

# 2018 World Summit on CBME

## Program Overview

Friday, August 24, 2018					
Time	Session code	Session Type		Speakers	Room
0730		Registration Opens			Congress Centre
0800 – 0815	A1.1	Opening of the Summit		Jason Frank (Canada)	San Francisco
0815 – 0915	A1.2	Opening Plenary	Capturing the current state of the art: From 2000 until now <i>Chair: Dan Schumacher</i>	Carol Carraccio (USA)	San Francisco
0915 - 0945		COFFEE BREAK			
0945-1100 75 mins	B1	Parallel sessions	ORAL RESEARCH	Various	San Francisco
	B2		ORAL INNOVATIONS	Various	Helvetia 1
	B3		Workshop An introduction to CBME	Eric Holmboe and Dan Schumacher	Helvetia 2
	B4		Workshop An introduction to Learning Analytics in CBME	Stan Hamstra	Helvetia 7
	B5		Workshop Summative Entrustment Decisions in Medical Education: Defining a Program of Assessment for Entrustment or Clinical Competency Committees	Holly Caretta-Weyer (USA)	Wettstein
1115-1230 75mins	C1	Parallel sessions	ORAL RESEARCH	Various	San Francisco
	C2		ORAL INNOVATIONS	Various	Helvetia 1
	C3		ORAL INNOVATIONS	Various	Helvetia 2
	C4		Workshop Experiences with Entrustment Decision Making in EPA-based medical training. Practical insights from the Netherlands and Germany	Auk Dijkstra (Netherlands)	Wettstein
	C5		Workshop The preceptor as the assessment tool; evidence and exploration	Karen Shultz (Canada)	Helvetia 7
1230-1400		EXTENDED LUNCH & POSTER PRESENTATIONS (Research and Point of View)			3 <sup>rd</sup> floor Foyer
1400 - 1515 75 mins	D1	Parallel sessions	ORAL RESEARCH	Various	San Francisco
	D2		ORAL POINT OF VIEW	Various	Helvetia 1
	D3		Workshop Changing Culture to Facilitate Competency-Based Medical Education Program Implementation	Reuban Eng (Canada)	Helvetia 2
	D4		Workshop Curriculum Mapping: Just tell me how to do it!	Joan Binnendyk (Canada)	Wettstein
	D5		Workshop Program Evaluation on the Frontline of CBME: How to Use Rapid Cycle Evaluation to Developmentally Evaluate CBME Implementation at the Program Level	Andrew K. Hall (Canada)	Helvetia 7
1515 - 1545		COFFEE BREAK			3 <sup>rd</sup> floor Foyer
1545 - 1715	E1	Plenary session	International Flair: Addressing cultural influences, differences and perspectives <i>Chair: TBA</i>	Fremen Chou (Taiwan) Eliana Claudia de Otero Riberio (Brazil) Maitham Hussein (Kuwait)	San Francisco
1730-1930		EVENING RECEPTION			3 <sup>rd</sup> floor Foyer



# 2018 World Summit on CBME

## Program Overview

Saturday, August 25, 2018					
Time	Session code	Session Type		Speakers	Room
0730		Registration Opens			Congress Centre
0800 – 0810	F1.1	Opening Remarks		Jason Frank	San Francisco
0810 - 0915	F1.2	Plenary	Challenges and Cautions <i>Chair:</i>	Rachel Ellaway (Canada)	San Francisco
0915-0945		COFFEE BREAK			3 <sup>rd</sup> floor Foyer
0945-1100 75 mins	G1	Parallel sessions	World Café: A Method for Exploring the Frontiers of CBME Introductions, small group discussions (40 mins); harvest of best ideas (30mins)	Robert Englander (Host)	San Francisco
	G2		ORAL RESEARCH	Various	Helvetia 1
	G3		ORAL INNOVATIONS	Various	Helvetia 2
	G4		Workshop Competency-Based Handovers to Graduate Medical Education: A Framework to Bridge the Transition	Holly Caretta-Weyer (USA)	Wettstein
	G5		Workshop An introduction to CBME	Jason Frank	Helvetia 7
1115-1230 75mins	H1	Parallel sessions	ORAL RESEARCH	Various	San Francisco
	H2		ORAL INNOVATIONS	Various	Helvetia 1
	H3		Workshop Summative Entrustment Decision-Making: Ensuring Validity and Defensibility	H. Carrie Chen (USA)	Helvetia 2
	H4		Workshop Resident Leadership in the Co-Production of Competency-based Medical Education (CBME)	Kristen Weersink (Canada)	Helvetia 7
	H5		Workshop Clinical coaching in CBME	Denyse Richardson (Canada)	Wettstein
1230-1400		EXTENDED LUNCH & POSTER PRESENTATIONS (Innovations/Lessons Learned)			3 <sup>rd</sup> floor Foyer
	I 1	"MEET THE EXPERTS" SESSION			Wettstein
1400 - 1545 75 mins	J1	Parallel sessions	ORAL INNOVATION	Various	San Francisco
	J2		Workshop Practical strategies to achieving social accountability in postgraduate medical education	Tim Dube (Canada)	Helvetia 1
	J3		Workshop Mind Makeover: Cultivating a Growth Mindset in Trainees to Enhance Competency Based Outcomes	Teri Turner (USA)	Helvetia 2
	J4		Workshop Walking the Path of the Elephant - Exploring User-Centered Implementation of CBME. Powered by ICCA (Intercollegiate Collaboration on CBME in Anesthesia)	Adrian Marty (Switzerland)	Helvetia 7
	J5		Workshop Preparing Students for EPAs: How do we engage students in this evolving educational paradigm?	Maryellen Gusic (USA)	Wettstein
1545-1615		COFFEE BREAK			3 <sup>rd</sup> floor Foyer
1615 - 1715	K1.1	Closing Plenary	Competency-based Medical Education: How do we know it works? <i>Chair: Olle ten Cate</i>	Elaine Van Melle (Canada)	San Francisco
1715-1730	K1.2	Closing Remarks		Olle ten Cate (Netherlands)	San Francisco

**Friday, August 24, 2018**

**#A PLENARY 1**

Time: 0800-0915

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

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

Time: 0800-0815

Presenter: Jason Frank (Canada)

**#A1.2 Opening Plenary: Capturing the Current state of the art: From 2000 until now**

Chairperson: Dan Schumacher

Time: 0815-0915

Presenter: Carol Carraccio (USA)

**COFFEE BREAK**

Time: 0915-0945

Location: 3<sup>rd</sup> Floor Foyer, CCB

**0945-1100 #B SIMULTANEOUS SESSIONS**

**#B1 Oral Research: Implementing CBME**

Chairperson:

Time: 0945-1100

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

**0945-1000**

**#B1.1 Competency-based medical education implementation: How are we transforming the culture of assessment (5)**

**Authors:**

Jane Griffiths, Queen's University, Kingston, Canada  
Nancy Dalgarno, Queen's University, Kingston, Canada  
Han Han, Queen's University, Kingston, Canada  
Karen Schultz, Queen's University, Kingston, Canada  
Han Han, Queen's University, Kingston, Canada  
Elaine van Melle, RCPSC, Ottawa, Canada

**Presenter(s):** Karen Schultz, Queen's University, Canada

**Abstract:**

**Background:** Adopting and evaluating impacts and outcomes of competency-based medical education (CBME) is a challenge in Health Sciences education. CBME is a fundamental shift in thinking, which mandates a change in processes and approach, and ultimately a change in institutional culture with stakeholders ideally embracing and valuing the new processes. Using a transformational change framework, this study describes the shift in assessment culture, a critical intermediate outcome in CBME adoption, by faculty over three years of CBME implementation in one Department of Family Medicine.

**Research Question:** Has the culture of assessment changed with the implementation of CBME in one postgraduate residency training program?

**Methods:** A qualitative phenomenological method was adopted for this two-part study. Interviews were conducted with 12 faculty in 2013, and 9 faculty in 2016. The interview questions remained similar for both parts of the study. Data were analyzed through a constant comparative method.

**Results:** Three overarching themes emerged from the data: (1) identified shifts in assessment culture, (2) factors supporting the shifts in assessment culture, and (3) outcomes of the shifts in assessment culture

**Conclusion:** In both parts of the study, participants noted that assessment took more time and effort. In Part 2, the effort was mitigated by a newly voiced sense of value for all stakeholders. The major factors that supported this cultural shift included the mandate of regulatory bodies, local leadership, departmental support, Faculty Development and an electronic platform. The outcomes of this cultural shift were usage of embedded standards for performance decisions, improved

tracking and documentation of performance and a sense of enhanced learning and teaching. The constructs associated with Theory U provide a model that describes one Department of Family Medicine's transformative journey to a competency-based assessment culture.

**1000-1015**

**#B1.2 'Mind the Gap': Does Understanding Competence by Design Impact Perceptions Related to Implementation (121)**

**Authors:**

Jason Lord, University of Calgary, Calgary, Canada  
Rachel Ellaway, University of Calgary, Calgary, Canada  
Suzanne Bridge, Queen's University, Kingston, Canada  
Mone Palacios MacKay, University of Calgary, Calgary, Canada  
Suzanne Bridge, Queen's University, Kingston, Canada  
Gordon Finlayson, University of British Columbia, Vancouver, Canada  
Wendy Sligl, University of Alberta, Edmonton, Canada  
Jean Gilles Guimond, Centre Hospitalier de l'Université de Montréal, Montreal, Canada  
Jonathan Gaudet, University of Calgary, Calgary, Canada

**Presenter(s):** Jason Lord, University of Calgary, Canada

**Abstract:**

**Background:** All Canadian residency specialty training programs are transitioning to a competency-based training platform, called Competence by Design (CBD). Critical Care Medicine (CCM) is scheduled to implement this transition in 2019.

**Research Question:**

To determine whether understanding of CBD principles influences perceptions of CBD implementation for CCM faculty and trainees.

**Methods:** We surveyed CCM faculty and residents from five Canadian universities regarding their perceptions of CBD. Theorizing that different stakeholders would have different expectations regarding CBD depending on the extent to which they had been exposed to it, we dichotomized respondent data in terms of whether they had indicated they understood CBD or they did not. Data were summarized using descriptive statistics and reported as mean values.

**Results and Findings:** 112 (48%) physicians completed the survey. Those who understood CBD felt more strongly that there was a need to transition to CBD and they believed there was compelling evidence for this. They were also more likely to see inefficient electronic assessment platforms, and lack of support from the Royal College as important barriers to implementation. Those who did not understand CBD were more concerned about personal uncertainty about CBD principles and lack of faculty training in evaluation and feedback. The most commonly identified benefits of implementation for both groups included a greater ability to identify residents in difficulty and provide enhanced feedback to residents. Interestingly, both groups identified better quality healthcare for society and greater physician accountability as the least important benefit from CBD.

**Conclusions and Significance:** Successful implementation of CBD will depend on the perceptions and beliefs of those involved. Our findings show how knowledge related to CBD can impact perceptions related to its implementation.

**1015-1030**

**#B1.3 Validating the applicability and accessibility of the six Anesthesiology milestone-based entrustable professional activities in Taiwan: A nationwide experts' survey (80)**

**Authors:**

Chien-Yu Chen  
Fremen Chih-Chen Chou  
Yi-No Kang  
Kung-Pei Tang  
Yi-No Kang

**Presenter(s):** Chien-Yu Chen, Taipei Medical University Hospital, Taiwan

**Abstract:**

**Background:** The Taiwan Society of Anesthesiologists has contextualized the ACGME Anesthesiology milestones through a 4-round Delphi survey in March 2017, and further integrated them into the framework of entrustable professional activity (EPA) and developed 6 milestone-based EPAs (MEPAs) through focus group in July for the future nationwide implementation.

**Summary of Work:** To validate the applicability and accessibility of these MEPAs, a workshop was later held in August 2017 for faculty development and expert consensus acquisition. A 4-point scale (1: highly applicable/accessible; 2:

applicable/accessible; 3: inapplicable/inaccessible; 4: highly inapplicable/inaccessible) was used to evaluate experts' perspective through Interactive Response System case by case.

**Summary of Results:** The recruited 55 consultant anesthesiologists from 27 training centers nationwide were either program director or teaching attending. The primary results showed that five of the six MEPAs were regarded as highly applicable with high consensus (the means ranged from 1.17 to 1.41; IQR  $\leq$  1; SD $<$ 1); only one was referred to fairly applicable with acceptable consensus (M=2.06; IQR $\leq$ 1.5; SD $<$ 1). All the MEPAs were accessible (the means ranged from 1.22 to 1.98). Our secondary analyses illustrated that the applicability of MEPAs was found no difference in between genders; yet, the difference among directors and non-directors and mega-hospitals and non-mega-hospitals was noted in MEPA-2 (t=2.130; p=0.038) and in MEPA-1 (t=3.397; p=0.001) in terms of their accessibility respectively.

**Discussion & Conclusion:** This nationwide validation survey allows the professional body to re-examine the legitimacy and practicability before adopting an educational innovation. The current version of Anesthesiology MEPAs developed in Taiwan is all contextually applicable and accessible from experts' perspective. However, further revision might be needed in MEPA-2 in the future.

**Take-Home Message:** Anesthesiology MEPAs have been developed and validated in Taiwan.

## 1030-1045

### #B1.4 Early Implementation of CBME in Emergency Medicine in Canada: Lessons Learned using Rapid-Cycle Evaluation (145)

#### Authors:

Andrew K. Hall, Queen's University, Kingston, Canada  
Jessica Rich, Queen's University, Kingston, Canada  
Kristen Weersink, Queen's University, Kingston, Canada  
J. Damon Dagnone, Queen's University, Kingston, Canada  
Kristen Weersink, Queen's University, Kingston, Canada  
Jaelyn Caudle, Queen's University, Kingston, Canada  
Jonathan Sherbino, McMaster University, Hamilton, Canada  
Jason R. Frank, University of Ottawa, Ottawa, Canada  
Glen Bandiera, University of Toronto, Toronto, Canada  
Elaine Van Melle, Queen's University, Kingston, Canada

**Presenter(s):** Andrew K. Hall, Queen's University, Canada

#### Abstract:

**Introduction:** The specialist Emergency Medicine (EM) postgraduate training program at Queen's University in Canada implemented the Royal College of Physicians and Surgeons of Canada Competence By Design (CBD) model of Competency-Based Medical Education (CBME) on July 1, 2017. This presents an opportunity to identify critical steps, success factors, and challenges encountered when implementing such a complex process to inform broader CBME implementation efforts.

**Methods:** A case-study methodology with Rapid Cycle Evaluation was used to explore the lived experience of implementing CBME, and capture evidence of behavioural change. Data was collected at 3- and 6-months post-implementation via multiple sources and methods, including: field observations, document analysis, and interviews with key stakeholders including residents, faculty, program director, CBME lead, academic advisors, and competence committee members. Qualitative findings have been triangulated with available quantitative electronic assessment data.

**Results:** The critical processes of implementation have been outlined in 3 domain categories: administrative transition, resident transition, and faculty transition. Multiple themes emerged from stakeholder interviews including: a desire for holistic assessment beyond Entrustable Professional Activity (EPA) assessments, concerns about the utility of milestones in workplace-based assessment by front-line faculty, trepidation that CBME is adding to, rather than replacing, old processes, and a need for effective data visualisation and filtering for assessment decisions by competency committees. We identified a need for administrative direction and faculty development related to: new roles and responsibilities, shared mental models of EPAs and entrustment scoring. Quantitative data indicates that there may be discrepancies between the targeted number of assessments per EPA and what is feasible in practice.

**Conclusion:** Exploring the lived experience of implementing CBME from the perspectives of all stakeholders has provided early insights regarding the successes and challenges of operationalizing CBME at the program level.

## #B2 Oral Innovations and Lessons Learned: Implementing CBME 1

Chairperson:

Time: 0945-1100

Location: Helvetia 1, 1<sup>st</sup> Floor, Swissotel

0945-1000

### #B2.1 Assessment rubrics for medical student performance of EPAs: lessons learned in the AAMC Core EPAs for Entering Residency Pilot (74)

#### Authors:

Kimberly Lomis, AAMC/Vanderbilt, Nashville, USA

William Cutrer, Vanderbilt, Nashville, USA

Abbas Hyderi, University of Illinois, Chicago, USA

Vivian Obeso, Florida International University, Miami, USA

Abbas Hyderi, University of Illinois, Chicago, USA

Meenakshy Aiyer, University of Illinois, Chicago, USA

Sandra Yingling, University of Illinois, Chicago, USA

**Presenter(s):** Kimberly Lomis, Vanderbilt University School of Medicine, USA

#### Abstract:

**Background:** In 2014, the Association of American Medical Colleges published a list of 13 Core Entrustable Professional Activities for Entering Residency, articulating tasks that medical school graduates should be able to perform upon transition to residency under indirect supervision. Ten US medical schools were convened to develop best practices for implementation, with an expectation to pilot the process of summative entrustment decisions in 2019. (1)

**Purpose:** Schools in the pilot envision summative entrustment decisions based upon a body of performance evidence for each learner, which must include “ad hoc” entrustment impressions from the clinical workplace. Valid and reliable assessment tools are needed.

**Interventions:** Participating schools have implemented processes for direct observation of learners in the clinical environment. No specific assessment rubric was required across sites. The pilot team reviewed differences among the assessment forms that have been implemented and culled themes.

**Results/applications:** Exploring the rationale for variance in assessment forms reveals underlying reluctance about implementing the entrustment framework in the context of undergraduate medical education. Identified themes demonstrate concerns regarding standardization of performance expectations, the impact of contextual factors, and the applicability of supervisory language to students.

**Future directions:** The framework of entrustment intentionally places the welfare of patients more prominently in the assessment process. Understanding sources of discomfort with that perspective will be essential to fully actualize this construct. Addressing the complexity of workplace-based assessment will be important to ensure a meaningful and equitable entrustment process.

1) Implementing an Entrustable Professional Activities framework in undergraduate medical education: Early lessons from the AAMC Core Entrustable Professional Activities for Entering Residency pilot. Lomis K; Amiel J; Ryan M; Esposito K; Green M; Stagnaro-Green, A; Bull J; Mejicano G; for the AAMC Core EPAs for Entering Residency Pilot Team. Acad Med 2017;92:765-770

1000-1015

### #B2.2 Resident engagement in the co-production of competency based medical education (CBME) at Queen's University (107)

#### Authors:

Kristen Weersink, Queen's University, Kingston, Canada

Jena Hall, Queen's University, Kingston, Canada

Emily St. Denis, Queen's University, Kingston, Canada

Samantha Buttemer, Queen's University, Kingston, Canada

Emily St. Denis, Queen's University, Kingston, Canada

Damon Dagnone, Queen's University, Kingston, Canada

**Presenter(s):** Kristen Weersink, Queen's University, Canada

#### Abstract:

**Background:** The Royal College of Physicians and Surgeons of Canada (RCPSC) is transforming its national approach to postgraduate medical education to transition to competency based medical education (CBME). Queen's University, with special permission from the RCPSC, launched CBME curricula for all incoming residents across its 29 specialty programs in July 2017. Engagement and empowerment of residents through this transition has been instrumental in successful implementation of CBME at Queen's University.



**Summary of Work:** The CBME resident sub-committee was created in parallel with a faculty executive committee to leverage co-production of CBME at Queen's University. Resident representation and leadership across specialties was purposefully sought out to ensure diverse committee membership. Each program's CBME Resident Lead collaborates with the Program Director and CBME Program Lead, ensures resident interests are represented throughout all aspects implementation, and contributes to the accomplishment of program specific CBME goals.

**Summary of Results:** With ongoing involvement and incorporation of change management theory, the resident subcommittee shares leadership in both resident and faculty development throughout the transition to CBME. The committee has proven invaluable in keeping the Queen's resident body informed and engaged in the many changes implemented through this iterative process. The committee serves as a venue for cross-talk and collaboration between faculty and residents, maintaining an open avenue for feedback and opportunity for quality improvement.

**Discussion & Conclusions:** In keeping with the true nature of CBME, the development and continued growth of the CBME resident sub-committee has been significant in the ongoing engagement and coproduction of post graduate medical education at Queen's University.

**Take-home Messages:** Resident engagement in the co-production and iterative implementation of CBME has been instrumental to its success at Queen's University and provides a model for similar transitions in other institutions moving forward.

## 1015-1030

### #B2.3 Revisiting our Systems Approach for Institutional CBME Adoption at Queen's University: A Two Year Retrospective (116)

#### Authors:

Ross Walker, Queen's University, Kingston, Canada  
Leslie Flynn, Queen's University, Kingston, Canada  
Denise Stockley, Queen's University, Kingston, Canada  
Richard Reznick, Queen's University, Kingston, Canada.  
Denise Stockley, Queen's University, Kingston, Canada  
Rylan Egan, Queen's University, Kingston, Canada  
Richard van Wylick, Queen's University, Kingston, Canada  
Laura McEwen, Queen's University, Kingston, Canada  
Damon Dagnone, Queen's University, Kingston, Canada  
Jennifer Railer, Queen's University, Kingston, Canada

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

#### Abstract:

**Background:** In 2016, at the AMEE World Summit we presented our systems approach towards CBME adoption at Queen's University. During this session we presented our accelerated path (July 2017 launch) to competency-based medical education (CBME) for all 29 postgraduate specialties. After a successful launch, our session will revisit our systematic approach to this implementation, the lessons we learned embarking on this type of system-wide change, lessons learned, and our path forward.

**Overview:** This accelerated path allowed us to take an institutional approach for CBME implementation and ensure that all of our specialties are part of a system-wide change that is supported. Our unique institution-wide 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 foundations for CBME, implement the change, and plan for sustainability. To date, it has been an essential part of our strategy to develop a broad community that is invested in CBME implementation. This has created opportunities to bridge and connect the various programs involved in the implementation of CBME on Queen's campus.

**Results/Applications:** Through the Queen's CBME community we addressed the core needs of our transition to CBME. This included: reconsidering the 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 specific needs and the central development of tracking tools such as an e-portfolio. In addition, we provided centrally derived funding support, created an institutional CBME community of scholars, and developed explicit strategies to ensure the perspectives of multiple stakeholders (including the patient voice) were taken into account.

## 1030-1045

### #B2.4 Optimizing Faculty Development: Satisfying the New Parameters of Faculty Development under Competency-based Medical Education (126)

#### Authors:

Richard van Wylick, Queen's University, Kingston, Canada

Jennifer Railer, Queen's University, Kingston, Canada  
Phil Wattam, Queen's University, Kingston, Canada  
Damon Dagnone, Queen's University, Kingston, Canada  
Phil Wattam, Queen's University, Kingston, Canada

**Presenter(s):** Damon Dagnone, Queen's University, Kingston, Canada

**Abstract:**

**Introduction:** As the landscape of medical education changes to competency-based, so must the scope of faculty development. Over the past three years, Queen's University embarked on an institutional-wide change, successfully transitioning all of its 29 postgraduate medical education programs to competency-based ones. This change in educational practice meant that Queen's University had to adopt a new approach to developing faculty under the tenants of CBME

**Background:** Faculty Development at Queen's University undertook a rigorous needs assessment to prioritize faculty training and educational requirements to successfully execute CBME. The results of this review were used to inform a new strategic direction for faculty development in medical education, which resulted in an opportunity not just to update content, but to fundamentally shift our residency programs, assessment and culture.

**Conclusions/Findings:** Queen's University's comprehensive faculty development implementation plan focused on the inclusion of a multi-faceted approach that aligns with the progression of the roll-out of CBME at Queen's. Various initiatives were adopted to address new methods of teaching and assessment, curricular reform and policy reform which included workshops for CBME program leaders, on-line modules, small specialty-specific workshops and the inception of 'CBME Central'. Faculty development also partnered with Queen's Education Technology Unit to co-create a robust training plan for users of the new CBME electronic assessment system, MedTech. The needs assessment also informed the University's decision to undertake a joint resident/faculty initiative that will educate both groups, simultaneously, broadening the scope of faculty development into this stakeholder group. This unique approach to faculty development is attributed to the success of the implementation of CBME in all 29 postgraduate medical education programs at Queen's University based on our data from the on-going CBME program evaluation

**1045-1100**

**#B2.5 Implementing an undergraduate medical education competency committee: challenges and lessons learned (157)**

**Authors:**

Seetha U Monrad, University of Michigan, Ann Arbor, USA  
Rajesh S Mangrulkar, University of Michigan, Ann Arbor, USA  
Michelle M Daniel, University of Michigan, Ann Arbor, USA  
James O Woolliscroft, University of Michigan, Ann Arbor, USA  
Michelle M Daniel, University of Michigan, Ann Arbor, USA  
Sarah E Hartley, University of Michigan, Ann Arbor, USA  
Tamara L Gay, University of Michigan, Ann Arbor, USA  
Alexandra Highet, University of Michigan, Ann Arbor, USA  
Nithya Vijayakumar, University of Michigan, Ann Arbor, USA  
Sally A Santen, Virginia Commonwealth School of Medicine, Richmond, VA

**Presenter(s):** Seetha Ursula Monrad, University of Michigan, Ann Arbor, USA

**Abstract:**

**Background:** As part of a major curriculum transformation, University of Michigan Medical School sought to develop structures and processes to systematically review medical student progress, provide rigorous competency-aligned assessment and feedback, guide remediation, and make promotion decisions. A competency committee (CC) for undergraduate medical education (UME) was formed. UME CCs have not been well described.

