questions. Its Face and content validity and reliability were assessed .The cronbach's alpha was 0.69=acceptable. analyze done using SPSS software. Descriptive statistics, independent t-test and Pearson's correlation coefficient

Results: The results indicated that, (44.7%) were male and (55.3%) were female. Moreover (42.6%), (57.4%) were intern and resident respectively

The average age was  $29/29 \pm 3/29$ .from 15 knowledge score; the average scores of  $7.14 \pm 2.51$  were obtained, which suggests that physicians' knowledge in this point are very low. Also independent t-test revealed that between knowledge, gender and level of education, were no significant correlation. Besides Pearson's test showed no significant difference was between age and knowledge. For data collection section, knowledge score was  $3.02 \pm 1.51$  and Physician Patient Relationship skills knowledge score was  $1.56 \pm 4.14$ .

Conclusion: our results illustrated that interns and residents' knowledge were very low in this area. So, experience is not a good tool to teach these skills. Based on evidences, teaching these skills to physicians had a significant impact on patient satisfaction. Regarding their low knowledge in this area, teaching these skills are recommended to be included in the Curriculum of Medical Education in Iran.

**A mixed methods approach to teach professionalism to ophthalmology residents: A pilot study (171)**

*Kavita Bhatnagar (India)*

Background: Professionalism is an important competence to be taught and assessed for ophthalmology residents but presently there is no structured curriculum available for the same in India. Objectives: This educational research project was undertaken to develop, implement and evaluate a formal training in professionalism for ophthalmology residents using reflections and role-plays on simulated patients before using it on real patients. Methodology: This interventional study with Pre and post intervention assessment was conducted from 01 Nov 2014 to 31 March 2015 with study sample of 24 residents in ophthalmology department of a medical college in western India. A resident professionalism log-book was prepared to document the course objectives, course outline, student groups, evidence-based rationale, and specific professionalism behaviors to be learned. Training modules were prepared and validated. Interactive lectures by subject experts, reading assignments, seminars were used to teach basics of professionalism. Specific Professionalism Behaviors like empathy, altruism and informed consent were practiced using demonstration videos, role plays and reflections on their learning. Results: There was statistically significant improvement in resident's perceived importance of professionalism ( $P < 0.005$ ). Mini-CEX encounters observed were 450 with mean scores of 5.48, 5.45 and 4.81 on a 9 point scale for empathy, altruism and informed Consent respectively. 100% faculty and residents were satisfied with this training program. Resident portfolios showed improvement in their humanistic/professionalism qualities. Conclusion: Professionalism can be taught and assessed. There is a need to have a structured training module for professionalism in ophthalmology residency in India.

**Reinforcing Doctor Patient Communication Skills for Undergraduate Medical Students at entry to clinical rotation:  
A pilot study (172)**

*Kavita Bhatnagar (India)*

**Purpose:** The purpose of this study was to reinforce doctor patient communication and medical interviewing skills of second year medical students just before they start clinical postings. **Method:** Five days workshop to reinforce basics of communication skills taught in first MBBS and developing relationship with the patient, assessing patients' problems, managing patients' problems, and managing difficult patients / challenging situation was planned and conducted for 2nd year MBBS students before starting clinical rotations. A total of 110 second year medical students participated in this workshop. Teaching strategies used were interactive lectures and role plays followed by panel discussion. Pretest and posttest were taken. Feedback was taken on the impact of the program on the students. The students who took part in role-plays were asked to rate their experience on a 7-point scale. **Result:** The response rate was 86.36% 70.91% and 100% for post-test, programme evaluation and learning through Role-play respectively. Cronbach alpha for the pretest questionnaire, programme evaluation and learning through Role-Play was 0.799, 0.764 and 0.916 respectively. There was considerable improvement in the scores from the pretest values with the mean scores almost doubling in majority of the questions. Mean total score improved from 4.57 to 10.13. The improvement was statistically very highly significant. More than 70% students recommended this activity for other students ( $p < 0.0001$ ) **Conclusion:** Outcome measure scores in the posttest increased significantly. Teaching through interactive workshop and student's participation in role play was found to be an effective method as reflected by students' feedback. Therefore, the program will be continued in future.

**Competency Based Teacher Education In India: Framework and Practice (173)**

*Pushpanadham Karanam (India)*

Right to Education is a constitutional commitment in India which provides educational opportunities for children to fulfill their potential, realize opportunities for employment and develop life skills. Amongst the many factors influencing education quality, it is widely recognized that teachers play a crucial role, and some even argue that teacher quality is the most influential school-based factor affecting student learning. Researchers, policy makers, programme designers and evaluators, therefore, are looking for ways of understanding teacher quality and learning and promising teacher improvement programmes. As Student learning is the most important determinant, and thus quality teachers are those most capable of helping their students learn. Teacher competence is one way of looking at teacher quality, as it can provide a framework for talking about essential qualities that are expected of teachers. Competence standards for teachers, both in teacher education and daily classroom practice, are increasingly being designed.

The concept of competence has a long history in education and training research and practice. The term competence is employed in a generic sense, meaning the quality or state of being competent. The quality of being competent is explained by the possession of a set of 'competencies' that together are causally related to competent performance. In the literature, a long list of different competences for teachers can be assembled, e.g. knowledge competence, civic competence, emotional competence, cultural competence, gender competence. The National Curriculum Framework for Teacher Education in India envisages a competency based teacher education framework and direct the teacher education institutions to integrate in the pre-service and in-service teacher education programmes.

In this paper, author has highlighted the recent teacher education reforms in India within the competency framework and critically examined the current practices and future challenges.