**Purpose:** We present the design and implementation of a novel UME CC, focusing on choices made and challenges encountered.

**Interventions:** The CC was designed based on the US ACGME graduate medical education model<sup>1</sup>, and followed a single class of students from matriculation to graduation. Voting members represented multiple stakeholders not directly responsible for grading decisions; non-voting members provided expertise on the curriculum, context regarding the students, and continuity between committees in cases where a student may transition classes. A programmatic assessment model was adopted, utilizing a robust electronic database of assessments mapped to our eight institutional competencies. Monthly meetings focused primarily on student deficiencies; twice a year all students underwent holistic review.

**Results/Applications:** Initially, the broad-based CC struggled to generate a shared mental model of developmental competency progression, particularly in competencies other than medical knowledge. This made it particularly hard to identify excellence in performance. The CC was able to review struggling students effectively, but it was challenging to



perform holistic review on all 170 students. This was partly due to logistical complexities, but also difficulties in appraising and integrating the multiple available data points (both quantitative and qualitative, curricular and contextual.)

Future Directions: As greater familiarity and experience is gained with the transformed curriculum, we anticipate further development of a shared mental model of student progression across all the competencies. Further work is being performed to optimize holistic review. Finally, a major goal is to provide meaningful and actionable developmental feedback to all students.

## **#B3 Workshop: An Introduction to CBME**

Time: 0945-1100

Location: Helvetia 2, 1<sup>st</sup> Floor, Swissotel

**Presenters:** Eric Holmoe and Dan Schumacher

**Abstract:**

Awaited

## **#B4 Workshop: An Introduction to Learning Analytics in CBME**

Time: 0945-1100

Location: Helvetia 7, 1<sup>st</sup> Floor, Swissotel

**Presenters:** Rodrigo Cavalcanti, Canada

**Abstract:**

Awaited

## **#B5 Workshop: Summative Entrustment Decisions in Medical Education: Defining a Program of Assessment for Entrustment or Clinical Competency Committees (143)**

Time: 0945-1100

Location: Wettstein, 2<sup>nd</sup> Floor, Swissotel

**Presenter(s):**

Holly Caretta-Weyer, Oregon Health & Science University, Portland, USA

**Abstract:**

The adoption of a competency-based framework of assessment has necessitated the formation of Entrustment Committees at the undergraduate medical education (UME) level and a change in how we approach the purpose of our Clinical Competency Committee (CCC) at the graduate medical education (GME) level and the assessment data required to make decisions regarding entrustment, promotion, and remediation. The Association of American Medical Colleges (AAMC) Core Entrustable Professional Activities (EPAs) for Entering Residency pilot program has recommends several guiding principles for rendering summative entrustment decisions in undergraduate medical education, which include: (1) training a specific group of administrators and faculty for this purpose; (2) basing entrustment decisions on a longitudinal view of a learner's performance; (3) emphasizing the use of daily ad hoc workplace-based supervisory and entrustment decisions; (4) explicitly measuring attributes of trustworthiness; (5) gathering evidence from multiple assessors; (6) ensuring a process for formative feedback; and (7) giving the learner an active voice in the entrustment process. These have been the guiding principles used in establishing early iterations of ECs, and many in graduate medical education have begun to adopt similar processes of holistic review and emphasis on workplace-based assessment and supervisory data. Additionally, many have called for an increased emphasis on qualitative data over checkboxes and daily milestone assessment to add richness to the data reviewed by the EC or CCC.

As we transition to a competency-based paradigm, a full program of assessment will be required in order to provide the data necessary to render meaningful and valid summative entrustment decisions for each learner. In this session, we will review best practices used in these committees, and we hope to spend the bulk of the time facilitating a robust discussion on the assessment data needed to render summative entrustment and promotion decisions across the continuum of medical education.

## **1100-1115 COMFORT BREAK AND TRANSFER TO NEXT SESSION**

## 1115-1230 #C SIMULTANEOUS SESSIONS

### #C1 Oral Research: Assessment I

Chairperson:

Time: 1115-1230

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

### 1115-1130

#### #C1.1 Using electronic health record data to assess emergency medicine trainees' independent and interdependent competency-based performance (4)

##### Authors:

Stefanie Sebok-Syer, Western University, London, Canada

Lisa Shepherd, Western University, London, Canada

Robert Sedran, Western University, London, Canada

Allison McConnell, Western University, London, Canada

Robert Sedran, Western University, London, Canada

Adam Dukelow, Western University, London, Canada

Lorelei Lingard, Western University, London, Canada

**Presenter(s):** Stefanie Sebok-Syer, Western University, London, Canada

##### Abstract:

**Introduction:** Competency-based medical education (CBME) affirms that trainees will receive timely assessments and effective feedback about their clinical performance, which has inevitably raised concerns about assessment burden. Therefore, we need ways of generating assessments that do not rely exclusively on faculty-produced reports. The main object of this research is to investigate how data already collected in the electronic health record (EHR) might be meaningfully and appropriately used for assessing emergency medicine (EM) trainees' independent and interdependent clinical performance. This study represents the first step in exploring what EHR data might be utilized to monitor and assess trainees' clinical performance.

**Method:** Following constructivist grounded theory, individual semi-structured interviews were conducted with 10 EM faculty and 11 EM trainees, across all postgraduate years, to identify EHR performance indicators that represent EM trainees' independent and interdependent clinical actions and decisions. Participants were presented with a list of performance indicators and asked to comment on how valuable each would be in assessing trainee performance. Data analysis employed constant comparative inductive methods throughout data collection.

**Results:** Participants created, refined, and eliminated performance indicators. Our main result is a catalogue of clinical performance indicators, described by our participants, as reflecting independent and/or interdependent EM trainee performance that are believed to be captured within the EHR. Such independent indicators include: number of patients seen (according to CTAS levels), turnaround time between when a patient is signed up for and first orders are made, number of narcotics prescribed. Meanwhile, interdependent indicators include, but are not limited to, length of stay, bounce-back rates, ordering practices, and time to fluids.

**Conclusion:** Our findings document a process for developing EM trainee report cards that incorporate the perspectives of clinical faculty and trainees. Our work has important implications for distinguishing between independent and interdependent clinical performance indicators

### 1130-1145

#### #C1.2 Development & Prioritization of Resident-Sensitive Quality Measures In Pediatric Emergency Medicine (41)

##### Authors:

Daniel J. Schumacher

Abigail Parrigan, University of South Florida, Tampa, USA

Cees van der Vleuten, Maastricht University, Maastricht, USA

Kartik Varadarajan, Cincinnati Children's Hospital Medical Center, Cincinnati, USA

Jamais Busari, Maastricht University, Maastricht, USA

Eric Holmboe, Accreditation Council for Graduate Medical Education, Chicago, USA

Carol Carraccio, American Board of Pediatrics, Chapel Hill, USA

**Presenter(s):** Daniel Schumacher

##### Abstract:

**Purpose:** Traditional quality measures do not always align well with the work residents perform. Resident-sensitive quality measures (RSQMs) are important to effectively assess resident performance, drive resident improvement, and influence and improve patient care. This study sought to develop RSQMs.

**Methods:** To develop measures, we first utilized a Nominal Group Technique (NGT) with 8 pediatric residents at Cincinnati Children's (Cincinnati, Ohio, USA), a quaternary care children's hospital, to generate prospective patient care measures for 3 common diagnoses and overall care in the Pediatric Emergency Department (PED). The diagnoses of interest were Asthma, Bronchiolitis, and Closed Head Injury (CHI). Following the NGT, an additional 16 pediatric residents completed three rounds of a Delphi process to prioritize the developed measures. Prioritization was based on: 1) how well the measures represented work completed by residents (rather than by another member of the healthcare team), and 2) perceived importance to quality care for the illness.

**Results:** The NGT produced a total of 151 potential measures: 57 for general care in the PED, 33 for Asthma, 28 for Bronchiolitis, and 33 for CHI. After the prioritization of these measures during the Delphi process a total of 32 measures remained: 15 for Asthma, 10 for Bronchiolitis, and 7 for CHI. Across illnesses, measures often focused on following guidelines (e.g., imaging indications in CHI, asthma care algorithms), pertinent documentation (e.g., key aspects of history and exam for specific illness, patient reassessment), correct medication dosing (e.g., albuterol dose correct for age), and ensuring adequate discharge guidance (e.g. care and expected course for patients with bronchiolitis, reasons to return).

**Conclusion:** This study demonstrates a method for developing RSQMs as well as measures that can be piloted in the PED setting to determine their utility in providing resident feedback and for assessment purposes.

## 1145-1200

### #C1.3 Assessment of Technical Skills Competence in the Operating Room: A Systematic and Scoping Review (100)

#### Authors:

Christine Fahim, McMaster University, Hamilton, Ontario, Canada  
Markku Nousiainen, Division of Orthopaedic Surgery, University of Toronto, Ontario, Canada  
Ranil Sonnadara, McMaster University, Hamilton, Ontario, Canada

**Presenter(s):** Natalie Wagner, McMaster University, Canada

#### Abstract:

**Purpose:** While academic accreditation bodies continue to promote competency-based medical education (CBME), the feasibility of conducting regular CBME assessments remains challenging. The purpose of this study was to identify evidence pertaining to the practical application of assessments that aim to measure technical competence for surgical trainees in a nonsimulated, operative setting.

**Method:** In August 2016, the authors systematically searched Medline, Embase, and the Cochrane Database of Systematic Reviews for English-language, peer-reviewed articles published in or after 1996. The title, abstract, and full text of identified articles were screened. Data regarding study characteristics, psychometric and measurement properties, implementation of assessment, competency definitions, and faculty training were extracted. The findings from the systematic review were supplemented by a scoping review to identify key strategies related to faculty uptake and implementation of CBME assessments.

**Results:** A total of 32 studies were included. The majority of studies reported reasonable scores of interrater reliability and internal consistency. Seven articles identified minimum scores required to establish competence. Twenty-five articles mentioned faculty training. Many of the faculty training interventions focused on timely completion of assessments or scale calibration.

**Conclusions:** There are a number of diverse tools used to assess competence for intraoperative technical skills and a lack of consensus regarding the definition of technical competence within and across surgical specialties. Further work is required to identify when and how often trainees should be assessed and to identify strategies to train faculty to ensure timely and accurate assessment

## 1200-1215

### #C1.4 The Development of Validity Evidence for the Pharmacotherapy-Structured Clinical Observation Tool: Implications for Competence-Based Assessment (87)

#### Authors:

John Q. Young, Zucker School of Medicine, Hempstead, USA  
Patricia S. O'Sullivan, UCSF School of Medicine, San Francisco, USA

**Presenter(s):** John Q. Young, Zucker School of Medicine at Hofstra/Northwell, USA

#### Abstract:

**Background:** The direct observation of learners performing core professional activities represents a key component of competency-based assessment in the clinical workplace. Such assessment programs require tools and processes that generate data with sufficient evidence of validity.

**Research Question:** The authors present results from a program of research focused on the development of the Pharmacotherapy-Structured Clinical Observation tool (P-SCO), a direct observation tool for medication management in psychiatry, one of the specialty's core EPAs.

**Methods:** Three complementary methodologies have been employed thus far. First, the items for the P-SCO were developed via an iterative process that included input from experts in clinical pharmacotherapy and educational assessment. The essentialness of each item was then rated by a group of experts. Items with a content validity index greater than 0.8 were included in the final version. Second, exploratory factor analysis (EFA) of the first 650 completed P-SCOs was performed to examine the internal structure. Third, thematic coding of the rater comments was used to examine the concordance between the item ratings and the comments and to assess the quality (behavioral specific and valence) of the comments generated by the first 100 completed P-SCOs compared to those generated by assessment-as-usual, i.e., end-rotation global assessment.

**Results:** The content validity survey endorsed 26 tasks/items as essential to a medication management visit. The EFA yielded three factors: affective tasks, cognitive tasks, and 'hard tasks'. The thematic coding survey found that the comments generated by the P-SCO were markedly more specific than assessment-as-usual with a much better balance of corrective and re-enforcing comments.

**Conclusions:** These studies have generated content and internal structure validity evidence of the P-SCO. Additional validity dimensions such as response process and consequences require further study. Implications for curriculum and for the development of direct observation instruments in general are explored.

## #C2 Oral Innovations and Lessons Learned: Assessment I

Chairperson:

Time: 1115-1230

Location: Helvetia 1, 1<sup>st</sup> Floor, CCB

1115-1130

### #C2.1 Queen's Periodic Performance Assessments: Capturing Performance Information Beyond Single Observations in CBME Contexts (52)

#### Authors:

Laura McEwen, Queen's University, Kingston, Canada

Amy Acker, Queen's University, Kingston, Canada

David Taylor, Queen's University, Kingston, Canada

Susan Chamberlain, Queen's University, Kingston, Canada

David Taylor, Queen's University, Kingston, Canada

in collaboration with other members of Queen's CBME Assessment Sub-committee

**Presenter(s):** Laura McEwen, Queen's University, Canada

#### Abstract:

**Background:** Point-of-care assessments (e.g., Field Notes) linked to Entrustable Professional Activities (EPAs) are a principle component of programmatic assessment for Royal College competence-based programs. The intention of these assessments is to capture information about resident performance as they provide patient care. As valuable as these assessments are anticipated to be for revealing patterns of performance over time and across contexts, they are only one lens. Capturing information about the consistency of residents' performance is an identified gap.

**Purpose:** Traditionally this gap has been filled by In-Training-Evaluation-Reports (ITERS) that have been shown to offer value in terms of capturing tacit aspects of trust; consistency, reliability, and conscientiousness in daily work; patterns of strengths and weaknesses; inter-collegial behavior and communication; sense of responsibility; empathy and patient-centeredness; and the recognition of limitations (Park, Riddle, & Tekian, 2014). Valid assessment in these areas depends on exposure to a resident over a period of time. Moreover, this informed longitudinal perspective cannot be achieved by aggregating multiple point-of-care assessments. This is unique information that requires an assessment tool specific to this purpose. Furthermore, point-of-care assessment is a predominantly 'resident driven model' subject to potential selection bias on the part of residents in terms of who they approach to complete these.

**Intervention:** In order to address this gap Queen's CBME Assessment Sub-committee created Periodic Performance Assessments (PPA) as longitudinal/holistic CBME assessment tools (e.g., 1- 2 weeks or more) to: (1) maintain the value of ITERS in terms of continuity of observation over time and primary recognition of performance patterns by supervising physicians and (2) provide a non-selective sampling approach that could offset the potential for bias in a resident driven assessment model.

Results: Multiple programs have incorporated the use of PPAs. We share examples of these tools and discuss the value they have contributed to date.

**1130-1145**

**#C2.2 Clerkship Grading Committees: What is the Value Added? (90)**

**Authors:**

Karen E Hauer, UCSF, San Francisco, CA, USA  
Annabel Frank, University of Pennsylvania, PA, USA  
Virginie Muller-Juge, UCSF, San Francisco, CA, USA  
Lynnea Mills, UCSF, San Francisco, CA, USA  
Virginie Muller-Juge, UCSF, San Francisco, CA, USA  
Patricia S. O'Sullivan, UCSF, San Francisco, CA, USA

**Presenter(s):** Karen Hauer, University of California, San Francisco, USA

**Abstract:**

**Background:** The accuracy of medical student clerkship grades is debated, and methods for assigning grades vary widely. Workplace assessments and grades are subject to biases and may lack validity. Group decision-making may improve grade assignments.

**Research question:** How do clerkship grading committees synthesize information and make decisions?

**Methods:** In 2016, the University of California, San Francisco (UCSF) School of Medicine began requiring core clerkships in 8 disciplines to utilize grading committees comprising at least three faculty educators. Clerkship students are evaluated by supervisors using competency-based in-training evaluation reports and discipline-specific clerkship exams. This qualitative study uses semi-structured interviews with clerkship directors and up to two other grading committee members to explore their grading committee experience. Interviews are recorded, transcribed, and analyzed with Dedoose software using content analysis with sensitizing concepts.

**Results:** We have interviewed 15 faculty members from 8 specialties to date. Preliminary results showed all committees focus their discussion on students on the Honors/Pass border. Each committee weights narrative comments and numerical ratings differently. Participants found Reporter/Interpreter/Manager/Educator (RIME) ratings unhelpful and inconsistent across supervisors. Grade decisions were especially difficult with sparse or non-specific narrative comments or discrepancy among evaluators. Across clerkships, professionalism issues were considered red flags. Committees were concerned about unconscious bias related to race, gender, and personality impacting evaluations, yet uncertain about solutions. Interviewees expressed confidence in their committees' shared mental models of Honors students, although they relied on evaluator adjectives and normative comparisons rather than comments describing performance within competencies or on expected skills. They believed their committees facilitated fair, consistent grading but recognized ongoing challenges making decisions with "imperfect information."

**Discussion:** Clerkship grading committee members' efforts to make defensible judgments about student performance are hampered by available performance information and driven by normative comparisons. Methods to improve validity of judgments about student performance are needed.

**1145-1200**

**#C2.3 Lessons Learned: A multi methods systems approach to improving the culture and practice of feedback (95)**

**Authors:**

Susan Glover-Takahashi, Postgraduate Medical Education, University of Toronto, Toronto, Canada  
Rebecca Dube, SickKids Hospital, Toronto, Canada

**Presenter(s):** Rebecca Dube, SickKids Hospital, Toronto, Canada

**Abstract:**

While feedback is central to workplace-based health professions education, it is repeatedly viewed by both learners and faculty as unsatisfactory. Much has been written about the need for, and the mechanics of feedback. Recent work suggests feedback may need to be re-conceptualized to be less frequent but more effective, and welcomed by the receiver within the context of a constructive relationship and a culture of continuous learning and improvement.

To improve the culture of feedback, faculty developers and education leaders need enhanced approaches to feedback and coaching to support the successful implementation of competency-based medical education.

This case study describes a multi-level, systems approach that applies an integrated relationship-centred approach to building individual, program and systems capacity for effective feedback. The approach builds on lessons gleaned from the education and leadership research, differentiating data from feedback and coaching, and clarifying myths and misconceptions held by givers and receivers of feedback for a sustained improvement to the practice and culture of feedback. We report on the guiding theoretical frameworks used, resources developed and outcomes of workshops

delivered, as well as the observed capacity of residents and faculty to co-learn and co-teach improved feedback in the context of a supportive framework.

Key lessons from the case study highlight the value of inventory of program needs for improved culture of feedback; the benefits of concurrent developmental activities that include faculty and learners; the benefits of flexibility in educational delivery; the need for longitudinal mentorship of learners and faculty; and the positive potential impact of multi-level, systems approach that applies an integrated relationship-centred approach to building individual, program and systems capacity for effective feedback.

Early program evaluation data on the impact of interventions is provided.

## 1200-1215

### #C2.4 The Core Entrustable Professional Activities for Entering Residency as a framework for Assessment in UME: Experience over three years at the University of Minnesota Education in the Pediatrics Across the Continuum (EPAC) pilot (163)

#### Authors:

Robert Englander  
Patricia Hobday  
Emily Borman-Shoap  
Katherine E. Murray  
Emily Borman-Shoap  
John Andrews

**Presenter(s):** Robert Englander

#### Abstract:

**Background:** The paradigm shift to competency-based medical education is well on its way in the US, especially in graduate medical education. The change has been slower at the undergraduate medical education level but is accelerating with the publication of the Core EPAs for Entering Residency. The Education in Pediatrics Across the Continuum (EPAC) pilot is an exciting project with a primary aim of testing the feasibility of competency-based, time-variable advancement from undergraduate medical education to graduate medical education (GME) and ultimately to fellowship or practice.

Advancement is based on achieving entrustment on the 13 Core EPAs for entering residency for the UME to GME transition and on the 17 Pediatrics EPAs for the GME to fellowship or practice transition.

**Results:** Over the first three years of the pilot, we have had two cohorts make the transition to GME and a third cohort completing their UME clinical immersion experience in which the vast majority of their ad hoc entrustment decisions on the Core EPAs are made. The number of observations/assessments has significantly increased year-over-year: from an average of 190 (range 145-271) in the first year to 207 (range 185-237) in the second year, to the third year cohort on pace through 2/3 of the year to average closer to 250. The assessments have also become more evenly spread across the 13 EPAs as the program has matured. All learners were able to achieve entrustment (at the level of indirect supervision) on all but the procedural EPA prior to transition to GME due to the inability to perform certain procedures in our context.

**Conclusions:** The Core EPAs for Entering Residency can serve as an excellent framework for assessment of competence in UME and allow for data-driven determination of entrustment that serves as the basis for competency-based, time variable advancement from UME to GME.

## 1215-1230

### #C2.5 Competency-Based Assessment Using a Top-Down Versus Bottom-Up Approach Within a Transitions to Residency Course (142)

#### Authors:

Holly Caretta-Weyer, Oregon Health & Science University, Portland, USA

**Presenter(s):** Holly Caretta-Weyer, Oregon Health & Science University, USA

#### Abstract:

**Background:** The advent of competency-based education has led to concerns regarding reductionism in the assessment of clinical competence. This apprehension stems from a fractionated, "bottom-up" approach using the assessment of isolated competencies to build a picture of clinical competence, which many feel oversimplifies a complex cognitive and behavioral process. In contrast, others argue that the EPA framework is a complementary, "top-down" approach, as EPAs require the integration of multiple competencies.

**Purpose:** We designed a simulation-based workshop as part of our school's Transitions to Residency (TTR) course in order to compare assessment data from both the "top-down" and "bottom-up" approach.

**Intervention:** Each student was assessed using the toolkits from the Association of American Medical Colleges (AAMC) Core EPAs for Entering Residency pilot program, a modified version of the Chen Supervision Scale, and a global statement



regarding entrustment and readiness for residency (the “top-down” approach). These assessments were then compared to aggregate workplace-based assessment data on the various individual competencies as rated by trained assessors (the “bottom-up” approach).

Results/Application: Assessment data obtained using the EPA toolkits as part of the TTR course were highly correlated with the individual competency ratings obtained by raters in the workplace and subsequently mapped to corresponding EPAs. However, these assessments did not correlate with supervision scale ratings, global entrustment decisions, or perceived readiness for residency. This demonstrates that the global assessment of supervision and summative entrustment appears to be a separate process for raters, which may reflect the need to consider the framework of trustworthiness in addition to the learner’s behaviors and ability to perform the required tasks.

Future Directions: We intend to study similar constructs of assessment using both the “bottom-up” and the “top-down” approach as part of our Entrustment Committee review process. We also intend to formally measure the construct of trustworthiness during this process.

## #C3 Oral Innovations and Lessons Learned: Implementing CBME II

Chairperson:

Time: 1115-1230

Location: Helvetia 2, 1<sup>st</sup> Floor, CCB

1115-1130

### #C3.1 Learn from our Experience! Family Medicine Residency Program Directors share lessons learned about CBME Implementation in Canada (11)

#### Authors:

Keith Wycliffe-Jones, University of Calgary, Calgary, Canada

Karen Schultz, Queens' University, Kingston, Canada

Danielle O'Keefe, Memorial University, St. John's, Canada

Presenter(s): Keith Wycliffe-Jones, University of Calgary, Calgary, Canada

#### Abstract:

Background: The 17 Family Medicine Residency Training Programs in Canada began transitioning to a competency-based paradigm in 2011 and most now have established competency-based curricula and competency-based assessment programs that have been “live” for at least 2-3 years. Because Family Medicine, as a discipline, led the way in Canada in changing from time-based to more hybrid CBME training, the Program Directors who led this major change gained invaluable experience in developing and implementing CBME.

Purpose: In Canada, postgraduate Family Medicine moved to a competency-based approach to align better with a focus in medical education on outcomes as well as updated accreditation standards for Residency training developed by the College of Family Physicians of Canada.

Interventions: The 3 authors, all Family Medicine Program Directors, led the implementation of competency-based Family Medicine Residency programs in their respective schools and collaborated with Program Directors across Canada in this major curriculum change on a national level.

Applications: Based on a reflective exercise between the 3 authors, common themes around the implementation of CBME and a set of important lessons-learned will be shared that might be useful for those considering or already embarked upon a similar curriculum change.

Future directions: It is hoped that the sharing of important lessons learned from the experience of the 3 Family Medicine Residency Program Directors in Canada will help raise awareness about facilitators and potential pitfalls in CBME implementation in other Programs and Institutions.

1130-1145

### #C3.2 Transitioning to Competency Based Medical Education – Supporting direct observation in a non-procedural based specialty (33)

#### Authors:

Tina Hsu, University of Ottawa, Ottawa, Canada

Sohaib Al-Asaaed, Memorial University of Newfoundland, St. John's, Canada

Sanraj Basi, University of Alberta, Edmonton, Canada

Nazik Hammad, Queen's University, Kingston, Canada

Som D. Mukherjee, McMaster University, Hamilton, Canada

Tina Hsu, University of Ottawa, Ottawa, Canada

Sohaib Al-Asaaed, Memorial University of Newfoundland, St. John's, Canada

Sanraj Basi, University of Alberta, Edmonton, Canada

Nazik Hammad, Queen's University, Kingston, Canada  
Som D. Mukherjee, McMaster University, Hamilton, Canada

**Presenter(s):** Tina Hsu, University of Ottawa, Ottawa, Canada

**Abstract:**

**Background:** The transition to competency-based medical education (CBME) is rooted in frequent assessment with timely feedback based on direct observation of trainees. In procedural based specialties, such as surgery, faculty presence throughout a patient encounter is already embedded into the culture of residency education. In contrast, trainees in non-procedural based specialties are often implicitly entrusted early on with tasks such as patient assessment due to assumptions by faculty that these skills are already attained in medical school or due to competing clinical demands. In preparation for CBME, Canadian medical oncology residency programs launched a national field test in 2016.

**Purpose:** 1) To determine feasibility of work-based assessment (WBA) and in particular direct observation in medical oncology. 2) To identify potential barriers to implementation of direct observation.

**Interventions:** In July 2016 we implemented a national field test across 14 medical oncology training programmes across Canada consisting of 6 entrustable professional activities (EPA), three at the Foundations level and three at the Core level. Both paper-based and electronic methods of capturing work-based assessments (WBA) were utilized.

**Results/Applications:** All oncology programs participated, with 29% of programs started within the first month, an additional 50% starting within 3 months and the remainder initiating the pilot at the 5-6 month mark. Most programs (57%) utilized paper-based assessments. The majority of observations were initiated by the learner and about half were direct vs. indirect observations. Generally teachers felt that direct observation was feasible but there were divergent opinions. Specific facilitators and barriers to direct observation will be presented.

As a result of the field test changes to the EPAs, milestones, and assessment tools were made. Further faculty development and changes in rotations and/or clinics have been implemented to help facilitate direct observation.

**Future directions:** Competency-based medical education was implemented in medical oncology in July 2018 and ongoing monitoring, evaluation and feedback is planned to ensure ongoing success.

**1145-1200**

**#C3.3 Using structured interviews to build relationships and diagnose program readiness for CBME: a key tool for on the ground implementation (29)**

**Authors:**

Anna Oswald, University of Alberta, Edmonton, Canada  
Ramona Kearney, University of Alberta, Edmonton, Canada

**Presenter(s):** Anna Oswald, University of Alberta, Canada

**Abstract:**

**Background:** Competency Based Medical Education (CBME) implementation at a school level presents a variety of challenges to both individual postgraduate training programs and the University structures that oversee and support them. These challenges include ensuring clear and consistent communication and expectations, determining readiness for change, outlining tasks/timelines for implementation, facilitating faculty development, sharing resources and best practices and providing central support and oversight. While postgraduate medical education (PGME) offices may have the resources and intention to support training programs in this change, they may struggle to establish visibility and supportive relationships with the large number of individual programs.

**Purpose:** To use a structured interview process to facilitate relationship building, change management and successful implementation across multiple training programs at the individual school level.

**Interventions:** A triad including a clinician educator, an education specialist and a program administrator who were all members of the central PGME CBME team conducted semi-structured interviews with targeted clusters of local program directors, program administrators and CBME leads within each discipline as the discipline progressed through the national CBME specialty curriculum/assessment design process. A standardized interview template was developed and refined to ensure key topics were covered in each interaction.

**Results/applications:** Our team conducted 35 interviews across 28 disciplines. These interviews allowed our team to diagnose readiness of individual programs for CBME implementation, clarify misconceptions about the intended model, identify barriers and solutions at a program level, share best practices, support pilot activities, convey policy expectations and offer support and faculty development.

**Future directions:** In response to the results of these structured interviews, we have focused our interviews to earlier stages of the disciplines' national CBME curriculum/assessment design process. We have shared our interview template with several schools across the country and intend to build on this strategy for second stage of implementation sessions.

1200-1215

**#C3.4 Hiking to the Summit of Competency-Based Medical Education: Using Kotter's 8 Stage Model of Change for Programmatic Implementation (156)**

**Authors:**

Teri Turner, Baylor College of Medicine/Texas Children's Hospital, Houston, TX, USA

**Presenter(s):** Teri Turner, Baylor College of Medicine/Texas Children's Hospital, USA

**Abstract:**

Leading organizational change is described as extremely difficult and likened to climbing a mountain. Leadership experts, Kouzes and Posner state, "The summit is the vision . . . keep [it] in mind as you prepare for and make the ascent. Leaders have to . . . keep their eyes focused on the summit and their minds concentrated on getting there." However, those who have reached the peak before will argue that although leading change might feel like climbing Mount Everest, with just these three principles; the right preparation, understanding of the process of change, and the essential gear and support for those involved, leaders will be up to the challenge. This point of view will discuss how one can use Kotter's 8 Stage Model of Change to implement a Competency-Based Evaluation System into residency training. It will use real life examples and lessons learned from one large post-graduate pediatric training program which transformed from a normative-based evaluation system to a criterion-based developmental evaluation model. It will focus on three key actions; preparing for change, leading for success and engaging others for empowerment. These themes will be used to describe how one can move people more quickly through the process of change transition and overcome the most common barriers of resistance, such as traditions, rituals and past personal experiences of the training process. Throughout the session, metaphors to the hiking process will be woven into the narrative to facilitate understanding of new concepts and provide a common mental model to share with individuals at their home institutions. The session will also provide tips for "riding out" bad weather, dealing with unexpected dangers and turning avalanches into opportunities. "The best views come from the hardest climbs." So, let's get hiking!

1215-1230

**#C3.5 The Implementation of CBME: Challenges and Solutions (106)**

**Authors:**

Julia Tai, Queen's University, Kingston, Canada

Amar Chakraborty, Queen's University, Kingston, Canada

**Presenter(s):** Julia Tai, Queen's University, Canada

**Abstract:**

**Background:** Competency Based Medical Education (CBME) is a novel approach to residency training that focuses on the development of essential skills, called Entrustable Professional Activities (EPAs). EPAs are defined by each program and are unique to each stage of residency training. Instead of the traditional time-based model, which assumes that all residents will develop their respective essential skills by the end of residency, CBME ensures that residents: 1) understand which skills are essential at their stage of training, and 2) are competent in these skills through direct observation and feedback. **Discussion:** In 2017, Queen's University was the first Canadian institution to transition all its programs to CBME. By facilitating more direct supervision, assessment, and mentorship from faculty and senior residents, CBME aims to create more competent clinicians and teachers.

The first challenge to CBME was the development of an online interface to capture assessments. This was accomplished by input from multiple program directors and the CBME resident subcommittee, which consists of representatives from all residency programs. These two groups worked closely with software developers to create a functional interface and adapt it to the needs of key stakeholders.

Secondly, as CBME requires direct supervision to assess learners, faculty engagement has been a significant challenge. To mitigate this, some programs have incentivized the completion of assessments, whereas others have created faculty development sessions on how to provide meaningful feedback and mentorship.

Lastly, the portability of assessments has been a potent logistical challenge, from unreliable Internet connection to a lack of computer availability. Although many systemic changes have occurred, the most promising is the ongoing development of a mobile application.

**Conclusions:** CBME represents a significant paradigm shift in medical education. Although its implementation has encountered many challenges, it offers a boundless potential to individualize learning experiences and create stronger clinicians and teachers.

## #C4 Workshop: Experiences with Entrustment Decision Making in EPA-based medical training. Practical insights from the Netherlands and Germany (38)

Time: 1115-1230

Location: Wettstein, 2<sup>nd</sup> Floor, Swissotel

### Presenter(s):

Jacqueline de Graaf, Department of General Internal Medicine at Radboudumc Nijmegen, Netherlands

Harm Peters, Dieter Scheffner Centre for Medical Education and Educational Research, Charité – Universitätsmedizin Berlin, Germany

Marieke Bolk, Dutch Assosiation of Medical Specialists, Utrecht, Netherlands

Auk Dijkstra, Dutch Association of Medical Specialists, Utrecht, Netherlands

Marieke van der Horst, Dutch Association of Medical Specialists, Utrecht, Netherlands

Ylva Holzhausen, Dieter Scheffner Centre for Medical Education and Educational Research, Charité – Universitätsmedizin Berlin, Germany

### Abstract:

Background: The concept of EPA-based medical training is implemented in more and more countries. What are experiences we can share and how can we work together to empower and accelerate implementation? The focus of this workshop will be on the main goal of medical training to guide and monitor the professional development of trainees towards independent practice as a physician. Entrustment decisions are an important hallmark in this process. In daily entrustment decisions (ad hoc entrustment) supervising physicians decide under how much supervision a trainee can perform certain professional activities under the given circumstances. Additionally, a summative entrustment decision can be made, which gives a trainee the generalized permission to perform a professional activity under a certain level of supervision. But what exactly does this mean? And how do you do that in the right way? We'll guide the participants through the approaches and experiences made in a Dutch postgraduate and a German undergraduate medical curriculum regarding EPA-based training and assessment.

Structure of the workshop: The workshop will start with a focussed introduction on the practice of Summative Entrustment Decision Making in resident training in the Netherlands. We explain the procedure with animated video and demonstrate experiences of residents and medical teachers in a video registration. In a second step, we will discuss how the concept of entrustment decision making was adapted and implemented in an undergraduate curriculum in Germany. In small groups participants will reflect on the entrustment decision making concept, discuss about needs, advantages and pitfalls and share experiences. All participants may use the demonstrated tools and materials.

## #C5 Workshop: The preceptor as the assessment tool: evidence and exploration (73)

Time: 1115-1230

Location: Helvetia 7, 1<sup>st</sup> Floor, Swissotel

### Presenter(s):

Certification Process and Assessment Committee, College of Family Physicians of Canada, Toronto, Canada

Karen Schultz, Queen's University Department of Family Medicine, Kingston, Canada

Shelley Ross, University of Alberta Department of Family Medicine, Edmonton, Canada

Theresa van der Goes, University of British Columbia Department of Family Medicine, Vancouver, Canada

Kathy Lawrence, University of Saskatchewan Department of Family Medicine, Saskatoon, Canada

### Abstract:

As post-graduate medical education moves increasingly towards competency based training and work-place based assessment; programs seek tools and skills that will ensure the valid and robust assessment of learner competence. While assessment of resident competence in various CanMEDS roles has the authenticity of being done in the work-place using direct observation; the work-place is both opportunistic and "non-standardized" and, obligingly, presents myriad opportunities. Many programs are using nimble "assessment tools" such as Encounter Cards / Field Notes to gather assessment data. The Certification Process and Assessment Committee of the College of Family Physicians of Canada endorses that with work-place based assessment, the "assessment tool" is not the Encounter Card or Field Note, rather it is the preceptor, themselves, that is the assessment tool.

## LUNCH BREAK AND POSTER PRESENTATIONS

Time: 1230-1400

Location: 3<sup>rd</sup> Floor Foyer, CCB

## #P1 Poster Presentations: Points of View and Research

Chairperson:

Time: 1230-1400

Location: 3<sup>rd</sup> Floor, CCB

1230-1235

### #P1.1 Downunder, surgeons and trainees may not be fans of CBME (14)

#### Authors:

Stephen Tobin, RACS, Melbourne, Australia

**Presenter(s):** Stephen Tobin, Royal Australasian College of Surgeons, Australia

#### Abstract:

The current RACS Surgical Education and Training (SET) program commenced in 2007, the outcomes being extensively reviewed in 2014. Attrition was noted to be considerable, about 1:7 trainees not completing. Issues around professional behaviours and surgical educator skills and attributes have been described and somewhat addressed by the 'Building Respect' action plan. Specific aspects of SET have been looked at with the 'Review of Assessments' and the 'Leaving Surgical Training' reports. Training is still significantly time based.

Current upskilling of surgeons to be better supervisors and trainers has focus on principles of adult learning, being a better clinical teacher, having dialogue for feedback based on observation, and building this all into assessments. Across the surgical specialties, surgeons are more comfortable about looking at performance on clinical tasks holistically, related to stage of training. Directed somewhat by the recent regulatory re-accreditation of RACS by the Australian Medical Council (AMC) the question of how this college and its surgeons and trainees utilise CBME needs to be addressed. What is it - within surgical education in Australia and New Zealand?

Given all of this, assuming that surgical educator skills and attributes are shown to become much better, and observation leading to respectful feedback occurs frequently, informing term assessments, establishing readiness for fellowship examination as certification as a surgeon, and this occurs across the usual period of years, would more comprehensive CBME actually mean much? High flying- and flexible training- trainees must be accommodated. If the daily work tasks are done well, and EPAs provide some suitable contracts, that might well be enough.

The AMC also requested well described SET graduate outcomes. We are inclined to some of the professional capabilities, the broader roles recently published by the GMC. We would consider such outcomes, for the new surgeon, to be our CBME product.

1235-1240

### #P1.2 Self-determining Outcome-based Education -an Early Clinical Exposure Experience from a Second Year Medical Student (135)

#### Authors:

Yu-Ting Huang, School of Medicine, Tzu Chi University, Hualien, Taiwan

Shao-Yin Chu, Department of Pediatrics and Medical Education, Buddhist Tzu Chi General Hospital, Hualien, Taiwan

**Presenter(s):** Yu-Ting Huang, School of Medicine, Tzu Chi University, Taiwan

#### Abstract:

**Background:** Outcome-based medical education (OBE) emphasizes learners' performance and competence in a fixed definition. Students must understand the concept and framework of unambiguous specified learning outcomes designed. Since learners are the key factor in OBE, it logically follows that learners should take major responsibility for their own learning and have flexible, and individualized learning pace. Educators' role are then shift to become advisors, mentors and guides, and co-create individualized curriculum.

**Questions:** As a second year medical student, while studying basic medical science is based on a fixed time schedule and standardized curriculum for biochemistry, psychology, microbiology, etc., even with clear teaching objectives, will there be one-size-fits-all curricula to be challenged?

**Discussion/Implications:** One self-directed mini-early clinical exposure learning program was arranged and supported by a physician educator at the pediatric clinic. By using the four principles of OBE, the opportunity of learning was expanded out of the formal curriculum into the clinical setting, specific performance based learning outcomes was designed (which include: patient educational skills, making connection with patients, bio-psycho-social model of Down syndrome patient care, holistic primary care, using technology for monitoring and managing T1DM, professional role of a physician), holding the believe that learners are the key in their own learning and will self-actualized the outcomes.

As for returning to curriculum design, and from this very preliminary experience of a motivated, self-directed medical student, how well all faculty members, other medical students and administrators be prepared or experiment with OBE in curriculum innovation?

Conclusions: Medical students should be encouraged to pursue their own learning plan on their own schedule, create optimal learning opportunities, search the clinical relevancy of those basic medical science knowledge, early connect with and learn from patients, and find the meaning of medicine.

**1240-1245**

**#P1.3 Comfort and Competencies: Simulating Clinical Encounters Involving Sexuality and Gender Diversity During Medical School (123)**

**Authors:**

Valerie Henderson, McGill University Faculty of Medicine, Montreal, Quebec, Canada  
Mary Koziol, McGill University Faculty of Medicine, Montreal, Quebec, Canada  
Luke Mondor, McGill University Faculty of Medicine, Montreal, Quebec, Canada  
Adryen Yak, McGill University Faculty of Medicine, Montreal, Quebec, Canada  
Luke Mondor, McGill University Faculty of Medicine, Montreal, Quebec, Canada  
Namta Gupta, McGill University Faculty of Medicine, Montreal, Quebec, Canada

**Presenter(s):** Namta Gupta, McGill University Faculty of Medicine, Canada

**Abstract:**

Background: Insufficient teaching on healthy sexuality and gender diversity was identified during the McGill UGME program 2015 CACMS/LCME accreditation visit. The student-led, Faculty-supported response to this deficit was the development of a simulation-based educational intervention concerning topics in sexuality and gender diversity. Students completed a 10-minute clinical interview with a standardized patient observed via one-way glass followed by a 9-minute feedback session with peers and trained evaluators. The clinical interviews featured scenarios developed about the themes of adolescent and elder sexuality, LGBT health, and contraception and pregnancy counselling. A corresponding study assessed students' subjective shift in self-rated comfort and competency prior to and following the intervention.

Research question: Do students report increased comfort and competency in the areas of gender diversity and sexuality following a simulation-based educational intervention?

Methods: Four simulated learning experiences were developed that introduced 2nd year medical students at McGill University to challenging sexuality and gender-themed health-care scenarios. Students completed pre- and post-simulation questionnaires that gathered basic demographic data and their self-assessed comfort and competency (18 questions, using a 5-point Likert scale). Non-parametric Wilcoxon signed-rank test compared changes in students' perceptions for each question.

Results: 359 participants completed the educational intervention, with 228 (63.5%) complete response sets eligible for analysis. For 16 of 18 questions, mean Likert scores increased ( $p < 0.05$ ) suggesting overall greater comfort and self-perceived competency levels following the intervention.

Conclusion: The results suggest increased comfort with challenging topics in human sexuality and improvement of sexual health competencies in the areas of patient care, interpersonal and communication skills, and personal and professional development. This successful student-Faculty collaboration demonstrates how simulation-based education can play a role in a comprehensive, longitudinal approach to teaching sexual health competencies in medical education.

**1245-1250**

**#P1.4 The Perceptions in Faculty Development of an Inter-professional Training Program- Challenges of the OSTE (64)**

**Authors:**

Hsiu-Chen Yeh, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taiwan  
Ming-Chen Hsieh, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taiwan  
Sin-yi Huang, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taiwan  
Cian-Huei Shih, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taiwan  
Sin-yi Huang, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taiwan  
Hui-Chen Lee, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taiwan

**Presenter(s):** Hsiu-Chen Yeh, Hualien Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation, Taiwan

**Abstract:**

Background: Work in Interdisciplinary Team is one of the five core competencies that medical professionals need (IOM). But lack of teaching strategies and relevant evaluation ability for multidisciplinary faculty development. This study aim was to build up teaching model of Inter-Professional Practice (IPP) and explore the effectiveness of using OSTE strategies.

Research question: What's about the perceptions of teachers and the status of implementation in IPE ? Does the OSTE ( Objective Structured Teaching Exercise ) can help teachers improve their teaching abilities?

Methods: We decided a stratified purposive sampling, selection four categories's clinical teachers include nursing, medical technologist, nutrition and pharmacy as the research object. Each participant completed OSTE through three



station to practice skills of assessment, evaluation and feedback . The results were analyzed by descriptive statistics and Wilcoxon Test.

Results and conclusions:

1. A total of 23 clinical teachers participating in the OSTE, the overall average satisfaction was 4.2, of which "exercise content will help future IPE teaching" satisfaction scores for the highest. Teachers' self-assessment after participating in the drill, their perceptions of IPE improved from 3.3 to 4.3
2. In the indicators of scoring, There are no significantly between different seniority. Teachers who participated in IPE workshops had significantly higher teaching awareness prior to testing than non-participants ( $p < .05$ ). At the same time, referring to the feedback of standardized PGY students and the self-assessment of teachers tested, there was a significant difference between teachers statistically who participated in IPE workshops.
3. OSTE was a measurement method, and as a teaching strategy, practical exercises can effectively improve cross-disciplinary teaching ability, especially for feedback ( $P < .05$ )
4. In the future, this teaching model can be continuously promoted. We will regularly evaluated the teaching effectiveness of implementation in IPE and to achieve the patient-centered care quality.

**1250-1255**

**#P1.5 Assessment of medical residents professional competency in Mashhad University of Medical Science (10)**

**Authors:**

Hossein Karimi Moonaghi, Mashhad University of Medical Science, Mashhad, Iran  
Somayeh Akbari Farmad, Shaheed Beheshti University of Medical Science, Tehran, Iran  
Habibollah Esmā'eily, Mashhad University of Medical Science, Mashhad, Iran  
Fathieh Mortazavi, Shaheed Beheshti University of Medical Science, Tehran, Iran  
Habibollah Esmā'eily, Mashhad University of Medical Science, Mashhad, Iran

**Presenter(s):** Hossein Karimi Moonaghi, Mashhad University of Medical Science, Iran

**Abstract:**

**Background and Purpose:** The professionalism is a core competency for medical residents, and assessment of this competency is a vital element at residency education. The purpose of this study was to assess professional behaviors of medical residents in Mashhad University of Medical Science.

**Methods:** This study assessed the professional competency of residents by using a 360 degree approach. The data gathering tool was a questionnaire with 25 items and four points rating scale. Validity of questionnaire was confirmed by experts. Total of 176 Residents from 17 departments of two main educational hospitals of Mashhad University of Medical Science participated in this study. For each resident, four questionnaires were completed by his professors, himself, peers, and his patient. A total of 704 questionnaires were completed and analyzed using SPSS.

**Results:** The mean and standard deviation of professional competency in resident were  $3.14 \pm 0.36$  out of 4. The highest mean score related to the domain of "confidentiality and honesty" ( $3.21 \pm 0.44$  out of 4), and the lowest mean related to the domain of "self-improvement and acceptance of error" ( $3.08 \pm 0.45$ ). Significant difference of professional competency was not observed between the residents of two hospitals. But, there was a significant difference between male and female residents in the domains of "responsibility" ( $p=0.03$ ), "altruism and compassion" ( $p=0.03$ ), and respect to others" ( $p=0.05$ ). Also, there was a significant difference between residents according to different academic years in domains of "communication with patient" ( $p=0.05$ ), "responsibility" ( $p=0.04$ ), "self-improvement and acceptance of error" ( $p=0.02$ ) and "respect to others".

**Conclusion:** Although, Result of this study shows that residents professional competency was acceptable, but maintaining and promoting of residents competency is necessary.

**1255-1300**

**#P1.6 The distinction between competency types (44)**

**Authors:**

Shahram Yazdani, Shahid Beheshti University of Medical Sciences, Tehran, Iran.  
Somayeh Akbari Farmad, Shahid Beheshti University of Medical Sciences, Tehran, Iran.  
Arezou Farajpour, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

**Presenter(s):** Somayeh Akbari Farmad, Shahid Beheshti University of Medical Sciences, Iran

**Abstract:**

**Background:** Competency based curriculum is the cutting edge of the medical education. Despite the importance of this curriculum and the central role of competency in it, there is no clear distinction between the types of competency in the literature. This study attempts to explain and clarify the distinction between them.

**Research question:** What is the difference between varieties of competency?

**Methods:** This study was done through Concept analysis and literature review.

**Results:** Results summarized in below table

Core professional performance Continuing Top performance

Non task specific Enabling competencies Meta competencies Technical competencies

Task specific Task specific competencies Non-core & evolving competencies

**Conclusions:** Competencies according that are task specific and non-task specific are divided into two general categories: non task specific and task specific as showed in first left column. Moreover, characteristics of competency according the performance types include core professional performance and continuing top performance as shown in first row. So, In core professional performances column: First category of competencies that are non- task specific and Essential for core professional performance is enabling competency, such as problem solving. These competencies are complementary for technical competencies. Technical competencies that are non-task specific and essential for core professional performance are general, such as Diagnosis, Treatment, and Referrals. These competencies must break into task specific competencies . such as Diagnosis of infectious disease. Second category of competencies is competencies for continuing top performance. Those competencies that are not specific to the continuing top performance are meta-competency that are achieved form The development of enabling and technical competencies, such as system based practice. Those competencies that are specific for top performance and achieved from task specific competency development in the electives courses, CME and vocational self-directed learning are called non-core & evolving competencies, such as Diagnosis of Infectious Disease based on new guidelines.

## 1300-1305

### #P1.7 Engaging departmental stakeholders in shaping their program of assessment (63)

#### Authors:

Rylan Egan, Queen's University, Kingston, Canada  
Stephanie Baxter, Queen's University, Kingston, Canada  
Nancy Dalgarno, Queen's University, Kingston, Canada  
Laura McEwen, Queen's University, Kingston, Canada  
Nancy Dalgarno, Queen's University, Kingston, Canada  
Heather Braund, Queen's University, Kingston, Canada  
Mary-Anne Reid, Michigan State University, East Lansing, USA

**Presenter(s):** Nancy Dalgarno, Queen's University, Canada

#### Abstract:

**Background:** Canada is adopting a competence-based medical education (CBME) model in residency education. The Royal College of Physicians and Surgeons of Canada has advocated for a programmatic approach to assessment with increased emphasis on direct observation of residents' clinical performance. This change has implications for physicians' and residents' workflow. Supporting and incorporating feedback from stakeholder groups as they pilot CBME assessment tools may increase engagement.

**Research Question:** To what extent does involving stakeholders in the selection and modification of workplace-based assessment (WBA) tools for use in Ophthalmology assist in shaping their program of assessment?

**Methods:** The qualitative case study was conducted in an Ophthalmology Emergency Eye Clinic at a teaching hospital in Eastern Ontario prior to the July 1, 2017 CBME implementation. Phase 1 consisted of faculty piloting four WBAs over a three-month period by documenting perceptions of the tools. Phase 2 involved two focus groups, one for residents (n=9) and one for faculty (n=6), which explored qualities of effective feedback, feasibility, usability, value, challenges, and recommendations for the tools. Data was analyzed using a thematic design.

**Results:** All participants discussed the need for a shift in the departmental assessment culture to support the transition to CBME and improve buy-in among stakeholders. The WBAs tools were generally viewed as formal evaluations and faculty were concerned about 'formalizing' feedback. Residents stated the need for more timely feedback given in a safe location. Generally, residents preferred written performance indicators rather than numerical. Residents and faculty valued verbal feedback more than written.

**Conclusions:** These results provide insight into faculty and resident perspectives about assessment processes. An ongoing challenge is integrating feedback processes in the assessment culture and promoting WBAs as low-stakes coaching tools. Future research will examine the extent to which these perspectives about the program of assessment change following CBME implementation.

## 1305-1310

### #P1.8 Development and validation of the Competency Evaluation Scale for Pharmacy Students (CESPS) to measure Pharm.D. students' self-efficacy in professional competency (71)

#### Authors:

Jia-An Hung, National Taiwan University (NTU), Taipei, Taiwan  
Fei-Yuan Hsiao, NTU, Taipei, Taiwan  
Fe-Lin Lin Wu, NTU, Taipei, Taiwan  
Chia-Yi Wu, NTU, Taipei, Taiwan  
Fe-Lin Lin Wu, NTU, Taipei, Taiwan  
Li-Jiuan Shen, NTU, Taipei, Taiwan  
Shu-Wen Lin, NTU, Taipei, Taiwan

**Presenter(s):** Shu-Wen Lin, National Taiwan University, Taiwan

**Abstract:**

**Background:** The Bachelor of Science (B.S.) program in National Taiwan University School of Pharmacy (NTUSP) has been transformed into 6-year Doctor of Pharmacy (Pharm.D.) program with a parallel period between 2009 and 2017. We aimed to develop a scale to measure students' self-efficacy as an indicator for the evaluation of professional competency.

**Research question:** The Competency Evaluation Scale for Pharmacy Students (CESPS) was developed and applied to determine the differences of self-efficacy level between B.S. and Pharm.D. students with a cross-sectional survey in May 2017.

**Methods:** The scale was developed based on literature review, opinions from focus group, experts review and pretest. The differences of self-efficacy between students in NTUSP programs and years were analyzed with Student's t-test, Mann-Whitney U-test and Kruskal-Wallis one-way analysis of variance ranks.

**Results:** The original scale had 5 constructs (interpersonal and communication skills, professionalism, pharmaceutical care, system based practice, practice based learning and improvement) and 119 items. The content validity index revealed satisfying results (All I-CVIs  $\geq$  0.83, S-CVI/Ave 0.98). A total of 81 students (94% response rate) responded to the survey. After item analysis and stratified exploratory factor analysis, 53 items were retained. The Cronbach's alpha was 0.969. The criterion-related validity indicated that students with superior academic performance had higher self-efficacy level and the constructs of professionalism and pharmaceutical care ( $p < 0.05$ ).

The 6th year Pharm. D. students had the best self-efficacy level than the 4th year students in B.S. program and the 4th and 5th year Pharm. D. students. Compared to 4th year B.S. students, the 6th year Pharm. D. students showed significantly higher self-efficacy in pharmaceutical care construct ( $p < 0.05$ ).

**Conclusions:** The CESPS was validated as a reliable psychometric assessment for pharmacy students' self-efficacy in professional competency. Students in the last year of Pharm.D. program demonstrated the highest self-efficacy.

**1310-1315**

**#P1.9 Innovation and collaboration used to Develop and Evaluate a Musculoskeletal Medicine Module for Competency-Based Orthopaedic Training (78)**

**Authors:**

Veronica Wadey, Toronto, Canada  
Douglas Archibald, Ottawa, Canada  
Benjamin Alman, North Carolina, USA  
Michael Zywiell, Toronto, Canada  
Benjamin Alman, North Carolina, USA  
Peter Ferguson, Toronto, Canada  
Markku Nousiainen, Toronto, Canada

**Presenter(s):** Veronica Wadey, University of Toronto, Canada

**Abstract:**

**Introduction:** An MSK module, part of a competency-based orthopaedic surgery training program was developed and evaluated for its effectiveness in improving: 1) MSK knowledge expected of graduating orthopaedic residents, and 2) the ability to be innovative and collaborative professionally with learning strategies.

**Methods:** Development of the module was informed by the conceptual framework of patient-centered, multidisciplinary care based on presenting complaint and learning objectives of a nationwide consensus for core curriculum competencies in MSK health and, on competencies expected of graduating orthopaedic residents by the Royal College of Physicians and Surgeons of Canada. An evaluation strategy was developed by multidisciplinary MSK educators. Effectiveness of the module was determined by structured feedback from both learners and educators. Then, a pilot cohort of 9 residents was studied during the mid-point of training (PGY 3 equivalent) over 3 years. Descriptive, quantitative and qualitative analyses were completed.

**Results:** An 8 week MSK module was developed. Learners collaborated within five disciplines: infectious diseases, rheumatology, physical medicine and rehabilitation, bone health/osteoporosis, and pediatrics (genetics/endocrinology/skeletal dysplasias). All residents demonstrated improvements in MSK knowledge with a 40% increase in mean MCQ scores ( $p < 0.001$ ) and 58% improvement in mean SAQ scores ( $p < 0.001$ ). Professionalism

performance was above expected levels for all domains (collaborator/health advocate/communicator) with mean ITER score of 4.19 out of 5. Qualitative analysis of scholarly presentation feedback revealed successful knowledge translation. All trainees were satisfied with the module and improved ability to diagnose, manage MSK conditions and to refer and/or co-manage patients with MSK conditions. Preceptors from MSK medicine disciplines reported value in having orthopaedic residents participate in their clinical learning environments.

Conclusion: An inaugural MSK medicine module positively impacts acquisition of MSK knowledge and skill. A learning experience of this nature may benefit residents preparation for fellowship evaluation and optimize collaborative practice environments in the future.

## 1315-1320

### #P1.10 Canadian Critical Care Medicine Physician Perceptions Regarding Transition to Competence by Design: Are we Ready? (125)

#### Authors:

Jonathan Gaudet, University of Calgary, Calgary, Canada  
Rachel Ellaway, University of Calgary, Calgary, Canada  
Suzanne Bridge, Queen's University, Kingston, Canada  
Mone Palacios MacKay, University of Calgary, Calgary, Canada  
Suzanne Bridge, Queen's University, Kingston, Canada  
Gordon Finlayson, University of British Columbia, Vancouver, Canada  
Wendy Sligl, University of Alberta, Edmonton, Canada  
Jean Gilles Guimond, Université de Montreal, Montreal, Canada  
Jason A Lord, University of Calgary, Calgary, Canada

**Presenter(s):** Jason Lord, University of Calgary, Canada

#### Abstract:

**Background:** All Canadian residency specialty-training programs are transitioning to a competency-based medical education (CBME) training model, called Competence by Design (CBD). Critical Care Medicine (CCM) is scheduled to implement this transition in 2019. Identifying and addressing barriers and enabling factors may facilitate successful transition.

**Research Question:**

To determine opinions and perceptions of Canadian CCM faculty and residents regarding the coming transition to CBD.

**Methods:** We surveyed CCM faculty and residents from five Canadian universities regarding their perceptions of CBD. Data are reported as frequencies or descriptive statistics and reported as mean values. Comparisons between groups were performed using independent samples t-tests.

**Results:** 112 (48%) physicians completed the survey. Respondents were ambivalent about the need for CBD, they did not believe compelling evidence for CBD existed, and they lacked confidence they could implement CBD. We found no differences between faculty and residents' understanding of CBD principles. The most significant implementation barriers were identified as lack of faculty engagement, time, and training in evaluation and feedback. Engaged faculty and residents, effective medical education leadership and identification of clear expectations and responsibilities were perceived to be important enablers for implementation success. Faculty felt more strongly than residents that adequate funding was an important enabler. Benefits from CBD implementation included greater ability to identify residents in difficulty, enhanced feedback quality and an improved ability to teach and assess requisite skills of our specialty. Better quality healthcare for society; faculty and resident satisfaction were viewed as less important.

**Conclusions:** Significant uncertainty and incomplete understanding of CBD implementation exists in the Canadian CCM context. We have identified important factors that require thoughtful consideration to enable successful transition to CBME for our specialty.

## 1320-1325

### #P1.11 Development of an evaluation tool for ultrasound-guided paracentesis (158)

#### Authors:

Amar Chakraborty  
Julia Tai

**Presenter(s):** Amar Chakraborty, Queens University, Canada

#### Abstract:

**Introduction:** Paracentesis is a procedure that is frequently performed in Internal Medicine for both therapeutic and diagnostic purposes. It is a prerequisite that all trainees within Internal Medicine programs establish competency in this procedure. However, there is currently no standardized tool used to evaluate and provide feedback to residents on their

paracentesis technique. Direct, high-quality feedback is essential to effectively developing paracentesis skills during residency. The purpose of this study is to create an evaluation tool that will be used to assess core Internal Medicine residents on their paracentesis skills.

**Methods:** A literature review was completed to determine which elements constitute a successful ultrasound-guided paracentesis. These elements were inputted into a modified Delphi Method and distributed to nine faculty experts from Gastroenterology and General Internal Medicine within both the academic and community setting. Experts were asked to rate the importance of each element on a 5-point Likert scale, where consensus was defined by more than 80% of panelists rating at least 4 points for each given item. After three rounds of the Delphi Method, a list of core action items was generated. Cohen's Kappa coefficient was applied to the items to determine the reliability and consensus between individual rounds of the Delphi Method. Using the list of core action items, an evaluation tool for ultrasound guided paracentesis was created.

**Results:** We are currently in the process of collecting responses from the Delphi Method.

**Conclusion:** As the CBME era approaches, there is a growing emphasis on the direct supervision of residents. This can be challenging in the field of Internal Medicine, where staff are often unavailable to provide direct supervision, and senior residents must assume this role. The development of an expert-informed evaluation tool will mitigate this by standardizing high-quality feedback from both senior residents and staff.

**1325-1330**

**#P1.12 Warmth and Competence: Using a Single (dimensionally-based) Categorization to predict Mini-CEX ratings (17)**

**Authors:**

Andrea Gingerich, Northern Medical Program, Prince George, Canada  
Stefanie Sebok-Syer, Western University, London, Canada

**Presenter(s):** Andrea Gingerich, Northern Medical Program-University of Northern British Columbia, Canada

**Abstract:**

**Purpose:** As we embrace competency-based medical education, assessment systems need to incorporate more frequent assessments of clinical activities. More frequent assessments demand documentation that is quick, valid, reliable, and feasible within the workplace. A potential solution is to model the assessment process according to the social judgment process. We unavoidably judge others based on the benevolence of their intentions (i.e. warmth) and their ability to carry out those intentions (i.e. competence). We analyzed how well physician raters' selection of a two-dimensional categorical response can predict their ratings on Mini-CEX scales.

**Methods:** In 2012-13, 35 physicians from two medical schools assessed video-recorded patient encounters for 7 residents by providing Mini-CEX ratings (on 9-point rating scales). Physicians categorized each resident as Warm-Competent, Warm-Incompetent, Cold-Competent, Cold-Incompetent or none of these. Ordinal logistic regression modeled how well the categorization predicted Mini-CEX ratings on the following scales: medical interviewing skills, humanistic qualities/professionalism, clinical expertise, organization/efficiency, and the overall clinical competence.

**Results:** Physician raters did not uniformly select the same category for any given resident; however, they did assign similar ratings for a given categorization regardless of the resident. After collapsing the ratings across all residents, the four categorizations predicted scores on all 5 Mini-CEX scales. Over half of the variance in ratings on each of the 5 scales could be explained by physicians' selection of a single category (R<sup>2</sup>: 53-61).

**Discussion:** Physicians summarized multiple assessment judgments using a single categorical response (based on underlying dimensions of warmth and competence). Therefore, categorical descriptors may be a crude yet reasonable documentation strategy to increase the frequency of completed assessments. In terms of acceptability, physicians may be reluctant to use the word "incompetent" in authentic assessment situations invoking the need to study better alignment of the categorical descriptors with the mental language of physicians' competency judgments.

**1330-1335**

**#P1.13 A Measure of Competence in Athletic Therapy – Content Validation of the Mini-CEX for AT (19)**

**Authors:**

Mark Lafave, Mount Royal University, Calgary, Alberta, Canada  
Dennis Valdez, Mount Royal University, Calgary, Alberta, Canada  
Jeff Owen, Mount Royal University, Calgary, Alberta, Canada  
Michelle Yeo, Mount Royal University, Calgary, Alberta, Canada  
Jeff Owen, Mount Royal University, Calgary, Alberta, Canada

**Presenter(s):** Mark Lafave, Mount Royal University, Canada

**Abstract:**

**Background:** Athletic therapy (AT) is an allied healthcare profession in Canada that consists of practice across two primary areas: outpatient clinical settings and working in a field setting with teams or athletes. AT workplace-based education occurs in those same settings under the guidance of certified athletic therapists acting as clinical instructors. Evaluation of student competence in these practical settings has not been standardized for AT in Canada. The primary goal of this study was to validate the content for the Mini-CEX for AT (Mini-CEX-AT herein).

**Summary of Work:** The Mini-CEX-AT is an instrument that is employed to evaluate students in clinical and field practice settings with real-life patient encounters. Procedures for the Mini-CEX-AT are similar to those in medicine, but the content is different. Content (i.e. items) representing both hard and soft skills are necessary to demonstrate comprehensive AT competence. A modified Ebel procedure was employed whereby content experts representing all seven AT programs in Canada voted on the importance and frequency of hard and soft skills that constituted competence.

**Summary of Results:** 80% expert consensus was achieved for both hard and soft skills. Hard skills included: orthopaedic assessment, therapeutic rehabilitation, therapeutic modality use, primary evaluation/management, secondary evaluation/management. Soft skills included: 1) verbal and nonverbal communication, listening, teamwork/collaboration, rapport, written communication, interpersonal interaction, social appropriateness and cultural competence; 2) problem solving, critical thinking, decision making, clinical reasoning, situation awareness and evidence-informed practice; 3) ethical practice, honesty, integrity and cultural competence; 4) reliability/dependability, time management, organization and teamwork/collaboration; 5) work-ethic motivation, resilience and working independently; 6) empathy, compassion, care and rapport.

**Discussion and Conclusions:** Standardized workplace-based assessment instruments like the Mini-CEX-AT are critical when accrediting competent professionals. Other sources of competency evaluation must also be factored into overall competency development. Future research of the Mini-CEX-AT will include inter-rater reliability.

## 1335-1340

### #P1.14 Using Kirkpatrick model to evaluate a Cardio Pulmonary Resuscitation (CPR) retrain course for Iranian nurses (59)

#### Authors:

Seyed Masoud Hosseini, Mashhad University of Medical Sciences, Mashhad, Iran  
Hamid Reza Behnam, Mashhad University of Medical Sciences, Mashhad, Iran  
Mozhgan Ghiassi Ajghan, Mashhad University of Medical Sciences, Mashhad, Iran

**Presenter(s):** Seyed Masoud Hosseini, Mashhad University of Medical Sciences, Iran

#### Abstract:

**Background and purpose:** The Cardio Pulmonary Resuscitation (CPR) skill is an important part of nurses' professional competencies. There are many evidences about the decline of knowledge and skills of nurses on CPR over the time. This study carried out to evaluate a CPR retrain course for nurses using Kirkpatrick model in a university hospital in Mashhad (Iran). Kirkpatrick model conceptualizes the evaluation process in four levels as Reaction, Learning, Behavior and Results. **Methods:** Using stratified random sampling, 100 nurses were enrolled in a CPR retrain course (Six hours). A questionnaire was administered to evaluate the participants' satisfaction (Reaction level) on the course. Also the Learning level was evaluated by comparing pretest and post-test scores of participants. Performance of participants in real situations was assessed by trained observers (Behavior level). Finally, the comparison of successful CPR records before and after the course were used as Results level data.

**Results:** Most of the participants were satisfied on the course (Reaction level). Also as Learning level, the post-test scores were higher than pretest ones, significantly ( $P \leq 0.05$ ). Recorded data by the observers using a checklist showed that the performance of the retrained nurses had been improved. As Result level, the gathered data and field observations showed an increase in successful CPR's in wards that the retrained nurses worked in.

**Conclusion:** Due to fast changes in medical guidelines, health care providers' knowledge and skills ought be updated in short time intervals in order to quality of patients care improvement in hospitals. A variety of teaching methods should be applied in such programs to ensure that the learners acquire the needed competencies. Kirkpatrick model can provide a holistic view to evaluate the retrain programs more accurately.

## 1340-1345

### #P1.15 Development of a competency framework for assessment of Paediatric interns in South Africa (SA) (60)

#### Authors:

Kimesh Naidoo  
Jacqueline M Van Wyk

**Presenter(s):** Kimesh Naidoo, Nelson R Mandela School of Medicine ,University of KwaZulu-Natal

#### Abstract:



**Background:** Work-based assessment practices during internship in SA focus on procedural skills within the clinical competency with a deficiency in evaluating non clinical competencies and non –procedural skills that are required for effective medical practice. International best practice in postgraduate assessment has supported having competency frameworks with concrete critical clinical activities that involve direct observation and multi-source feedback.

**Aim:** The aim of this study was to develop, a competency framework that will enable comprehensive assessment among Paediatric interns in the SA context that was relevant to a high childhood disease burdened context.

**Methods:** This mixed methodology study involved sampling 10 senior paediatric intern supervisors and 409 interns across 4 hospital complexes in a high childhood disease burdened province in SA. By using a modified Delphi process, a set of core competencies for assessment amongst pediatric interns was determined. The tool developed was validated by assessing construct validity with factor analysis and internal consistency being measured with Cronbach’s alpha.

**Results:** After 4 rounds in the Delphi process a competency tool based on 7 core competencies was developed .This tool was found to be very reliable with an overall Cronbach’s alpha of 0.927 .Factor analysis revealed an instrument of 61 items that measured 4 factors These factors corresponded with core clinical skills (hard skills), holistic non clinical skills (soft skills), self-developmental skills (emotional skills) and leadership skills

**Conclusions:** A locally relevant competency based tool was developed in SA to assess pediatric interns .This tool was found to be a reliable and valid instrument for use in interns in high disease burdened contexts .It performed as a multidimensional instrument assessing core clinical skills, non-clinical skills as well as emotional and leadership competencies and can serve as the basis of improved assessment in the workplace.

## 1345-1350

### #P1.16 Comparison of faculty and resident intra-operative performance ratings of supervision and performance: are all steps equal? (82)

#### Authors:

Anjali Wagle, University of Alabama at Birmingham, Birmingham, USA  
Herbert Chen, University of Alabama at Birmingham, Birmingham, USA  
Thomas Wang, University of Alabama at Birmingham, Birmingham, USA  
John Porterfield, University of Alabama at Birmingham, Birmingham, USA  
Thomas Wang, University of Alabama at Birmingham, Birmingham, USA  
Erin Buczek, University of Alabama at Birmingham, Birmingham, USA  
Brenessa Lindeman, University of Alabama at Birmingham, Birmingham, USA

**Presenter(s):** Anjali Wagle, University of Alabama at Birmingham School of Medicine, USA

#### Abstract:

**Purpose:** Many studies have expressed concern about the ability of graduating surgeons to enter unsupervised practice upon completing training, and have been cited to explain the increasing number seeking fellowship training. Several surgical training programs have adopted a two-item rating scale (supervision and competency) for overall operative performance. However, it is unknown whether the degree of supervision granted to trainees varies for each step of an operation.

**Methods:** All residents performing a thyroidectomy or parathyroidectomy with 5 surgeons from October, 2017-January, 2018 were invited to complete an operative performance evaluation (OPE) of supervision and performance for all steps of each operation, plus an overall rating. Attending surgeons completed the same survey and scores were compared using paired t-tests.

**Results:** Twelve residents received 54 faculty and 54 self-evaluations. For faculty and residents, mean performance scores were significantly higher than mean supervision scores (3.28 vs. 3.18,  $p<0.001$ ). Faculty scores were generally higher compared to residents’ scores (3.25 vs. 3.01,  $p=0.049$ ). Significant differences were observed in both supervision and performance ratings for individual operative steps, with the middle “critical” portions of the procedure earning lower scores for both performance and supervision compared to “non-critical” steps (supervision 2.97 vs. 3.32,  $p=0.003$ , performance 3.06 vs. 3.43,  $p=0.002$ ). Higher critical step performance scores were associated with higher overall performance ratings ( $p<0.001$ ). Compared with faculty, PGY-1 residents evaluated themselves higher on average (1.38 vs. 2.20,  $p<0.001$ ). No differences were observed between scores for thyroidectomy and parathyroidectomy, or with other demographic variables.

**Discussion:** Faculty and residents evaluate supervision and competency variably at different steps in both thyroidectomy and parathyroidectomy. Scores on the middle “critical” steps of the operation were predictive of overall performance ratings, and higher-level residents met this threshold more often.

## 1400-1515 #D SIMULTANEOUS SESSIONS

### #D1 Oral Research: Assessment II / EPAs

Chairperson:

Time: 1400-1515

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

### 1400-1415

#### #D1.1 Assessing in a Competency-based Master of Health Professions Education Program (48)

##### Authors:

James Fitzgerald, University of Michigan, Ann Arbor, USA

Larry Gruppen, University of Michigan, Ann Arbor, USA

MHPE Assessment Committee, University of Michigan, Ann Arbor, USA

Dawn Harris, University of Michigan, Ann Arbor, USA

MHPE Assessment Committee, University of Michigan, Ann Arbor, USA

**Presenter(s):** James Fitzgerald, University of Michigan, Ann Arbor, USA

##### Abstract:

**Background:** The competency-based University of Michigan's Master of Health Professions Education (MHPE) program is individualized and time variable; it has no formal classes. Faculty have 3 roles: Mentors, Subject Matter Experts and Assessors. It assesses competence on 12 educational competencies using 23 educational Entrustable Professional Activities (EPAs).

**Purpose:** Our goal was to create and implement a learner assessment method. A standardized assessment is not compatible with the individualized and adaptive philosophy of our program. As such, the assessment process needed to be standardized to advance a fair and equitable review. Further, the process needed to accommodate a wide range of topics and competency evidence submission formats. We also required an independent assessment and a learner repository.

**Intervention:** Learners submit evidence for competencies using an EPA (e.g. develop a curriculum). Three independent Committee members review the submission, scoring the submission as Passing (competent), Provisional (minor modifications/additional materials), or Not Passed (not competent). EPAs can be revised and resubmitted as part of the formative learning process until competence is demonstrated. For each competency of the EPA, the learner is provided an assessment of their strengths and areas for improvements. The review is both formative (feedback on the EPA) and summative (competency judgment).

**Results:** The MHPE program completed its 5th year; we have completed 100+ assessments from 24 learners.

**Challenges encountered include:**

- Difficulty in implementing CBE in a traditional university system
- Significant faculty time commitment
- Faculty lack of confidence in providing global assessments
- Differing standards for Masters-level competence

**Effective aspects include:**

- Greater calibration among scores than expected
- Value of formative and summative components
- Intellectual exchanges among reviewers
- Ability to accommodate diverse EPA topics and formats

**Future Directions:** New assessment faculty require training and calibration. There is ongoing need for better communication between the Committee and learners about expectations and level of detail required.

### 1415-1430

#### #D1.2 Development and Assessment of a Simulated "Entrustable Professional Activity" in Orthopaedic Surgery - A Proof of Concept (99)

##### Authors:

Markku Nousiainen, University of Toronto, Toronto, Canada

Douglas Archibald, University of Ottawa, Ottawa, Canada

Devin Abrahami, Toronto, Canada

Marissa Bonyun, University of Toronto, Toronto, Canada

Devin Abrahami, Toronto, Canada

William Kraemer, University of Toronto, Toronto, Canada

Veronica Wadey, University of Toronto, Toronto, Canada

**Presenter(s):** Veronica Wadey, University of Toronto, Canada

**Abstract:**

**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 Activities (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.

**Methods:** A simulated EPA that assessed the ability for a junior resident to manage a patient with an ankle fracture was developed and underwent a validation process with content experts and resident trainees before testing. The EPA involved structured oral examinations of how the trainee would provide pre and post-operative care and an observed structured assessment of technical skills (OSATS) that would assess how the trainee would surgically manage an ankle fracture using an artificial bone and soft tissue model. Assessments occurred at two (T1) and seven (T2) months during the first year of residency training and following successful completion of basic fracture module. Descriptive, quantitative and qualitative analyses were completed. Specifically, paired-sample t-tests were used to compare scores across time periods, with statistical significance defined as p value of < 0.05.

**Results:** Five residents participated in both time points of the study. No difference was found in the level of competence between T1 to T2 in the oral structured examination and OSATS scores. All trainees were deemed competent. Interviews revealed that all residents favored immediate feedback following their performance and on-going practice and opportunities to complete numerous EPAs between times of evaluation.

**Conclusions:** The developed simulated EPA that assessed ankle fracture management skills in junior residents was found to be a valid tool to assess competence.

**Level of Evidence:** A prospective cohort study design was implemented, representing Level II evidence.

**1430-1445**

**#D1.3 Construct Validity for Entrustable Professional Activities - Trusting our EPAs for Entrustment (21)****Authors:**

David Taylor, Queens University, Kingston, Canada  
Yoon Soo Park, University of Illinois at Chicago, Chicago, USA  
Ara Tekian, University of Illinois at Chicago, Chicago, USA  
Jolanta Karpinski, University of Ottawa, Ottawa, Canada  
Ara Tekian, University of Illinois at Chicago, Chicago, USA

**Presenter(s):** David Taylor, Queen's University, Canada

**Abstract:**

**Purpose:** Entrustable Professional Activities (EPAs) are emerging as a foundational construct for assessment in competency-based medical education. Despite this, little attention has been paid to construct validity in EPA development. This study aimed to identify sources of validity evidence for the development of the stage-specific EPAs for Internal Medicine in the Competence by Design framework.

**Method:** Stage-specific EPAs for Competence by Design were developed by the Royal College Specialty Committee for Internal Medicine between April 2015 and June 2016 using a mixed-methods approach involving a modified Delphi and expert consensus conferences. Evaluation of the methods used and the EPAs themselves aimed to characterize sources of validity evidence using Messick's framework for construct validity. Evidence was sought in each of: content validity, response process, internal structure, relation to other variables, and consequences.

**Result:** The mixed methods approached generated 29 stage-specific EPAs with broad consensus for adoption. Sources of validity evidence for their development were identified in all five domains of Messick's framework. Demonstration of representativeness and content relevance supported the content validity argument. Strategies to control for known systematic errors in consensus methods supported validity arguments for response process. Intraclass correlation coefficients and a generalizability study provided evidence for internal structure. Comparison of the EPAs to internal medicine EPAs developed in the United States provided evidence by relations to other variables. Evidence based on consequences was limited and came from decision-making related to the risks and benefits of adopting the EPAs.

**Conclusion:** EPAs are an emerging construct central to learner assessment in competency-based medical education. Evaluating EPAs, and methods used to develop them, is essential to ensuring they achieve their purpose. Application of Messick's framework for construct validity provides a robust approach for evaluating EPAs, broadens the concept of validity for EPA development, and sets more stringent standards.

**1445-1500**

**#D1.4 Setting cutoff scores for entrustability based on competency-based assessment and psychometric principles (24)****Authors:**

Claudio Violato, University of Minnesota, Minneapolis, MN, USA  
Kim Askew, Wake Forest University, Winston-Salem, NC USA  
David Manthey, Wake Forest University, Winston-Salem, NC USA

**Presenter(s):** Claudio Violato, University of Minnesota, USA

**Abstract:**

Background: Entrustability and other student performance levels (e.g., novice and learner in pre-entrustability, proficient exceeds entrustability, and expert) need to be determined based on competency based, criterion-referenced assessment.

Research Question: Can reliable and valid cutoff scores be set based on direct observation and assessment of clinical performance with in situ patient interactions?

Methods: The mini-CEX was adapted for the direct observation of third year students in mandatory clerkship rotations. Data for a total of 108 participants (57 men (52.8%) and 51 women (47.2%) with a mean age of 26.3 years (SD=2.89; min=22.1, max=37.4) were collected. Faculty assessors were trained in 90 minute workshops using video recordings of student encounters with patients (novice, entrustable, proficient, expert). Students were rated on a five point scale (1=not close to meeting criterion; 5=well exceeds criterion) based on their performance.

Results: For 27 assessors and 108 students there was a total of 1,001 assessments (mean number of assessments = 8.97 (SD=2.57); range: 1-15) over a ten month period (May-February). The mean time for assessment was 25.31 minutes (range: 10-90 minutes). Using the standard error of measurement (Sem), we set the cutoff score for entrustability for communication, medical interview, physical exam, professionalism, clinical reasoning, management planning, organizational efficacy, oral presentation at the upper level of the 95% confidence interval: scale score + (2 x Sem). Ep2 for 4 assessors = 0.82 and  $\alpha = .94$  for the mini-CEX. Entrustability for different competencies was achieved at different rates.

Conclusion: Cutoff scores for entrustability can be set for various competencies based on the Sem of direct observations. A feasible, reliable and valid way to set entrustability cutoff scores can be based on direct observations of competency based, criterion-referenced assessment.

## #D2 Oral Point of View

Chairperson:

Time: 1400-1515

Location: Helvetia 1, 1<sup>st</sup> Floor, CCB

### 1400-1415

#### #D2.1 Bridging the Transition: Competency-Based Handovers from Undergraduate to Graduate Medical Education (144)

**Authors:**

Holly Caretta-Weyer, Oregon Health & Science University, Portland, USA

**Presenter(s):** Holly Caretta-Weyer, Oregon Health & Science University, USA

**Abstract:**

Background: Residency program directors have expressed concerns that many medical school graduates are not prepared for many of the patient care responsibilities expected of them upon entering residency. In response, medical education systems around the world have adopted a competency-based approach to training students and residents. In the United States, those in undergraduate medical education (UME) have begun to utilize the Association of American Medical Colleges (AAMC) Core Entrustable Professional Activities (EPAs) for Entering Residency as part of this paradigm. In contrast, the majority of graduate medical education (GME) programs continue to use milestones for reporting competency achievement of residents. This, along with the lack of standardization of competency-based information presented in the Medical Student Performance Evaluation (MSPE), makes handovers from UME to GME a potential minefield for discontinuity and misunderstanding.

Questions:

1. What information do GME program leaders want for each student as they transition to residency?
2. At what time point and in what format would this handover prove most useful?
3. How will GME faculty use this information once received?

Discussion/Implications: Discussions with GME program leaders has yielded a framework for structuring learner handovers for the greatest impact as they move forward in their training. This framework utilizes the Core EPAs and additional specialty-specific abilities required prior to graduation. Many in both UME and GME agree that this handover should occur after the Match to avoid negatively impacting that process. GME program directors feel that adopting a coaching framework in both UME and GME would be of great utility in the handover process and would facilitate the continuation of the learner's developmental trajectory in GME.

Conclusions: A standardized handover process to bridge the transition from UME to GME training is needed to fully actualize the competency-based approach to medical education. The Core EPAs may facilitate this handover.

**1415-1430**

**#D2.2 Clash of constructs: can competency-based approaches and traditional grading co-exist? (75)**

**Authors:**

Kimberly Lomis, Vanderbilt, Nashville, USA  
William Cutrer, Vanderbilt, Nashville, USA

**Presenter(s):** Kimberly Lomis, Vanderbilt University School of Medicine, USA

**Abstract:**

Background: Few educators would argue the logic of aligning educational outcomes for medical students with the competencies needed throughout one's career. However, students' experience of the "continuum" of medical education is disrupted. Competitive selection for graduate training slots creates a conflict between preparing for the responsibilities of the profession versus external pressures to appear better than one's peers.

Our institution has made significant strides in implementing competencies and entrustable professional activities for medical students (1). Pre-clerkship and clerkship phases are graded pass/fail; the post-clerkship phase uses discriminatory grading with criterion-referenced standards defining "honors". Early students are receptive to milestone-based feedback and address areas of relative weakness with coaches. Students in the graded phase are more likely to challenge ratings, and have been known to coach assessors regarding which milestones to assign in order to attain the desired grade. Other authors (2) have reported similar findings.

Questions: Can we attain "pure" implementation of competency-based medical education in a context of competitive residency placements? Are strategies for placement used in other countries less vulnerable to this concern? What competency-based evidence could supplant traditional grades for placements?

Discussion/implications: External drivers of student and faculty behavior currently contaminate competency-based performance evidence. Institutional conflicts of interest exist: successful placement of graduates is pitted against a perceived risk of transparency in reporting. Potential mechanisms to report competency-based outcomes for each learner in a readily-interpreted manner will be discussed.

Conclusions: True implementation of CBME is hampered by the current structure of the medical education continuum. Several challenging conflicts must be tackled to attain our vision.

1) Lomis, Cutrer et al. "Competency milestones for medical students: Design, implementation, and analysis at one medical school." *Med Teach* 39(5) 2017

2) Pereira, Englander et al. "Criterion-Based Assessment in a Norm-Based World: How Can We Move Past Grades?" *Acad Med*; PAP doi: 10.1097/ACM.0000000000001939

**1430-1445**

**#D2.3 Academic Advisors as Knowledge Brokers of Postgraduate Medical Trainees' Performance Information: A Central Role in CBME Implementation? (84)**

**Authors:**

Jessica Rich, Queen's University, Kingston, Canada  
Andrew Hall, Queen's University, Kingston, Canada

**Presenter(s):** Jessica Rich, Queen's University, Canada

**Abstract:**

Background: Preceptors have long played an important role in monitoring and advising postgraduate medical trainees with regards to progress in programs of training. Although "Academic Advisors" are not a role defined or required in many Competency Based Medical Education (CBME) initiatives, many institutions and programs are considering using this approach. This session will examine the utility of Academic Advisors within a competency-based postgraduate medicine program's system of training, assessment, and progression.

Questions: In planning for implementation of CBME, institutions and post-graduate training program leadership are asking: Are Academic Advisors worth the investment? What role do they play? How is their role different from faculty supervisors or the Program Director?

Discussion/Implications: Within a system of assessment, information about postgraduate trainees' performance is a form of knowledge. Knowledge is produced through interactions between trainees and those who observe, assess, and document their performance during practice. Assessments are a product of a transaction between people, at a particular point in time, within in a particular context, for a given purpose. When this knowledge is used by a Competence Committee, it is interpreted through the lens of those who will use the performance information for a different purpose (i.e., progress or promotion decisions) --which differs from the purpose in which the information was initially produced (i.e., to guide learning). Increasingly, formal roles are being created for individuals to function as knowledge brokers, who

actively work to bridge gaps in communication between communities of knowledge production and knowledge use. In this way, Academic Advisors broker knowledge between individual trainees and the Competence Committee.

Conclusions: Considering the ways in which faculty can function as dedicated knowledge brokers -- those who facilitate the creation, sharing, and use of postgraduate medical trainees' performance information-- can assist us in understanding the role and value of Academic Advisors within CBME.

**1445-1500**

**#D2.4 Implementing competency-based medical education: What changes in curricular structure and processes are needed? (97)**

**Authors:**

Peter Ferguson, Division of Orthopaedic Surgery, University of Toronto, Toronto, Ontario, Canada  
Kelly Caverzagie, University of Nebraska, Omaha, Nebraska, USA

**Presenter(s):** Markku Nousiainen, Division of Orthopaedic Surgery, University of Toronto, Canada

**Abstract:**

Medical educators must prepare for a number of challenges when they decide to implement a competency-based curriculum. Many of these challenges will pertain to three key aspects of implementation: organizing the structural changes that will be necessary to deliver new curricula and methods of assessment; modifying the processes of teaching and evaluation; and helping to change the culture of education so that the CBME paradigm gains acceptance. This "point of view" presentation will focus on nine key considerations that will support positive change in first two of these areas. Key considerations include: ensuring that educational continuity exists amongst all levels of medical education, altering how time is used in medical education, involving CBME in human health resources planning, ensuring that competent doctors work in competent health care systems, ensuring that information technology supports CBME, ensuring that faculty development is supported, ensuring that the rights and responsibilities of the learner are appropriately balanced in the workplace, preparing for the costs of change, and having appropriate leadership in order to achieve success in implementation

**1500-1515**

**#D2.5 Challenges and Solutions for Defining and Using Clinical Performance Measures for Trainees (22)**

**Authors:**

Daniel Schumacher, Cincinnati Children's Hospital Medical Center, USA  
Stefanie Sebok-Syer; Saad Chahine, University of Western Ontario, London, Canada  
Robyn Tamblyn, McGill University, Montreal, Canada  
Adina Kalet, New York University, New York, USA  
Robyn Tamblyn, McGill University, Montreal, Canada  
Kiki Lombarts, Amsterdam Medical Center, Amsterdam, Netherlands  
Cees van der Vleuten; Alina Smirnova, Maastricht University, Maastricht, Netherlands

**Presenter(s):** Daniel Schumacher, Cincinnati Children's Hospital Medical Center, USA

**Abstract:**

Background: Aligning trainees' clinical performance measures to patient outcomes is important in order to ensure safe high-quality patient care, provide trainees with meaningful performance assessments, and familiarize trainees with the performance improvement process.

Questions: To achieve these goals, we will explore:

- 1) What challenges exist in defining and implementing clinical performance measures?
- 2) What are potential solutions to overcome these challenges?

Discussion: Using clinical performance measures to assess trainees poses three main challenges: 1) identifying measures to accurately reflect trainees' performance, as traditional quality measures may not be sufficient; 2) capturing and extracting clinical performance measures from an electronic health record (EHR), which is not a common skillset in medical education; and 3) managing contextual, ethical, and legal challenges (e.g. data ownership, patient privacy issues, potential misuse of performance indicators) is tantamount.

Practical solutions can help address these challenges. First, we recommend using consensus group techniques to develop new measures that are "resident-sensitive" (Schumacher et al., 2017) and "educationally sensitive" intermediate patient outcomes (Kalet et al. 2010) as a starting point for defining relevant clinical performance measures. Second, we recommend using established statistical techniques to create cross-domain composite measures where differences between trainees explain a relatively large proportion in variance of the outcome measure(s) (Holmboe et al. 2010). Thirdly, we recommend using high quality EHR data and establishing proper assessment and feedback processes to ensure



the information is meaningful to trainees. Finally, we suggest that guidelines be established to reflect best practices for defining, extracting, and using EHR data for supporting trainees throughout medical training.

Conclusion: Clinical performance measures are a promising source of assessment data and can offer trainees meaningful feedback opportunities, focused on patient safety and high-quality of care. To optimize the use of such measures, operational challenges need to be addressed.

## #D3 Workshop: Changing Culture to Facilitate Competency-Based Medical Education Program Implementation (50)

Time: 1400-1515

Location: Helvetia 2, 1<sup>st</sup> Floor, Swissotel

### Presenter(s):

Reuben Eng, University of Calgary, Calgary, Canada  
Melinda Davis, University of Calgary, Calgary, Canada  
Michael Gysel, University of Calgary, Calgary, Canada  
Edward Choi, University of Calgary, Calgary, Canada  
Michael Gysel, University of Calgary, Calgary, Canada  
Nadine Lam, University of Calgary, Calgary, Canada  
Jolanta Karpinski, Royal College of Physicians and Surgeons of Canada, Ottawa, Canada

### Abstract:

Culture is a tremendously important aspect to consider as part of the implementation of any new initiative. As residency training programs begin implementing Competency-Based Medical Education (CBME) programs, change leaders may focus primarily on the practical and procedural aspects of their new programs without due consideration for the cultural barriers and enablers that contribute to the success or failure of their program.

The University of Calgary's Anesthesiology Residency Training Program, as part of the Royal College of Physicians and Surgeons of Canada's (RCPSC) first cohort of Competence by Design (CBD) residency programs, introduced CBD in 2017. Over the course of several years prior, our program identified and modified the following three cultural domains in order to facilitate and optimize the implementation of CBD in our residency program:

1. sense of belonging to a team and organization;
2. structure of responsibility; and
3. communication goals and tools.

This workshop will provide participants the opportunity to reflect on the impact of culture on their CBME program implementation plans, and to formulate strategies to overcome cultural barriers and optimize cultural enablers. The objectives of this workshop are:

1. describe the culture changes needed to implement CBME;
2. discuss initiatives to change program culture; and
3. establish a framework for participants to apply in their home programs to initiate and/or promote a change in culture.

It is our desire that the lessons we learned over the past several years of CBD preparation and implementation will contribute to the efficiency and efficacy of CBD and CBME implementation programs around the world.

## #D4 Workshop: Curriculum Mapping: Just tell me how to do it! (66)

Time: 1400-1515

Location: Wettstein, 2<sup>nd</sup> Floor, Swissotel

### Presenter(s):

Joan Binnendyk, Western University, London, Canada  
Shannon Venance, Western University, London, Canada  
Tim Dube, McGill University, Montreal, Canada

### Abstract:

With the global movement toward competency-based medical education (CBME), The Royal College of Physicians and Surgeons of Canada (RCPSC) embarked on the implementation of their Competence by Design (CBD) hybrid model for residency training in 2016. Specialty Committees establish national program-specific Entrustable Professional Activities (EPAs), Milestones, and training experiences to guide the transition to CBME. However, there has been an expressed need by residency programs for assistance with curriculum mapping since the responsibility resides within each program. Curriculum mapping is an accreditation standard in Canada, and its primary function is to develop a comprehensive roadmap of the curriculum that facilitates residents' competency development. It is also a form of program evaluation which can lead to improvements regarding the quality of a residency program.

This session will provide a stepwise approach to curriculum mapping that translates across countries, institutions and programs regardless of their readiness stage for CBME implementation. This method is being used with Canadian residency programs in advance of final document availability and lends itself to efficient completion once the final EPAs and Milestones become available.

This interactive session will provide game-based learning opportunities to analyze challenges with, and facilitate problem solving around, curriculum mapping. Through small-group discussion, an analytical approach to curriculum mapping detects gaps in training experiences, and identifies the need for early communication with other programs to avoid scheduling and service conflicts.

This session will demonstrate to Program Directors, CBME Leads, Faculty, and Educationalists, practical methods to linking curricular elements including EPAs, Milestones, and assessment tools to training experiences so that participants leave with a tangible, applicable approach that can be readily implemented in their home programs. Important lessons learned and strategies will be shared in terms of developing a roadmap to effectively orient residents and faculty to the competencies, and the pathways toward achieving them.

## **#D5 Workshop: Program Evaluation on the Frontline of CBME: How to Use Rapid Cycle Evaluation to Developmentally Evaluate CBME Implementation at the Program Level (146)**

Time: 1400-1515

Location: Helvetia 7, 1<sup>st</sup> Floor, Swissotel

### **Presenter(s):**

Andrew K. Hall, Queen's University, Kingston, Canada  
Jessica Rich, Queen's University, Kingston, Canada  
J. Damon Dagnone, Queen's University, Kingston, Canada  
Kristen Weersink, Queen's University, Kingston, Canada  
Jaelyn Caudle, Queen's University, Kingston, Canada  
Elaine Van Melle, Queen's University, Kingston, Canada

### **Abstract:**

Effective adoption of CBME depends on systematic efforts to document and evaluate the strengths and challenges of early implementation efforts. In this session, we will introduce front-line faculty, residents, program leaders and administrators to the intersections of evaluation theory and practice. Using a practical illustration from our own experience with early implementation of the Royal College of Physicians and Surgeons of Canada Competence By Design (CBD) model in the Emergency Medicine postgraduate training program at Queen's University, we will present a front-line perspective on developmentally evaluating CBME implementation using Rapid Cycle Evaluation (RCE) and the Core Components Framework (CCF): Framework, Progression, Tailored Experiences, Competency-Focused Instruction, and Programmatic Assessment. This session is designed for beginners who are new to the field of program evaluation, as well as intermediates who are looking to apply their knowledge in practice.

## **COFFEE BREAK**

Time: 1515-1545

Location: 3<sup>rd</sup> Floor Foyer, CCB

## **#E PLENARY 2**

Time: 1545-1715

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

### **#E1 Plenary: International Flair: Addressing cultural influences, differences and perspectives**

Chairperson: To be advised

Presenters: Fremen Chou (Taiwan), Elian Claudia de Otero Riberio (Brazil), Maitham Hussein (Kuwait)

## **EVENING RECEPTION**

Time: 1730-1930

Location: 3<sup>rd</sup> Floor Foyer, CCB

**Saturday, August 25, 2018**

**#F PLENARY 3**

Time: 0800-0915

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

**#F1.1 Opening Remarks**

Time: 0800-0810

Presenter: Jason Frank (Canada)

**#F1.2 Plenary: Challenges and Cautions**

Chairperson:

Time: 0810-0915

Presenter: Rachel Ellaway (Canada)

**COFFEE BREAK**

Time: 0915-0945

Location: 3<sup>rd</sup> Floor Foyer, CCB

**0945-1100 #G SIMULTANEOUS SESSIONS**

**#G1 World Café: A Method for Exploring the Frontiers of CBME**

Host: Robert Englander

Time: 0945-1100

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

**#G2 Oral Research: Teaching and Learning in CBME**

Chairperson:

Time: 0945-1100

Location: Helvetia 1, 1<sup>st</sup> Floor, Swissotel

**0945-1000**

**#G2.1 Beyond hands-on and hands-off: A model of supervisory approaches on the inpatient ward (16)**

**Authors:**

Andrea Gingerich, Northern Medical Program, Prince George, Canada

Vijay Daniels, University of Alberta, Edmonton, Canada

Sharla-Rae Olsen, Northern Medical Program, Prince George, Canada

Laura Farrell, Island Medical Program, Victoria, Canada

Sharla-Rae Olsen, Northern Medical Program, Prince George, Canada

Tara Kennedy, Dalhousie University, Fredericton, Canada

Rose Hatala, Vancouver Fraser Medical Program, Vancouver, Canada

**Presenter(s):** Andrea Gingerich, Northern Medical Program-University of Northern British Columbia, Canada

**Abstract:**

**Introduction:** The concept of entrustment was initially described for procedural specialties and has garnered significant attention in medical specialties, despite variability in supervision styles and entrustment decisions. There is a need to further study the enactment of supervision on inpatient wards to inform competency-based assessment design.

**Methods:** Attending physicians on clinical teaching inpatient wards were invited to describe a recent moment of enacting supervision with an internal medicine resident. Constructivist grounded theory guided data collection and analysis.

**Interview transcripts** were analysed in iterative cycles to inform data collection. Constant comparison was used to build a theory of supervision from the identified themes.

**Results:** In 2016-17, 23 supervisors from 2 Canadian universities participated in 28 semi-structured interviews. Supervisors contend with the competing roles of clinical teacher and care provider. Supervisors may feel personal responsibility for the ward (resulting in hands-on approaches) or shared responsibility for the ward (resulting in hands-off approaches). The

Approaches to Clinical Supervision model combines these two tensions to explain four approaches to supervision. The two hands-on approaches are “micromanaging” delivery of care that prioritizes patient safety and “scaffolding experiences” for learning guidance that prioritizes learner welfare. The two hands-off approaches are a “divide and conquer” delivery of care prioritizing ward efficiency and a “pearls of wisdom” approach to clinical guidance that prioritizes learner autonomy. Conclusions: Our study emphasizes that medical inpatient clinical supervision is predominantly performed through indirect observation, that the use of the word ‘trust’ by supervisors is infrequent and that the granting of complete entrustment is uncommon. The supervisor’s approach to supervision is influenced by competing tensions around patient safety vs. learning and personal vs. shared responsibility for patient care. Thus, entrustability assessment approaches will need to contend with entrustment decisions being based on more than a unidimensional judgment of a trainee’s competence.

## 1000-1015

### #G2.2 Developing a Model for Attributing Care to Individual Residents on Inpatient Ward Teams (9)

#### Authors:

Daniel J. Schumacher, Cincinnati Children's Hospital Medical Center, Cincinnati, USA  
Danny T.Y. Wu, University of Cincinnati, Cincinnati, USA  
Lezhi Li, University of Cincinnati, Cincinnati, USA  
Karthikeyan Meganathan, University of Cincinnati, Cincinnati, USA  
Lezhi Li, University of Cincinnati, Cincinnati, USA  
Benjamin Kinnear; Dana Sall; Matthew Kelleher, University of Cincinnati, Cincinnati, USA  
Eric Warm, University of Cincinnati, Cincinnati, USA

**Presenter(s):** Daniel Schumacher, Cincinnati Children's Hospital Medical Center, USA

#### Abstract:

**Background:** Workplace-based assessment can capitalize on performance data extracted from electronic health records (EHRs). Determining data attribution to individual residents is fundamental to this effort. This study developed a computerized model to identify primary residents caring for hospitalized general medicine patients.  
**Methods:** Gold standard data with patient encounters and primary residents were manually recorded daily by two attending physicians of record at University of Cincinnati Medical Center in August 2017. Data was recorded each day, and a given resident could be recorded for multiple days. The following variables were explored to determine representation of primary resident involvement in care: 1) writing progress notes, 2) writing discharge summaries, 3) placing orders, and 4) logging clicks in the patient record. These behaviors were turned into quantitative attributes (e.g. `is_progress_note_writer`: yes/no) and informative attributes were selected to build decision tree models. The decision tree algorithm was implemented by R “party” library. The performance of the models was determined by sensitivity and specificity.  
**Results:** 40/49 daily patient encounters had a primary resident recorded. These encounters had care provided by 54 unique residents, 19 of whom were primary for at least one day. Considering daily encounters, this yielded 40 daily primary residents and 868 instances of daily “other residents” in the encounters. The best decision tree model identified primary residents based on progress note authorship, order placement, and residents’ training level. This model generated 36 records of potential primary residents, with 31 true positives (sensitivity:  $31/40=77.5\%$ ) and 5 false positives. This model also regarded 823 records as true negatives (residents were not primary on a date even though they had some involvement), resulting in a true negative rate of 94.82% (specificity:  $823/868$ ).  
**Conclusion:** Our model of primary resident attribution based on behaviors in the EHR demonstrates a high level of specificity.

## 1015-1030

### #G2.3 Using Longitudinal Milestones Data to Facilitate Outcomes-Based Feedback at the Program Level (49)

#### Authors:

Eric S. Holmboe, ACGME, Chicago, USA  
Kenji Yamazaki, ACGME, Chicago, USA  
Stanley J. Hamstra, ACGME, Chicago, USA

**Presenter(s):** Eric Holmboe, ACGME, USA

#### Abstract:

**Purpose:** Residents in post-graduate training programs in the United States are assessed by clinical competency committees every six months using specialty specific Milestones across a set of subcompetencies. Milestones are narratives describing five levels of professional development, with level 4 (i.e. proficient, unsupervised care) a recommended target for graduation. We investigated whether specific patterns of development based on Milestones are predictive of level 4 attainment in emergency medicine (EM) and internal medicine (IM).

**Methods:** Residents receive six Milestones assessments during these three year programs. Using the first five Milestone assessments, we calculated the odds ratio (OR) of a resident not achieving level 4 on the final Milestone assessment for each of three patterns: a) unchanged Milestone assessment, less than level 4, over three consecutive assessments (i.e. plateauing); b) any Milestone assessment lower than the previous assessments (i.e. regression); c) any Milestone rating level  $\leq 2.5$  with one year remaining in the program.

**Results:** 1340 EM residents (100%) and 7072 IM residents (98%) completed all six Milestone assessments. All three patterns demonstrated statistically significant higher ORs a resident would not achieve level 4 by time of graduation. The strongest predictor was a rating of  $\leq 2.5$  at the end of their PGY-2 year. The range of ORs for this pattern was 2.5 to 8.9 for EM (23 subcompetencies) and 2.5 to 8.2 for IM (22 subcompetencies) in not achieving level 4. For plateauing, the ORs ranged from 1.0 to 2.3 for EM and 1.3 to 2.2 for IM. For the regression pattern, the ORs ranged from 1.2 to 2.4 for EM and 1.4 to 2.5 for IM.

**Conclusions:** Specific patterns of assessments using longitudinal Milestone assessment data can be used by programs as feedback to identify residents at risk for not achieving recommended goals at graduation on specific competencies.

## 1030-1045

### #G2.4 Exploring how the new entrustable professional activity assessment tools affect the quality of feedback given to Medical Oncology residents (62)

#### Authors:

Nazik Hammad, Queen's University, Kingston, Canada  
Anna Tomiak, Queen's University, Kingston, Canada  
Nancy Dalgarno, Queen's University, Kingston, Canada  
Rylan Egan, Queen's University, Kingston, Canada  
Nancy Dalgarno, Queen's University, Kingston, Canada  
Heather Braund, Queen's University, Kingston, Canada  
Mary-Anne Reid, Michigan State University, East Lansing, USA  
Jeffrey Emack, Queen's University, Kingston, Canada

**Presenter(s):** Nazik Hammad, Queen's University, Kingston, Canada

#### Abstract:

**Background:** Competency-based medical education (CBME) assessment tools are designed to support residents' development. Our Medical Oncology training program completed a pilot study of six competency-based assessment tools in preparation for their July 1, 2017 CBME implementation.

**Research Question:** To what extent are the entrustable professional activity (EPA) assessment tools effective in providing quality feedback to Medical Oncology residents?

**Methods:** Using a sequential explanatory mixed-method design, data was collected from four of six workplace-based assessment tools (WBA) (n=17), a resident focus group (FG) (n=4) and physician interviews (n=5). Data was analyzed using a quality feedback framework developed by the research team and thematic design.

**Results:** The WBA data indicated that the overall rating of EPA achievement was 71% "Achieved" and 29% "In progress". Quantifiable written feedback was included in 88% of assessments, of these 33% provided actionable feedback and 20% offered next steps. Six overarching themes emerged from the data: quality feedback was viewed as timely, specific and actionable; verbal feedback was preferred over written; the importance of written feedback was acknowledged; the competency-based assessment process was conceptualized as coaching in a low-stakes, rather than high stakes, assessment environment; clarification about using the WBA tools was needed; and there were logistical concerns surrounding the WBA tools.

**Conclusions:** Despite a shared understanding of quality feedback, greater emphasis is needed to ensure that the documentation of actionable feedback takes place to encourage professional growth. Faculty development, and other procedural and structural changes are critical for stakeholder's explicit understanding of the assessment tools utilization, and application in supporting and documenting the developmental acquisition of competencies. Adopting WBAs is supported with the belief that specific adjustments will be required, but not known until full implementation has occurred.

## 1045-1100

### #G2.5 A Scoping Review to Explore Theoretical Perspectives and Frameworks used for CanMEDs-informed Self-Directed Learning Activities in Continuing Professional Development (113)

#### Authors:

Francesca Luconi, McGill University, Montreal, Canada  
Danielle Naumann, Queen's University, Kingston, Canada  
Laura McDiarmid, Queen's University, Kingston, Canada  
Bettina Habib, McGill University, Montreal, Canada  
Laura McDiarmid, Queen's University, Kingston, Canada

Karen Smith, Queen's University, Kingston, Canada  
Simon Kitto, Ottawa's University, Ottawa, Canada

**Presenter(s):** Francesca Luconi, McGill University, Canada

**Abstract:**

**Background:** The CanMEDS 2015 competency-based medical education model is now being explicitly connected to continuing professional development (CPD) in Canada. This represents a shift from a traditional participatory and externally-directed system, to a self-directed learning (SDL) system founded on active engagement in self-assessment of learning needs related to clinical practice and specialty interests. However, despite widespread promotion of SDL in CPD for practicing physicians, there is a poor understanding of the theoretical frameworks associated with CanMEDS-informed SDL activities.

**Research questions:** What theoretical perspectives and frameworks are used in CanMEDS-informed SDL activities? What, if any, are the trends in the deployment and evaluation of SDL interventions related to each CanMEDS role?

**Methods:** A 6-stage scoping review was conducted on research (English language) involving physicians and residents published between 2005-2015 across eight databases, using SDL and self-regulation interchangeably. Non-research and review articles were excluded. An expert interdisciplinary panel of stakeholders was systematically consulted throughout.

**Results:** Preliminary analysis yielded 65 articles; collaborative analysis reduced the sample to 10. Only one intervention was classified as Can-MEDS-informed. No clear trends were identified due to limited data methods of deployment and evaluation and variability of SDL terminology. Theories were not explicitly articulated, but inferred from andragogy, self-regulation, metacognition, socio-constructivism, situated cognition and competency-based education.

**Instructional tools included:** reflection in-on practice environments; online self-tutorial programs; hands-on procedural skills; learner-centered simulation including media; unstructured SDL with no formal teaching; resources for self-assessment and feedback. Results match integrative methods and models of supporting self-regulation (informed self-assessment, facilitated reflection, directed self-guided learning, guided self-audit).

**Conclusions:** This review identified gaps on theoretical perspectives on SDL and competency-based frameworks in medical education. These gaps represent significant limitations in current approaches to SDL within CPD. To enhance effectiveness of CanMEDS-informed SDL activities, theory must guide all stages of development and evaluation.

## #G3 Oral Innovations and Lessons Learned: Assessment II

Chairperson:

Time: 0945-1100

Location: Helvetia 2, 1<sup>st</sup> Floor, Swissotel

### 0945-1000

#### #G3.1 Competency-based assessment that works: Evaluation data from the Competency-Based Achievement System (CBAS) (154)

**Authors:**

Shelley Ross, University of Alberta, Edmonton, Canada  
Deena Hamza, University of Alberta, Edmonton, Canada  
Paul Humphries, University of Alberta, Edmonton, Canada  
Shirley Schipper, University of Alberta, Edmonton, Canada  
Paul Humphries, University of Alberta, Edmonton, Canada  
Mirella Chiodo, University of Alberta, Edmonton, Canada  
Mike Donoff, University of Alberta, Edmonton, Canada

**Presenter(s):** Deena Hamza, University of Alberta, Canada

**Abstract:**

**Background:** In 2009, in anticipation of changes to competency-based medical education (CBME) at the national level among accrediting bodies, our program developed and piloted a competency-based teaching and assessment framework founded in the concept of "assessment for learning". The Competency-Based Achievement System (CBAS) is a programmatic assessment approach that uses continuous formative feedback to inform summative assessment.

Assessment in CBAS is not unidirectional: both preceptor and resident review cumulative low stakes assessment evidence of the resident's demonstrated competence across a variety of clinical settings, and come to a mutual understanding of the strengths and gaps of the resident. CBAS is designed to facilitate student-centered learning by providing tools for accurate guided self-assessment. CBAS was fully implemented in 2010, and program evaluation data has been continuously collected.

**Research question:** To what extent is CBAS an effective tool to measure resident progress towards competence?



Methods: Mixed methods design. Quantitative data (assessment information in resident files post-CBAS 2010-2016 (n=489), and pre-CBAS 2005-2008 (n= 257)) was elaborated upon and clarified by qualitative data (focus groups and interviews with preceptors (n=22), residents (n= 78), and program directors (n=4)). Analysis: Descriptive statistics for quantitative data; constant comparison for qualitative data; all data and results integrated for triangulation and interpretation using Kane's framework of validity.

Key findings: Residents encountering difficulty identified and helped earlier, reducing incidences of multiple flags with no documentation of addressing issues (48.0% of such residents Pre-CBAS (95% CI: 39.0-57.5%); 16.9% Post-CBAS (95% CI: 8.5-25.3%); 0 incidences 2015 and 2016). Tools allowed for documentation of resident progress towards competence, and better differentiation between junior and senior learners (~14% increase in expert ratings of competence across the two years of training). Program directors reported more confidence in the rigour and trustworthiness of assessment.

Conclusions: CBAS shows evidence of being a trustworthy system for competency-based assessment.

## 1000-1015

### #G3.2 Development of an Assessment Program to Support Self-Regulated, Mastery Learning (101)

#### Authors:

Duncan Henry, University of California San Francisco, San Francisco, USA  
Ellen Laves, University of California San Francisco, San Francisco, USA  
Daniel West, University of California San Francisco, San Francisco, USA  
Christy Boscardin, University of California San Francisco, San Francisco, USA  
Daniel West, University of California San Francisco, San Francisco, USA

**Presenter(s):** Duncan Henry, University of California San Francisco, USA

#### Abstract:

**Background:** Assessment programs are a critical element of competency-based medical education (CBME); however, they may not necessarily encourage highly valued self-regulated, mastery learning behaviors. Assessment frameworks utilizing Entrustable Professional Activities (EPAs) could fill this gap. We sought to develop an EPA-based assessment program for pediatric residents in the clinical workplace to encourage self-regulated learning while informing competency decisions.

**Summary of Work:** We created assessment forms for a subset of the 17 Pediatric EPAs developed by the American Board of Pediatrics. Forms included three domains: (1) frequency of observable behaviors; (2) rating for level of entrustment/supervision; and (3) free-text comments to provide rationale behind supervisor's entrustment rating and next steps for advancement in entrustment level. We designed assessments to be co-completed by supervisor and resident using an electronic, mobile-accessible platform. After training supervisors and residents, we implemented the program over a 6-month period using a rapid-cycle iterative process (e.g. implementation, feedback, revision) to maximize feasibility and acceptability.

**Summary of Results:** We developed EPA-assessment forms for 8 of 17 EPAs. We implemented the program in 50% of our clinical training environments. Residents averaged 5 assessments (mean 5 [SD 4.2; range 0-27]). Feedback from supervisors and residents indicated the assessment system was easier to complete, occurred in a timelier manner, and provided more actionable feedback than our prior assessment system. Faculty and residents identified challenges in initiating assessments and adopting an attitude for low-stakes formative assessment.

**Discussion and Conclusion:** Preliminary evidence suggests that implementation of an EPA-based assessment program is feasible and may provide contextualized feedback to trainees. Logistical issues including initiating assessments as well as adapting to a high frequency, low-stakes system present challenges.

**Take-home Message:** EPA-based assessments in the clinical learning environment are feasible, acceptable, and may provide a more intuitive framework for supervisors and trainees to engage in feedback.

## 1015-1030

### #G3.3 Clinical Encounter Assessment: A daily competency-based workplace-based assessment tool for anesthesiology trainees (103)

#### Authors:

Rebecca Dube, SickKids Hospital, Toronto, Canada  
Clyde Matava, SickKids Hospital, Toronto, Canada  
Lisa Bahrey, Toronto General Hospital, Toronto, Canada  
Alayne Kealey, Sunnybrook Hospital, Toronto, Canada  
Lisa Bahrey, Toronto General Hospital, Toronto, Canada

**Presenter(s):** Rebecca Dube, SickKids Hospital, Canada

#### Abstract:

Workplace-based assessment is central to outcome-based medical education. In postgraduate anesthesiology training, where residents work with different supervisors each day, a daily evaluation tool is commonly employed. Our program created the clinical encounter assessment (CEA), a daily workplace-based assessment tool designed to reflect increasing resident independence and competence. The scale of the CEA is based on the extent to which the faculty trusts the resident to independently manage various case elements. We sought to identify whether the CEA tool captured increasing independence across increasing post-graduate training years, and to identify factors that would predict high evaluations for practice independence.

We retrospectively examined interim CEA assessment data for anesthesiology trainees of all training levels obtained from July 1, 2017 to October 1, 2017. Univariate and multivariate analyses were used to identify factors and a model predicting overall independence. A  $P < 0.05$  was taken as significant.

The median overall level of independence of trainees increased from “DIRECTION: Required some guidance and/or coaching for this case” in PGY1 to “AUTONOMOUS: Did not require coaching or guidance for this case” in PGY5. Regression analysis demonstrated that trainee overall level of independence was correlated with post-graduate training year ( $R^2 = 0.18$ ,  $p < 0.05$ ). After adjusting for site, on call status and case complexity, trainee performance in the “Patient assessment” ( $P = 0.01$ ) and “Critical thinking, insight and judgement” ( $P = 0.03$ ) domains predicted trainee overall level of independence ( $R^2 = 0.87$ ). Anesthesia plan creation ( $P = 0.07$ ) trended towards predicting trainee overall level of independence but was not statistically significant.

The CEA assessment tool captures increasing anesthesia trainee independence with progression through post-graduate training years. We identified that resident performance in two domains, “Patient assessment” and “Critical thinking, insight and judgement” correlate with a trainee’s overall level of independence.

## 1030-1045

### #G3.4 Development of a comprehensive assessment framework to enhance feedback provision (26)

#### Authors:

Portia Kalun, McMaster University, Hamilton, Canada  
Jennifer Zering, McMaster University, Hamilton, Canada  
Nathan Cupido, McMaster University, Hamilton, Canada  
Natalie Wagner, McMaster University, Hamilton, Canada  
Nathan Cupido, McMaster University, Hamilton, Canada  
Bradley Petrisor, McMaster University, Hamilton, Canada  
Ranil Sonnadara, McMaster University, Hamilton, Canada

**Presenter(s):** Portia Kalun, McMaster University, Canada

#### Abstract:

**Background:** Competency-based medical education requires a robust, comprehensive assessment framework. This includes frequent, formative assessments to provide valuable feedback and a clear understanding of trainee progress. To avoid placing an untenable burden on faculty, programs must optimize methods for implementing this assessment framework.

**Purpose:** We developed a workplace-based assessment framework that targets specific competencies in a Canadian orthopedic surgery training program. The goal of the framework is to assess trainees on skills deemed essential for independent practice, using tools that help faculty provide accurate performance assessments.

**Interventions:** We developed 24 assessment tools; each tool contained a task-specific checklist and a global rating scale (GRS). These tools were piloted in a paper-based format. Construct validity was examined by comparing performance of residents across different levels of training. Inter-rater reliability was explored for a subset of the tools using videos of resident performance. Each video was independently rated by four evaluators.

**Results/applications:** The assessment tools were able to discriminate between post-graduate year on both the checklist ( $\chi^2(4) = 10.14$ ,  $p < 0.05$ ) and GRS ( $\chi^2(4) = 14.11$ ,  $p < 0.01$ ). The subset of tools also demonstrated moderate to high inter-rater reliability, with ICC values ranging from 0.63 to 0.91. We are now piloting the framework using an online/phone application. We are developing software that will amalgamate the data from the assessment tools and provide real-time metrics to faculty and trainees.

**Future directions:** To ensure robust measurement of trainee progress, we will compare the validity and reliability of the tools on the online platform to that of the paper-based tools. We will also compare different options for presenting the data, pinpointing the most useful and meaningful performance analytics to display. Through the use of this comprehensive framework on an online platform, we hope to reduce the burden of assessment on faculty whilst also improving the quality of feedback provided to trainees.

1045-1100

#G3.5 MCC 360: A national multi-source feedback program in the world of CBME (160)

**Authors:**

Marguerite Roy  
Cindy Streefkerk  
Joan Sargeant  
Jocelyn Lockyer  
Joan Sargeant

**Presenter(s):** Marguerite Roy, MCC, Canada

**Abstract:**

As the field of medicine moves towards adopting a competency-based approach to education and continuous practice improvement, we rely increasingly on implementing a system of continuous and comprehensive assessments and feedback. This reliance on assessment for learning highlights the central role that feedback plays as a driver for learning and development across the educational continuum, extending out into practice

In line with this shift, the Medical Council of Canada (MCC) has collaborated with multiple organizations across Canada to develop a national multi-source feedback (MSF) program called MCC 360. MCC 360 provides physicians with quantitative feedback around collaboration, communication, and professional behaviours from a group of nominated physician colleagues, other co-workers and patients as well as self-evaluation data collected through ratings made across a series of survey statements. In addition, physician colleagues, other co-workers and patients are able to provide the physician with narrative comments. Ratings and comments are aggregated, anonymized, and fed back to physicians in a personal report. The report summarizes data in multiple formats, encourages reflection, and the creation of a plan for improvement, including identification of relevant CPD resources. The MCC 360 program recommends that physicians undergoing the process review their reports with a trained facilitator to support data interpretation, feedback reception, reflection, and action planning.

Importantly, the behaviours for feedback that are targeted by MCC 360 overlap with those that are predictive of patient satisfaction and complaints. These areas are often difficult to assess via other point in time type assessments but are well suited to an MSF.

Results: MCC 360 is currently being piloted with 1000 Family Medicine physicians in Alberta. Results of narrative comments will be discussed.

Future Directions: There are plans underway to expand the program and adapt the tools for undergraduate and postgraduate students.

## #G4 Workshop: Competency-Based Handovers to Graduate Medical Education: A Framework to Bridge the Transition (134)

Time: 0945-1100

Location: Wettstein, 2<sup>nd</sup> Floor, Swissotel

**Presenter(s):**

Holly Caretta-Weyer, Oregon Health & Science University, Portland, USA

**Abstract:**

Residency program directors have increasingly expressed concerns that many medical school graduates are unprepared for many of the patient care responsibilities expected of them upon entering residency. In response to this, medical education systems around the world have moved toward a competency-based, time-independent approach to training students and residents. In the United States, those in undergraduate medical education (UME) have begun to adopt the Association of American Medical Colleges (AAMC) Core Entrustable Professional Activities (EPAs) for Entering Residency as part of this paradigm. Some specialties have initiated the development of specialty-specific EPAs; however, the majority of graduate medical education (GME) programs continue to use milestones for reporting competency achievement of residents to the (ACGME) on a biannual basis. This makes handovers from the undergraduate to the graduate phase of medical education a potential minefield for discontinuity and misunderstanding of a learner's knowledge and abilities as they enter residency training as this information either is not fed forward at all or not provided in way that the GME program feels they can use. This session is designed to discuss different methods of learner handovers from UME to GME that have been implemented using the competency-based framework, and what we can do to improve the utility and impact of these handovers in the future for those in GME. As part of this workshop, we hope to facilitate an open dialogue among those on both the UME and GME side of these handovers in order to delineate the timing, methods, content, and developmental use of these handovers to maximize the developmental trajectory of our learners throughout the entire continuum of their medical education. We will also discuss the potential role of coaches and individual learning plans as part of optimizing these handovers.

## #G5 Workshop: An Introduction to CBME

Time: 0945-1100

Location: Helvetia 7, 1<sup>st</sup> Floor, Swissotel

**Presenters:** Jason Frank, Canada

**Abstract:**

Awaited

## 1100-1115 COMFORT BREAK AND TRANSFER TO NEXT SESSION

## 1115-1230 #H SIMULTANEOUS SESSIONS

### #H1 Oral Research: Outcomes / Program Evaluation

Chairperson:

Time: 1115-1230

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

#### 1115-1130

#### #H1.1 Using quality-of-care clinical data as an indicator for comparing outcomes from different Family Medicine residency training programs in Canada; a pilot study (12)

**Authors:**

Kathleen Moncrieff, University of Calgary, Calgary, Canada

**Presenter(s):** Keith Wycliffe-Jones, University of Calgary, Canada

**Abstract:**

Background: There is limited information about how family medicine (FM) residency training influences the quality of care provided by graduates in practice. Studies in American obstetrics have shown graduates from higher quality programs have lower maternal mortality rates. Clinical outcomes are more complex in FM, involving variables more difficult to measure than mortality and complication rates, but indicators have been developed in the UK for general practice quality-of-care data gathering and analysis.

The Canadian Primary Care Surveillance Network (CPCSSN) gathers similar quality indicator data from over 700 "sentinel" Canadian family physicians. This provides quality-improvement information to the sentinels and is also a potential source of information back to the FM residency training programs about the quality-of-care provided by their graduates.

Summary of Work: As a test of feasibility, the residency program of participating southern Alberta sentinels was identified. Quality indicator data were collected via CPCSSN for sentinels' patients with i) diabetes and ii) hypertension. Treatment targets from current Canadian practice guidelines were used to define quality benchmarks based on glycated hemoglobin (HbA1C) levels in patients with diabetes and blood pressure measurements for patients with hypertension. Data were compared based on residency training program (Calgary vs. non-Calgary).

Summary of Results: 72 sentinel physicians participated (35 Calgary and 37 non-Calgary graduates). Data from 14,808 patients were used, including 47,361 HbA1C levels and 182,875 blood-pressure measurements over a five-year period. No significant differences were found in the percentages of measurements that met the targets for the chosen quality indicators between the two groups.

Discussion and Conclusions: This pilot study confirms the feasibility of using a set of clinical data in measuring quality of care based on training program. Studies in other jurisdictions and studies including other potential variables would be possible where such data are available.

#### 1130-1145

#### #H1.2 Further Validation of a set of core EPAs as outcomes for an undergraduate medical curriculum (120)

**Authors:**

Ylva Holzhausen

Asja Maaz

Harm Peters

Yadira Roa Romero

Harm Peters

**Presenter(s):** Ylva Holzhausen, Charité-Universitätsmedizin Berlin, Germany

**Abstract:**

**Background:** The definition of Core EPAs as outcomes for undergraduate medical education clarifies the expectations for the graduates and may help to better prepare them for residency. A set of Core EPAs was developed in a Delphi study at our medical school, the Charité – Universitätsmedizin Berlin. To further validate these EPAs, we surveyed graduates of our program whether the defined set actually represent the tasks they are expected to perform at the beginning of their residency.

**Research question:** Does the defined set of Core EPAs represent the actual workplace expectation and practice for medical graduates when entering residency?

**Methods:** Graduates from the undergraduate medical curriculum were voluntarily surveyed in 2017. A questionnaire was sent by post three month after they finished their final exam. The questionnaire included the defined set of Core EPAs and surveyed how often graduates carried out each EPA since the start of residency and under which level of supervision (4-point-Likert scale).

**Results:** In total 71 students returned the questionnaire (response rate 28 %). 63 had started residency and could be included for data analysis (65 % female). The majority of residents (> 85%) had performed the EPAs since the start of residency. Upon performance, at least 70% of the residents were supervised either indirectly or distantly. Only one EPA (“Undertake an evidence-based patient case presentation”) was not performed by a notable percentage of residents (22%). However, 76 % of residents who performed this EPA were also supervised either indirectly or distantly.

**Conclusions:** This study provides further validation evidence that the defined set of Core EPAs represents the actual workplace expectation and practice for medical graduates when entering residency. The results also add to the concept that EPAs provide a useful framework to connect undergraduate with postgraduate medical training.

**1145-1200**

**#H1.3 Feeling Overwhelmed? Examining perceptions of CBME Graduates three years into practice (153)**

**Authors:**

Ivy Oandasan, College of Family Physicians of Canada, Mississauga, Canada

Lorelei Nardi, College of Family Physicians of Canada, Mississauga, Canada

on behalf of the College of Family Physicians of Canada Working Group for Survey Development (WGSD)

Dragan Kljucic, College of Family Physicians of Canada, Mississauga, Canada

on behalf of the College of Family Physicians of Canada Working Group for Survey Development (WGSD)

**Presenter(s):** Ivy Oandasan, College of Family Physicians of Canada, Canada

**Abstract:**

**Background:** The College of Family Physicians of Canada (CFPC) implemented the use of competency based medical education (CBME) across all family medicine (FM) residency programs in 2010. One key outcome was to produce self reflective life-long learners who identify & address areas of improvement. A resident survey was given at entry, at exit and 3 years into practice. **Research Question:** Do FM resident perceptions related to FM problem solving and identification of learning needs change after a residency CBME intervention? **Methods:** Inferential statistical analysis with Chi-squared test and confidence interval to test the null hypothesis were used on de-identified aggregate data of participating residents from 7 FM residency programs at the end of residency: T2–2013 FM Longitudinal Survey (FMLS) (n=392) and those who responded 3-years post graduation: T3-2016 FMLS (n=104) **Results:** 3 years post residency respondents reported a significant increase in their abilities to identify their learning needs (T2 90%, T3 98% p<0.01) and to problem solve effectively when faced with complex patient presentations (T2 77%, T3 92% p<0.01). However, respondents also reported increased feelings of being overwhelmed when dealing with these type of patients three years into practice. (T2 50%, T3 71% p<0.01). **Conclusions:** The first cohort of graduates from FM’s CBME Pan-Canadian residency intervention reported increased perceptions of their abilities to problem-solve and to identify their learning needs. This is reassuring with the introduction of CBME although long-term studies are needed. However, 3-years into practice respondents highlighted increased feelings of being overwhelmed when dealing with complex patients. In the context of CBME learning, it is interesting to note these feelings of being overwhelmed despite increased problem-solving skills and abilities to identify learning needs. More research is needed.

**1200-1215**

**H1.4 Highlights of a Three Year Longitudinal Study: CBME Implementation at Queen’s University (124)**

**Authors:**

Leslie Flynn, Queen's University, Kingston, Canada

Denise Stockley, Queen's University, Kingston, Canada

Amber Hastings-Truelove, Queen's University, Kingston, Canada

Alicia Hussain, Queen's University, Kingston, Canada

Amber Hastings-Truelove, Queen's University, Kingston, Canada  
Damon Dagnone, Queen's University, Kingston, Canada

**Presenter(s):** Denise Stockley, Queen's University, Canada

**Abstract:**

Background: For the first time at a Canadian institution, all postgraduate medical education programs at Queen's University transitioned to CBME in 2017. This three-year program evaluation (July 2015 to June 2018) examined the status of CBME identifying best practices required to build capacity for CBME implementation and ensuring sustainability.

Research questions:

- 1) How do we prepare programs for the adoption of CBME?
- 2) Are we implementing CBME as intended?
- 3) What strategies are required to sustain the adoption of CBME across the institution?
- 4) How has (or is) CBME contributing to changes in behaviours across all levels of the institution?

Methods (population, data collection and analysis methods): Using Concerns-based Adoption Model (CBAM), the 7S model (McKinsey, 1982) and the Multidisciplinary Model of Evaluation Capacity Building (Preskill & Boyle, 2008), we identified the current capacity and framework for CBME at Queen's. Preskill and Boyle's framework guided our evaluation team as we understood the data collection and analysis processes to be governed by sound leadership and open communication. Using Hall and Hord (2015) CBAM Levels of Use (LoU) interview protocol, three interview data sets were collected in years one (n=39), two (n=68), and three (n=68). Data sets included interviews with executive members of Queen's Faculty of Health Sciences, program directors, CBME leads, educational consultants, and residents. All interviews were transcribed.

Findings: Year 1 data point to participants' lowest level of use of CBME (i.e., Level III or less on LoU Chart), as the majority were in the very early stages of orienting themselves with CBME. Additionally, they highlighted the scarcity of protected time, money, and manpower allotted to implement CBME, and a concern that constantly arose was lack of buy-in. Year two and three data celebrated faculty buy-in, collaboration, and supports but there were still concerns about insufficient time and resident buy-in.

**1215-1230**

**#H1.5 Reliability and Validity Evidence for the Quality of Assessment for Learning (QuAL) score (83)**

**Authors:**

Teresa M. Chan, McMaster University, Hamilton, ON, Canada  
Stefanie Sebok-Syer, Western University, London, ON, Canada  
Sandra Monteiro, McMaster University, Hamilton, ON, Canada  
Christopher Sampson, University of Missouri, Columbia, MO, USA  
Sandra Monteiro, McMaster University, Hamilton, ON, Canada

**Presenter(s):** Sandra Monteiro, McMaster University, Canada

**Abstract:**

Introduction: In the age of competency-based medical education (CBME), short qualitative comments hold an important role on clarifying scores rendered by workplace observers. While daily comment cards have been effectively scored using the Completed Clinical Evaluation Report Rating (CCERR), it is a complicated score. Our objective in this study was to validate a newly derived 3-part score (the Quality of Assessment for Learning score) aimed to help discern between good and bad comments associated with single ratings.

Methods: A multi-centre rating study involving educators and trainees to evaluate 50 short qualitative comments associated with a single clinical performance score was conducted. Raters were randomized into two cohorts: One group used the CCERR, the other group used the QuAL score. We conducted a generalizability study (G-Study) to determine the reliability of the score, and a decision study (D-study) to the optimal number of raters required to achieve a highly reliable rating (target of  $\phi > 0.80$ ). Both scores were correlated with rater's gestalt impressions of utility for both faculty and residents reading the scores as a means of relating it to the present reference standard.

Results: 21 raters participated. The G-study revealed that the CCERR cohort (n=11) rated comments with a high reliability ( $\Phi = 0.94$ ). Meanwhile, the QuAL cohort (n=10) rated comments with a slightly higher reliability ( $\Phi = 0.95$ ). QuAL score required only 2 raters to reach the acceptable target reliability of  $> 0.80$ , the CCERR required 3. The QuAL score correlated highly with perceptions of each comment's utility for both faculty interpreters of the comment (Pearson's  $r = 0.69, p < 0.001$ ) and residents receiving the comments ( $r = 0.74, p < 0.001$ ). The CCERR performed similarly (faculty:  $r = 0.67, p < 0.001$ ; resident:  $r = 0.79, p < 0.001$ ).

Conclusion: The QuAL score is a reliable rating score that outperforms the CCERR. Both scores had high correlations with utility ratings for usefulness. The QuAL score may be more pragmatic for those rating short comments generated by workplace-based assessments in CBME contexts.



## #H2 Oral Innovations and Lessons Learned: Designing CBME / Teaching and Learning in CBME

Chairperson:

Time: 1115-1230

Location: Helvetia 1, 1<sup>st</sup> Floor, Swissotel

### 1115-1130

#### #H2.1 A process template for using EPAs for programmatic improvement (155)

##### Authors:

Paul Menard-Katcher

Courtney Bhat

Chad Stickrath

Gregory Austin

Chad Stickrath

Janet Corral

**Presenter(s):** Paul Menard-Katcher, University of Colorado, USA

##### Abstract:

**Background:** In 2014, 5 United States Gastroenterology (GI) societies released Entrustable Professional Activities (EPAs), to provide training programs a powerful tool in the transition to competency-based medical education (CBME). Very few GI EPA-based tools have been disseminated and no examples of GI EPA-based programmatic assessment exist. For the present study, we focused on GI EPA 13 (nutritional assessment and therapy implementation) as multiple studies have highlighted deficiencies in nutrition training in GI fellowship, and therefore identified a clear educational gap.

**Purpose:** To conduct a gap analysis regarding nutrition education using GI EPA 13, to guide curriculum development at a large University GI fellowship program.

**Interventions:** A survey to assess the adequacy of nutrition education was distributed to recent fellowship graduates in clinical practice (n=12). Respondents were asked to rate each GI EPA 13 component on a 5-point Likert scale with respect to importance to their practice.

**Results:** Of 11 respondents, 7 agreed/strongly agreed that nutrition is part of their practice and 7/11 felt that their nutrition training did not meet the needs of a practicing gastroenterologist. Furthermore, 10/11 agreed/strongly agreed that there was a need for standardized nutrition education within GI training. Regarding the 23 EPA components (knowledge/skills/attitudes), 3 were rated as being most important for clinical practice (mode = 5 on 1-5 scale) and 16 others were ranked important (mode = 4).

**Future Directions:** The EPA component survey will be repeated with nutrition experts in GI. These results will be triangulated with already identified education gaps and used in curriculum development. Thereafter, the remaining GI EPAs will be used to perform similar processes of program gap assessment and remediation, moving the program closer to CBME. Broadly, this work provides a roadmap for GI fellowships and training programs in other specialties to use EPAs in program assessment and curriculum development.

### 1130-1145

#### #H2.2 Designing a Milestone and Progress Grid to Illustrate Learner Performance in a Physician Assistant Program (8)

##### Authors:

Cathy Ruff, Rocky Vista University, Colorado, USA

Debra Nickell, Rocky Vista University, Colorado, USA

**Presenter(s):** Cathy Ruff, Rocky Vista University Physician Assistant Program, USA

##### Abstract:

**Background:** Physician Assistant training programs in the United States have just recently begun to examine how the use of entrustable professional activities and competency-based medical education may play a role in curriculum design and assessment. One developing program, however, has embraced CBME and structured the entire training program on its components. Additionally, the program has adapted a widely used pediatric developmental assessment tool to provide a visual representation of learner progression toward competence.

**Purpose:** The purpose of this poster is to outline the process of designing an assessment tool that clearly delineates learner expectations and illustrates learner performance within a competency-based curriculum.

**Interventions:** A competency-based medical program was developed following the steps as outlined by the Association of American Medical Colleges. The milestone literature was reviewed, consolidated, and adapted to suit the needs of a physician assistant training program. Expectations for learner progress were grounded in the 5-level milestone descriptors as designated by Dreyfus, and expanded to include learner goals, methods of instruction, primary assessment tools, and descriptors for approaching and meeting each goal. The milestones were illustrated to show the time by which learners

are expected to meet competency, paralleling the widely accepted Denver II Developmental Screening Test, and titled the Milestone and Progress© (MAP) grid. Competence was set at Level 3, based on the recommendations of Chen, et.al. Results/Applications: In anticipation of learner matriculation fall 2018, the MAP grid will be used to plot learner performance within each EPA over the course of the curriculum. This illustration will assist in identifying the time by which most learners reach each level of competence, potentially contributing to both the undergraduate and graduate medical literature.

Future Directions: The program will use the MAP to monitor learner outcomes, apply the findings to program evaluation, and determine adjustments to milestone benchmarks.

## 1145-1200

### #H2.3 Preparing Teachers for Competency-Based Medical Education: Fundamental Teaching Activities (23)

#### Authors:

Sudha Koppula, University of Alberta, Edmonton, Canada  
Viola Antao, University of Toronto, Toronto, Canada  
Miriam Boillat, McGill University, Montreal, Canada  
Cheri Bethune, College of Family Physicians of Canada, Mississauga, Canada  
Miriam Boillat, McGill University, Montreal, Canada  
Linda Snell, McGill University, Montreal, Canada  
Allyn Walsh, McMaster University, Hamilton, Canada

**Presenter(s):** Sudha Koppula, University of Alberta, Canada

#### Abstract:

Background: Competency based medical education (CBME) is being implemented widely in medical education. With this comes emphasis on direct observation of engaged learners, expectation of providing effective feedback and coaching, utilizing assessment strategies, and the development of new curricular models and programming. Medical educators require guidance and coaching to prepare for their essential roles in clinical and academic education of learners. The College of Family Physicians of Canada (CFPC) has developed a guide to the faculty development required, called The Fundamental Teaching Activities (FTA) Framework.

Summary: This tool provides a framework for medical educators as well as for those preparing them for the inherent tasks of CBME. The activities required of clinical preceptors, teachers outside clinical settings, and educational leaders are described across a developmental trajectory. Supporting resources for each of these teaching domains are available via the CFPC website.

Conclusion: The FTA Framework is being used to assess educators' needs, plan faculty development curricula, and to foster mentorship of educators in many Departments of Family Medicine across Canada. It holds promise as guidance for other medical education programs that may be in search of tools to prepare their teachers for competency based medical education.

## 1200-1215

### #H2.4 Implementing the Master Adaptive Learner Framework: Do Medical Students Demonstrate Lifelong Learning Skills? (118)

#### Authors:

Nicholas Iverson  
Alekest Quach  
Stephanie Kaner  
Patrick Yuan  
Stephanie Kaner  
Christy Boscardin

**Presenter(s):** Karen Hauer, University of California San Francisco, USA

#### Abstract:

Background: To develop lifelong learning skills, students need feedback, access to performance data, and coaching. Informed by self-regulated learning theory and the master adaptive learner framework, a new medical school curriculum incorporated infrastructural supports with an individual performance dashboard, longitudinal coaching relationship, and opportunities to reflect and set learning goals, to engage students in lifelong learning behaviors.

Research question: This study examines students' early experience with an innovative electronic performance dashboard, longitudinal coaching, and structured time for goal setting in a medical school curriculum.

Methods: We conducted 3 focus groups with 21 first-year medical students to explore performance dashboard usage, coaching and learning planning, and analyzed findings using content analysis. Results informed development of a 29-item

survey to investigate experience with the dashboard, coaching and learning goals program in the context of competency-based programmatic assessment. We calculated descriptive statistics and conducted factor analysis.

Results: 114 of 152 (75%) students completed the survey. Exploratory factor analysis yielded 5 factors characterizing self-regulated learning behaviors explaining 57% of the variance: 1) learning goals development ( $\alpha=.88$ ), 2) dashboard usage ( $\alpha=.82$ ), 3) coaching ( $\alpha=.71$ ), 4) employment of learning strategies ( $\alpha=.81$ ), and 5) reflection ( $\alpha=.63$ ). Highest correlation among the factors was between dashboard usage and employment of learning strategies ( $r=.31$ ). Survey results demonstrated that students perceive themselves as skilled lifelong learners, but are not optimally using the infrastructure to support their learning strategies, and are often unsure how to engage meaningfully in performance review with coaches. Conclusion: The student performance dashboard provides efficient feedback access, yet students vary in their use of this information to guide learning. They commonly viewed dashboard content to confirming their achievements rather than identify areas for growth. These results can inform other programs seeking to foster lifelong learning skills.

**1215-1230**

## **#H2.5 Competency-based Veterinary Education: The Future of Veterinary Medicine (159)**

### **Authors:**

Laura Molgaard, University of Minnesota, USA  
Jennie Hodgson, Virginia Tech, USA  
Kristin Chaney, Texas A&M University, USA  
Harold Bok, Utrecht University, Netherlands  
Kristin Chaney, Texas A&M University, USA  
Jan Ilkiw, University of California – Davis, USA  
Susan Matthew, Washington State University, USA  
Stephen May, Royal Veterinary College  
Emma Read, University of Calgary, Canada  
Bonnie Rush, Kansas State University, USA

### **Presenter(s):**

Laura Molgaard, University of Minnesota, USA  
Jennie Hodgson, Virginia Tech, USA

### **Abstract:**

Competency-based education (CBE) has been proposed as a model for medical education for over 40 years.<sup>1</sup> This approach focuses on outcomes-based and learner-centered education and assessment, increasing transparency and accountability to the public for the quality of their graduates.

While there are examples of veterinary schools with established competency-based programs, most veterinary academic institutions operate under a traditional model of education with the primary means of learner assessment being subjective faculty assessments in the clinical setting and sporadic assessments of competency in the pre-clinical program. There is a lack of shared language around competency-based education and accrediting organizations for veterinary schools globally vary in their requirements for evidence of competency-based outcomes. Overall there is a need for a modern, shared framework for competency-based veterinary education that is grounded in contemporary educational science literature and utilizes the experiences from colleagues in other health professions.<sup>2</sup>

**Purpose:** The aim of this initiative was to establish a set of competencies reflective of core expectations for all veterinary graduates, which could be adopted and adapted by programs in veterinary medicine world-wide. The creation and sharing of the competency-based veterinary education (CBVE) framework, with a common set of core competencies, Entrustable Professional Activities (EPAs) and assessments, would then unify veterinary educational programs through a common language.

**Results/applications:** The CBVE framework consists of 32 competencies grouped into nine domains of competence. The 32 competencies are considered core for veterinary education and are each supported by illustrative subcompetencies provided as examples of content that may be modified or refined by individual schools. Each EPA can be mapped to five to seven competencies that are critical in making an entrustment decision. This variety of assessment methodologies has an important role in the comprehensive assessment program of CBVE.

## **#H3 Workshop: Summative Entrustment Decision-Making: Ensuring Validity and Defensibility (69)**

Time: 1115-1230

Location: Helvetia 2, 1<sup>st</sup> Floor, Swissotel

### **Presenter(s):**

H. Carrie Chen, Georgetown University School of Medicine, Washington DC, USA

Claire Touchie, University of Ottawa Faculty of Medicine, Ottawa, Canada

Robert Englander, University of Minnesota Medical School, Minneapolis, USA

Reinier Hoff, University Medical Center Utrecht School of Medicine, Utrecht, Netherlands

Olle ten Cate, University Medical Center Utrecht School of Medicine, Utrecht, Netherlands

## Abstract:

**Brief Description:** Entrustable Professional Activities (EPAs) offer an approach to competency-based assessment in the clinical workplace. Within the EPA framework, assessment is based on entrustment decisions made about learners and their ability to safely complete patient care activities under appropriate levels of supervision. Entrustment as assessment includes the evaluation of learner qualities in 4 areas – Ability, Integrity, Reliability, and Humility, as well as a valuation of risk. As with any system of assessment, entrustment decisions need to be valid and defensible. This can be facilitated through a robust program of assessment and use of competency committees for summative decisions.

**Learning Objectives:** After workshop completion, participants will be able to:

- Explain the principles of entrustment as assessment
- Describe the qualities of learners that affect trust and entrustment decisions
- Discuss the programmatic nature of assessment and the role of clinical competency committees in summative entrustment decisions
- Discuss the validity and defensibility issues related to summative entrustment decision-making

**Workshop Methods:** The workshop will begin with an introduction to key concepts. Participants will first work in small groups to review mock learner files. Assuming the role of a Clinical Competency Committee, each small group will make a summative entrustment decision based on the file review. Then, participants will engage in a Committee of Appeal role play to challenge the entrustment decision made by one of the Clinical Competency Committees. The workshop will conclude with group discussion of the lessons learned and implications for implementation of entrustment as assessment.

**Time Schedule:**

15 minutes – Principles of entrustment as assessment (large group)

20 minutes – Summative entrustment decision-making by competency committees (small group)

15 minutes – Sharing of competency committee decisions, preparation for next exercise (large group)

30 minutes – Appeal of competency committee decision (large group role play)

10 minutes – Wrap-up (large group)

## #H4 Workshop: Resident Leadership in the Co-Production of Competency-based Medical Education (CBME) (119)

Time: 1115-1230

Location: Helvetia 7, 1<sup>st</sup> Floor, Swissotel

### Presenters:

Kristen Weersink, Queen's University, Kingston, Canada

Samantha Buttemer, Queen's University, Kingston, Canada

Damon Dagnone, Queen's University, Kingston, Canada

Jena Hall, Queen's University, Kingston, Canada

Damon Dagnone, Queen's University, Kingston, Canada

### Abstract:

**Background:** A CBME approach to residency education is currently being implemented across Canada by the Royal College of Physicians & Surgeons (Competency by Design Project) on a rolling timeline over a seven year period. Queen's University launched CBME for all incoming specialty residents and fellows in July 2017. Engagement and empowerment of residents through this transition and ongoing implementation was prioritized as a prerequisite for success.

The Queen's CBME Resident Sub-committee was formed to fulfill this purpose with membership from nearly all specialties across multiple residency years, in both traditional and CBME models. The mandate is to represent resident interest in anticipation of and throughout the transition to CBME. With consideration given to change management strategies and purposeful engagement tasks and events, the resident subcommittee continues to maintain an open and iterative dialogue with the Queen's resident body and faculty.

**Purpose:** The purpose of this workshop is to support residents, program administrative assistants, and faculty members in designing an approach to engaging residents in the co-production of CBME. Recognizing that models of training vary widely worldwide, idea generation will be customized to benefit their own institutions.

**Target Audience:** Residents, Faculty, Program Directors, Educational Consultants, Program Administrators

**Methods of presentation:** This workshop will be a combination of small and large group work, with worksheets to document ideas that can be taken home. There will be short a didactic presentation, however, the majority of time will be spent in group discussions and activities.

**Results:** At the end of the workshop, participants will understand the benefits of co-production and resident leadership in CBME. They will be more prepared to build a strategy for engaging residents in the transition to CBME at their institution.

Conclusions: Resident engagement and leadership has been essential in the successful implementation and ongoing transition to CBME at Queen's University.

## #H5 Workshop: Clinical Coaching in Competency Based Medical Education: Perspectives from the Learners (162)

Time: 1115-1230

Location: Wettstein, 2<sup>nd</sup> Floor, CCB

### Presenters:

Denyse Richardson, Canada

### Abstract:

Text Awaited

## LUNCH BREAK AND POSTER PRESENTATIONS

Time: 1230-1400

Location: 3<sup>rd</sup> Floor Foyer, CCB

## #P2 Poster Presentations: Innovations and Lessons Learned

Chairperson:

Time: 1230-1400

Location: 3<sup>rd</sup> Floor, CCB

1230-1235

### #P2.1 Aligning Requirements of Training and Assessment in Radiation Planning in the era of Competency-Based Medical Education (70)

#### Authors:

Catherine de Metz, Kingston General Hospital- Queen's University, Canada

Maria Kalyvas, Kingston General Hospital- Queen's University, Canada

Rylan Egan, Queen's University, Canada

Nikitha Moideen, Kingston General Hospital- Queen's University, Canada

Rylan Egan, Queen's University, Canada

Eleftherios Soleas, Queen's University, Canada

Nancy Dalgarno, Queen's University, Canada

**Presenter(s):** Nancy Dalgarno, Queen's University, Canada

#### Abstract:

**Background:** Radiation treatment planning is a unique skill that requires interdisciplinary collaboration among Radiation Oncologists (RO), Dosimetrists, and Medical Physicists (MP) to train and assess residents. With the adoption of competency-based medical education (CBME) in Canada, it is essential that residency program curricula focus on developing resident competencies in radiation treatment planning to ensure entrustment.

**Research Question:** How do radiation oncology team members' perspectives on optimized experiential treatment planning training align with requirements of competency-based medical education, and what are the practice implications?

**Methods:** This qualitative research study took place in one academic hospital RO Department in Southern Ontario.

Through convenience sampling, focus groups were conducted with ROs (n=11), dosimetrists (n=7), MPs (n=7), and residents (n=7). Thematic design was adopted to analyze the transcripts through open coding resulting in three overarching themes.

**Results:** The results identified existing strengths and weaknesses of the residency program, and future opportunities to redesign the curriculum and assessment process with a CBME paradigm. Stakeholders were optimistic that CBME was helping to enrich resident learning with the increased frequency and quality of competency-based assessments. All participants believed greater communication about residents' developmental progress was required between educational stakeholders. Dosimetrists and MPs were interested in participating directly in assessing and coaching residents. Participants across all stakeholder groups suggested building a library of cases so as to provide a safe environment to develop skills in contouring, dosimetry, and plan evaluation.

**Conclusions:** The interdisciplinary residency education stakeholder consultations approach yielded rich results and common themes emerged. In support of a CBME environment, it is important that all team members communicate

effectively, participate in formative assessments, and play a role in coaching residents. The findings inform the modification of treatment planning competency development to better align training and assessment of RO residents in the era of CBME.

1235-1240

## #P2.2 Updated Entrustable Professional Activities for a Family Medicine Residency Training Program (111)

### Authors:

Jose Francois, University of Manitoba, Winnipeg, Manitoba, Canada  
Bruce Martin, University of Manitoba, Winnipeg, Manitoba, Canada  
Terry McCormack, University of Manitoba, Winnipeg, Manitoba, Canada

**Presenter(s):** Jose Francois, University of Manitoba, Canada

### Abstract:

**Background:** The College of Family Physicians of Canada (CFPC) recently released CanMEDS-FM 2017, an updated competency framework designed for all Canadian family physicians regardless of practice type, location, or populations served. Although the framework defines a set of general attributes of a good family physician, it does not define the actual activities that a competent physician performs in practice. Subsequently, the CFPC released the Family Medicine Professional Profile, which taken together with CanMEDS-FM 2017, forms an overall picture of the roles and responsibilities of Canadian family physicians along with the competencies required to support their work.

**Purpose:** Using the CanMEDS-FM 2017 framework and the CFPC's Family Medicine Professional Profile, the University of Manitoba Family Medicine Residency Program sought to refine a list of Entrustable Professional Activities (EPAs) for to guide curriculum development and resident assessment.

**Interventions:** The residency program developed an initial list of EPAs in 2015 (prior to the release of CanMEDS-FM 2017) and further refined it by integrating new concepts from the CanMEDS-FM 2017 framework and the CFPC's Family Medicine Professional Profile, as well as through input of local family medicine educators at the University of Manitoba using a modified Delphi process.

**Results/applications:** A list of 25 updated EPAs was developed which collectively defines the type of care that the family medicine residency graduate should be trusted to perform competently upon graduation.

**Future Directions**

Updated EPAs will be rolled out in the 2018-2019 academic year and the program will monitor how these EPAs perform.

1240-1245

## #P2.3 Resident Driven Portfolios - Enhancing Self Assessment (122)

### Authors:

Robyn Doucet, Dalhousie University, Halifax, Canada  
Shannon Bradley, Dalhousie University, Halifax, Canada  
Cindy Shearer, Dalhousie University, Halifax, Canada

**Presenter(s):** Janice Chisholm, Dalhousie University, Canada

### Abstract:

**Background:** In July 2016, Dalhousie University's anesthesia residency program transitioned from a traditional, time-based model to a competency-based model. The new model is structured around well-defined Entrustable Professional Activities (EPAs), developed at the Royal College of Physicians and Surgeons of Canada, required training experiences and assessments, and a resident-driven e-portfolio system to track resident progress and EPA achievement. This learner-directed system of demonstrating competence is believed to better develop self-assessment and reflection skills than the previous time-based approach or other competency-based models with more prescriptive assessments.

**Purpose:** The introduction of the self-directed e-portfolio offers a unique opportunity to understand how resident self-assessment works in the context of CBME.

**Intervention(s)**

The e-portfolio system is a multidimensional tool designed for residents to illustrate that requirements and competencies are met at each stage of training. Residents update their e-portfolio on a regular basis and provide evidence (documentation) that demonstrates achievement of EPAs. When they feel there is enough evidence to demonstrate competence in an EPA, they request a competence committee review. The committee reviews the evidence and determines whether the EPA has been achieved or if further evidence is required.

**Results/Applications:** Although residents receive suggestions on documentation (assessments, reports, faculty observations) that constitute proof of competency, this process is learner-directed and not well understood. We will provide an exploration of this process, informed by document review and qualitative interviews with residents, highlighting



its impact on self-assessment skills, linkages with individual perceptions of competence, and suggestions for optimizing the e-portfolio system.

**Future Directions:** The resident-driven e-portfolio offers several opportunities to examine how trainees self-assess their competence. There may be opportunities to further examine group decision making and trends towards determining "how much evidence is enough?" in this context. Finally, there will be opportunities to examine the correlation between learner and competence committee assessment.

**1245-1250**

**#P2.4 Canadian CBME National Leads: Building a Network for Successful CBME Implementation (127)**

**Authors:**

Joan Binnendyk, Western University, London, Canada  
Shannon Venance, Western University, London, Canada  
Anna Oswald, University of Alberta, Edmonton, Canada  
Christina Tremblay, Northern Ontario School of Medicine, Sudbury, Canada  
Anna Oswald, University of Alberta, Edmonton, Canada  
Alan Chaput, University of Ottawa, Ottawa, Canada  
Sohaib Al-Asaaed, Memorial University, St. John's, Canada  
Kirsty Tompkins, Memorial University, St. John's Canada

**Presenter(s):** Joan Binnendyk, Western University, Canada

**Abstract:**

**Background:** The Royal College of Physicians and Surgeons of Canada's (RCPSC) branded vision of competency-based medical education (CBME), Competence by Design (CBD), requires ongoing support in translating elements of nationally-designed residency training in a manner respectful of local contexts.

**Purpose:** Postgraduate Deans supported CBME experts nationally to network and provide leadership for the implementation of CBME in cooperation with the RCPSC. This national collaboration shares lessons learned, policies, communication strategies, and faculty development initiatives while acting as both a bidirectional conduit between national and local stakeholders as well as local champions of change implementation.

**Interventions:** An initial ad-hoc assembly of three faculty CBME Leads formed in 2015 grew to a network of 34 faculty and educationalists representing all 17 Canadian medical schools. The CBME Leads Network convenes regularly via teleconference and has expanded to include broad representation from the RCPSC governing body.

**Results/Applications:** An analysis of the network's endeavors has identified themes categorized into strengths, challenges, opportunities, and threats. Streamlined communication, co-creation of resources, and collaborative troubleshooting continuously advance their mandate; however, imbalanced participation, disparate perceptions of issues, and lack of power challenge it. While this network could be jeopardized by declining participation, ambiguous responsibilities, and questionable trust, there remains great opportunity in its progressive collaboration and resource creation owing to the varied backgrounds and skillsets of the CBME Leads.

**Future Directions:** The long-term viability of a collective human endeavour, such as the CBME Leads Network, necessitates i) continued commitment; ii) enduring resources; iii) a cooperative and trusting environment; and iv) succession planning. Periodic evaluation of outcomes and member satisfaction surveys may aid in sustaining engagement in the group. Medical education organizations interested in establishing a national network can look to the presented guiding principles to determine how best to do so within their own context.

**1250-1255**

**#P2.5 Transitioning to Competency Based Medical Education: Challenges and strategies for pragmatic implementation in a non-procedural based specialty (130)**

**Authors:**

Sohaib Al-Asaaed, Memorial University, St. John's, Canada  
Tina Hsu, University of Ottawa, Ottawa, Canada  
Nazik Hammad, Queen's University, Kingston, Canada  
Som Mukherjee, McMaster University, Hamilton, Canada  
Nazik Hammad, Queen's University, Kingston, Canada  
Sanraj Basi, University of Alberta, Edmonton, Canada  
Xinni Song, University of Ottawa, Ottawa, Canada  
Tamara Shenkier, University of British Columbia, Vancouver, Canada  
Jan-Willem Henning, University of Calgary, Calgary, Canada

**Presenter(s):** Sohaib Al-Asaaed, Memorial University, Canada

**Abstract:**

Background: Competency-Based Medical Education (CBME) is rooted in frequent assessments, including frequent direct observation. Procedural based specialties lend themselves to direct observation as such habits are embedded into the culture of these training programs. In contrast, trainees in non-procedural based specialties are often implicitly entrusted early on with patient assessment and clinical management tasks. Due to multiple factors, entrustment within this context is not usually informed by direct observation but rather assumed by supervisors of training. The Royal College of Physicians and Surgeons is implementing Competence by Design (CBD), a hybrid form of CBME and classical time-based residency education. As an early non-procedural based specialty adopting CBD, medical oncology began the design process in 2014. Question: The question was what structural and process elements can facilitate the design of a CBD training program for a non-procedural specialty? The aim is to produce a final product that would be applicable to a variety of local health delivery contexts and training program structures.

Methods: Four in-person workshops, multiple teleconferences along with feedback from a national field test informed the final design product. This final product included the composition of Entrustable Professional Activities (EPAs), Required Training Experiences (RTEs) and varied work-based assessment tools.

Results: The process of designing the medical oncology training program extended over a four-year period. Several factors influenced the process and final design product, both intrinsic and extrinsic to the specialty. Structural changes to facilitate the culture change of frequent direct observation were accentuated.

**Conclusion**

The development of curricular structures and processes required to implement CBD is feasible in a non-procedural specialty. The creation of a collaborative community of program directors and key faculty facilitated the implementation and culture change inherent in a CBD-based medical oncology program. National collaborative projects can address shared challenges in CBD implementation.

1255-1300

**#P2.6 Documenting Work-based Assessments with Entrada: How long does it really take? (131)**

**Authors:**

Laura McEwen, Queen's University, Kingston, Canada  
Andrew Dos-Santos, Queen's University, Kingston, Canada  
Mary Bouchard, Queen's University, Kingston, Canada

**Presenter(s):** Laura McEwen, Queen's University, Canada

**Abstract:**

Background: It has been acknowledged that the move to competency-based models of residency education with an emphasis on work-based assessment (WBA) will involve increased time and effort on behalf of faculty (Hawkins et al 2015; Massie & Ali 2017). Advances in technology to support WBA have been identified as potential means for offsetting some of this increased assessment burden (Lockyer et al. 2017).

Purpose: Given the anticipated advantage of technology facilitated WBA and our robust Entrada platform we sought to explore how long the act of documenting a WBA actually took.

Intervention: Our platform enables programs to develop a range of WBA tools customized to program needs including: supervisor and procedure forms, field notes, rubrics, and periodic performance assessments (PPAs). Our system collects trace data on the length of time required to complete each of these WBA tool types.

Results: Overall, documenting resident performance with technology facilitated WBA tools ranged between 1minute, 92 seconds and 2 minutes, 39 seconds.

Breakdown by WBA tool type:

Supervisor Form	141.99 (2min. 37secs)	on average based on 2430 completed forms to date
Procedure Form	117.60 (1min. 96secs)	on average based on 431 completed forms to date
Field Note Form	143.41 (2min. 39secs)	on average based on 458 completed forms to date
Rubrics	119.28 (1min. 99secs)	on average based on 227 completed forms to date
PPAs	114.93 (1min. 92 secs)	on average based on 302 completed forms to date

It is important to note that these values are the time required to complete the WBA and do not include time required to observe resident performance and provide feedback.

Future Directions: It will be interesting to explore whether values reduce over time as users become more familiar with the technology and how innovations like the 'talk to text' feature in our app impact these.

1300-1305

**#P2.7 Highlighting Entrada Competency-Based Assessment Features used at Queen's University (132)**

**Authors:**

Mary Bouchard, Queen's University, Kingston, Canada  
Andrew Dos-Santos, Queen's University, Kingston, Canada

Laura McEwen, Queen's University, Kingston, Canada

**Presenter(s):** Mary Bouchard, Queen's University, Canada

**Abstract:**

**Background:** On July 1st 2017, with permission from the Royal College of Physicians and Surgeons of Canada, Queen's University launched competency-based educational models across 29 residency programs. Central to this institution-wide shift was the implementation of programmatic approaches to assessment that emphasize direct observation and documentation of resident performance in real time.

**Purpose:** Recognizing the need for a robust technological solution to support this transition, Queen's enlisted our Education Technology Unit to develop a module to support CBME within Entrada.

**Intervention:** Working closely with faculty, residents, medical education experts, and institutional leadership, our Education Technology Unit developed a flexible competency-based assessment system into Entrada.

**Results:** This iterative and collaborative process resulted in a flexible assessment and evaluation system for CBME that was guided by sound educational rationale. Our system includes point of care data collection and aggregation, advanced display functionality, and is customizable to differential program needs. Our CBME Resident Dashboard supports residents and faculty to monitor performance in real time and track patterns of performance over time. In this presentation we share our collaborative development strategy and speak to the exciting Entrada functionality that has enabled us to achieve our institutional goal of a smooth transition to CBME.

**Future Directions:** Expanding our iterative, collaborative process by eliciting feedback from the wider community through survey methodology to ensure continued engagement and establish future development priorities.

1305-1310

**#P2.8 Using Concept Maps to Address Competence of Athletic Therapy Students with Evidence Informed Practice (25)**

**Authors:**

Lynne Lafave, Mount Royal University, Calgary, Canada

Mark Lafave, Mount Royal University, Calgary, Canada

Michelle Yeo, Mount Royal University, Calgary, Canada

**Presenter(s):** Lynne Lafave, Mount Royal University, Canada

**Abstract:**

**Background:** Athletic therapy (AT) is an allied health profession that, like medicine, requires competence in evidence-informed practice (EIP). The "scholar" role is one of seven comprising the CanMeds competency framework. AT programs need to build educational strategies to establish EIP and measurement tools that demonstrate student competence. Currently, there are no measurement tools to assess EIP competence for AT in Canada.

**Summary of Work:** A rubric was developed to assess the EIP concept maps as a measure of student EIP competence. One AT faculty member and one educational researcher participated in the validity and reliability testing of the rubric.

Validators were blinded and assessed 15 maps on the dimensions of breadth, relationship, complexity, and global rating.

In a pre-post design, students initially engaged with EIP concepts through reading, discussion, and assessment. Six weeks later, students engaged in an EIP concept mapping assignment that was assessed using the rubric.

**Summary of Results:** To demonstrate validity, aggregate scores for breadth, relationship, and complexity dimensions correlated with global rating for both raters ( $r=.91$   $p<.001$ ;  $r=.93$   $p<.001$ ). Interrater reliability of the rubric was assessed for aggregate score (ICC=.56;  $p=.01$ ) and global rating (ICC=.41;  $p=.05$ ). There was a statistically significant ( $p<.001$ ) improvement in EIP assessment after concept mapping activity ( $M = 87.0$ ,  $SD=11.8$ ) compared to reading and discussion ( $M = 40.8$ ,  $SD=22.9$ ).

**Discussion & Conclusions:** EIP is important in medical and allied healthcare professions. However, AT students seem to undervalue the importance of it requiring creative learning strategies to engage their learning and competency development. EIP competence was established in this case, but future research should apply these same techniques and tools on a larger sample.

**Take-home Messages:** Evidence informed practice competency in the Athletic Therapy profession is important and require measurement tools to establish competence.

1310-1315

**#P2.9 Assessment of Medical Student Electronic Health Record (EHR) Note Documentation - assessing 3 Core Entrustable Professional Activities (EPAs) during the Neurology Clerkship at the University Of Pittsburgh School of Medicine (98)**

**Authors:**

Laurie Knepper, University of Pittsburgh School of Medicine, Pittsburgh, PA USA

Claire Yanta, University of Pittsburgh School of Medicine, Pittsburgh, PA USA  
Robert Safier, University of Pittsburgh School of Medicine, Pittsburgh, PA USA  
Andrew Levin, University of Pittsburgh School of Medicine, Pittsburgh, PA USA  
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Beth Littleton, University of Pittsburgh School of Medicine, Pittsburgh, PA USA  
Josif Stacic, University of Pittsburgh School of Medicine, Pittsburgh, PA USA  
Ajitesh Ojha, University of Pittsburgh School of Medicine, Pittsburgh, PA USA

**Presenter(s):** Laurie Knepper, University of Pittsburgh School of Medicine, USA

**Abstract:**

Documenting a patient encounter in the EHR encompasses three core EPAs. The past three years, students in the UPSOM Core Neurology Clerkship have been introduced to competency-based assessment, including core EPAs. From 2015-2016, 143 students reviewed one core EPA taught during their clerkship, many noting that note writing was not well taught. From 2016 – 2017, 150 students submitted two patient notes, as part of an EHR note writing exercise, receiving ungraded, formative feedback. From May 2017 – April 2018, students are given an outline noting key components of a patient note, including EPA descriptions with a checklist detailing grading criteria. Currently, 111 Students submitted the first note mid-clerkship, were given narrative feedback and in all students, the second note was graded. A blinded note graded by six reviewers noted good interrater reliability. The initial 36 students received ungraded narrative feedback for the first note. The next 48 students also received a mid-clerkship note grade.

All students improved their final graded notes, 86% receiving honors. Students (n=48) grades markedly improved after feedback. (Pretest M=80.85, SD=10.98, and Posttest M=93.27, SD=4.97;  $t(46)=-8.019$ ,  $p = .0001$ ). Post-hoc analysis suggests students who did not receive a first note grade performed as well on the final note score as students receiving a mid-clerkship grade. For students without a mid-clerkship grade, the mean final grade was 93.29 (SD=3.82). For students given a mid-clerkship score, the mean posttest grade was 93.27 (SD=4.97). These analyses question whether evaluation scores are instructive.

All Students in this study improved their ability to write an accurate and complete patient note. We learned our feedback is working. There was not a control group who did not receive feedback, so we cannot know whether feedback was singularly responsible for the improved final grades. We will continue to develop and test our feedback approach

**1315-1320**

**#P2.10 Updated Entrustable Professional Activities for a Family Medicine Residency Training Program (110)**

**Authors:**

Jose Francois, University of Manitoba, Winnipeg, Manitoba, Canada  
Bruce Martin, University of Manitoba, Winnipeg, Manitoba, Canada  
Terry McCormack, University of Manitoba, Winnipeg, Manitoba, Canada

**Presenter(s):** Jose Francois, University of Manitoba, Canada

**Abstract:**

**Background:** The College of Family Physicians of Canada (CFPC) recently released CanMEDS-FM 2017, an updated competency framework designed for all Canadian family physicians regardless of practice type, location, or populations served. Although the framework defines a set of general attributes of a good family physician, it does not define the actual activities that a competent physician performs in practice. Subsequently, the CFPC released the Family Medicine Professional Profile, which taken together with CanMEDS-FM 2017, forms an overall picture of the roles and responsibilities of Canadian family physicians along with the competencies required to support their work.

**Purpose:** Using the CanMEDS-FM 2017 framework and the CFPC's Family Medicine Professional Profile, the University of Manitoba Family Medicine Residency Program sought to refine a list of Entrustable Professional Activities (EPAs) for to guide curriculum development and resident assessment.

**Intervention:** The residency program developed an initial list of EPAs in 2015 (prior to the release of CanMEDS-FM 2017) and further refined it by integrating new concepts from the CanMEDS-FM 2017 framework and the CFPC's Family Medicine Professional Profile, as well as through input of local family medicine educators at the University of Manitoba using a modified Delphi process.

**Results/Applications:** A list of 25 updated EPAs was developed which collectively defines the type of care that the family medicine residency graduate should be trusted to perform competently upon graduation.

**Future Directions:** Updated EPAs will be rolled out in the 2018-2019 academic year and the program will monitor how these EPAs perform.

1320-1325

**#P2.11 Approaching competency-based medical education (CBME) with Backward Design (138)**

**Authors:**

Shima Tabatabai

**Presenter(s):** Shima Tabatabai, Shahid Beheshti University of Medical Science, Iran

**Abstract:**

Competency-based medical education (CBME), organized around a set of national competencies and learner outcomes, has inspired a transformational shift in medical education. This shift required medical education programs to re-examine curricular content and outcome measures uses national professional standards to shape curricular design and assessment of learner outcomes as well as to provide clarity to the learner about the knowledge, skills, and attitudes needed for successful independent practice.

An Innovative Strategy that provides a practical structure for approaching CBME medical education is .

Backward Design is an instructional design model that proposes instructors start with outcomes and work backward to design appropriate assessment tools and curricular content. Backward design can be applied to medical education by beginning with the national standards or competencies for medical education, defining outcomes and assessment methods, and then defining curricular content.

Backward Design model consists of the following components.

1. "Determining Desired outcomes." to define what criteria or performance standards are necessary for students mastery.
2. 'Determining Acceptable Evidence.'" To encourage the medical educator to identify appropriate assessment methods .
3. 'Plan Learning Experiences and Instruction' to analyze what is "enduring knowledge", "important to know or do", and "worth being familiar with".

At the end , teaching strategies are considered.

Medical educators may find backward design a useful instructional design methodology as they begin to shift their curriculum to competency-based outcomes. It provides a framework and strategy for thinking through measurement of competency as well as for identifying key curricular content and linking it to outcomes. Using this model in CBME is likely to result in learners having clearer expectations of what they need to learn and outcomes related to national standards.

1325-1330

**#P2.12 Leveraging Smartphones to Facilitate Feedback Based on Direct Observation in Clinic: Implications for Competency-Based Assessment (88)**

**Authors:**

John Q. Young, Zucker School of Medicine, Hempstead, USA  
Matthew McClure, Zucker School of Medicine, Hempstead, USA

**Presenter(s):** John Q. Young Matthew McClure, Zucker School of Medicine at Hofstra/Northwell, USA

**Abstract:**

**Background:** Competency-based assessment programs rely upon faculty providing feedback based upon the direct observation of the learner.

**Purpose:** The authors set out to test whether a smartphone-based application would facilitate faculty feedback.

**Interventions:** An iPhone application was developed. When opened, the application prompts faculty to: 1. Choose the resident; 2. Choose the EPA the resident is performing; 3. Complete an entrustment scale that indicates what level of supervision the trainee requires; 4. Enter via the iPhone keyboard or microphone 'one thing the trainee can do to advance to the next level'; and 5. Press submit. The feedback is then emailed to the trainee and the faculty member and also uploaded to a run chart on the training program's server. The run chart visualizes the progression of the trainee's entrustment ratings over time. After initial alpha testing, the authors conducted a pilot study in which faculty in a second year outpatient clinic were asked to alternate their use of the iPhone application with a previously validated paper-based assessment tool.

**Results:** Initial alpha testing established the feasibility and usability of the application. With relatively little training, faculty were able to download and successfully use the application. The mean time to enter the feedback was less than 30 seconds. Thematic coding of the feedback indicated that the quality of the feedback was behaviorally specific and corrective and generated only one such comment per observation compared to over 5 from the paper-based too.

Additional results from the pilot study are not yet available but will be for the conference.

**Future Directions:** The application will be modified and improved based on feedback from the faculty and learners during the pilot study. We will then test the application in a multi-site study. Multiple specialties have expressed an interest in potentially adapting this application.

1330-1335

**#P2.13 The SEXTANT: An innovative CanMED-FM competency-based intervention to support family physicians' continuing professional development (114)**

**Authors:**

Francesca Luconi, McGill University, Montreal, Canada  
Stephane Groulx, Quebec Chapter of the College of Family Physicians of Canada  
Roland Grad, McGill University, Montreal, Canada  
Leonora Lalla, McGill University, Montreal, Canada  
Roland Grad, McGill University, Montreal, Canada  
Marie Josée Campbell, Quebec Chapter of the College of Family Physicians of Canada  
Meron Teferra, McGill University, Montreal, Canada

**Presenter(s):** Francesca Luconi, McGill University, Canada

**Abstract:**

**Background:** In Canada, the upcoming competency-based continuing professional development (CB-CPD) is rooted on the competency-based medical education (CBME) model and the CanMED Family Medicine framework. CB-CPD entails a paradigm shift to support physicians' progress in competence, self-directed learning, and self-assessment (SA). Family physicians' (FP) self-assessment (SA) is often inaccurate, hence effective SA objective measures related to specific medical conditions are needed.

**Purpose:** to develop and evaluate the validity of the SEXTANT tool which assesses family physicians' competence in relation to two medical conditions and to develop, and evaluate the effectiveness of a CB-CPD outcome-based intervention. This study covers three phases: needs assessment; SEXTANT tool development and the CB-CPD intervention.

**Intervention:** this theory-driven, multifaceted, certified CB-CPD intervention lasts 12 months. Driven by identified gaps in relation to the two medical conditions, FPs will be able to develop a personal learning plan (PLP) and select relevant CPD activities/resources to fulfill those gaps. Outcomes measures assess these outcomes: satisfaction, relevance, competence, knowledge/skills, reported performance and expected patient benefits.

This is a longitudinal, theory-driven, evaluation case-study with mixed methods. Data collection lasts 12 months. Needs assessment combined with an interdisciplinary panel identify two clinical conditions and develop the SEXTANT tool. Two groups (i.e., 15-20 and then 150) of FPs complete the SEXTANT tool to assess its usability and content validity. Data analysis includes descriptive statistics, factor analysis, content analysis and triangulation of sources.

**Applications:** Findings of this study will benefit various stakeholders. Family physicians will be able to assess their clinical performance beyond the medical expert role and improve other intrinsic CanMEDS competencies. The SEXTANT tool could be used by Faculty Development for clinical teaching and traineeship; CBME and CB-CPD will be better aligned within the educational continuum in medical education. Finally, CPD providers will offer effective training to facilitate the implementation of CB-CPD.

1335-1340

**#P2.14 Designing a New CBME Palliative Medicine Residency Program (133)**

**Authors:**

Ingrid Harle, Queen's University, Kingston, Canada  
Laura McEwen, Queen's University, Kingston, Canada

**Presenter(s):** Laura McEwewn, Queen's University, Canada

**Abstract:**

**Background:** The Royal College of Physicians and Surgeons of Canada (RCPSC) recently designated Palliative Medicine as a 2-year subspecialty residency program. Medical schools wishing to implement this program were required to prepare an Application for Accreditation. The application is based on the Objectives of Training (OTRs) set out by the National Subspecialty Committee. Regrettably, version 1.0 of the of the Objectives Of Training In The Subspecialty of Adult Palliative Medicine published in 2016 were developed based on the CanMEDS 2005 Framework.

**Purpose:** Given the work involved in developing a new program we felt it prudent to adopt a competency-based educational model and share our developmental process.

**Intervention:** Our initial task required mapping the Adult Palliative Medicine 2016, version 1.0 OTRs to the CanMEDS 2015 Framework. We then developed Entrustable Professional Activities (EPAs) for each of the four RCPSC stages of training. The 32 key tasks (EPAs) a graduate of the discipline must be able to perform represented our CBME program outcomes. EPAs were then mapped to CanMEDS 2015 Enabling Competencies. We then mapped EPAs to rotations, developed rotation-specific goals based on EPAs assigned to each rotation, and developed lists of rotation-specific objectives based on the CanMEDS enabling competencies. Subsequently, we developed stage specific assessment plans that identified which assessment tools would be used for each EPA, defined the number of required completed assessments, and stipulated the



required mix of assessors, case complexity, diagnoses, and settings where appropriate. Through this extensive curriculum mapping process we ensured the alignment between rotation-specific goals and objectives and assessment activities. Results: The RCSPC Residency Accreditation Committee accredited our new program and noted the adoption of a CBME model as a particular strength. Future Directions: We conceptualize this as an iterative process and continue to refine our program as we learn from initial implementation.

## 1340-1345

### #P2.15 CBME Scholarship: At the Confluence of Standardization, Facilitation, and Innovation (115)

#### Authors:

Rylan Egan, Queen's University, Kingston, Canada  
Richard van Wylick, Queen's University, Kingston, Canada  
Damon Dagnone, Queen's University, Kingston, Canada  
Laura McEwen, Queen's University, Kingston, Canada  
Damon Dagnone, Queen's University, Kingston, Canada  
Ross Walker, Queen's University, Kingston, Canada  
Leslie Flynn, Queen's University, Kingston, Canada  
Richard Reznick, Queen's University, Kingston, Canada  
Denise Stockley, Queen's University, Kingston, Canada

**Presenter(s):** Denise Stockley, Queen's University, Canada

#### Abstract:

**Innovation:** Starting with the 2017 post-graduate cohort, Queen's University was the first Canadian Medical school to transition all residency programs to CBME. Successful implementation has required a balance between standardization and exploration. Specifically, our implementation has included standardized tagging of Entrustable Professional Activities, assessment processes and tools and database architecture. To allow for exploration we have actively facilitated CBME scholarship through a partnership with the CBME executive team and CBME champions, and active collaboration by the Office of Health Sciences Education (OHSE) which has provided faculty a central location to collaboratively transform questions, concerns, and ideas into scholarly projects.

**Outcomes:** The CBME Executive Team set a strategic direction to encourage physicians' CBME scholarship. Our initial priority was to enable Program Directors, who in turn facilitate the scholarship of physicians both within their specialty, and across specialties. Through a series of scholarship workshops and direct consultations/support/work with the team from the OHSE we achieved this outcome. Essential to this initiative has been the cultivation of internal funders such as the Maudsley Foundation, the Southeastern Ontario Academic Medical Organization, and Postgraduate Special Purpose Grants culminating in over \$250,000 of funding. Since 2014, 65% of specialty and subspecialty programs have received funding in collaboration with the OHSE and collaborators. Diverse topics of interest have included resident readiness and awareness, assessment needs and preferences, curricular innovation and change, and faculty needs and concerns.

**Conclusion:** Effective CBME implementation requires the simultaneous provision of implementation frameworks, standardized tools and processes, and support for autonomous exploration, challenge, and inquiry. Scholarship has allowed faculty to customize processes, find solutions to complex implementation challenges, and take ownership and pride in transition. In our presentation we will highlight the opportunities, challenges, and our lessons learned in the promotion of scholarship.

## 1345-1350

### #P2.16 Implementing CBME in a times-based world: Innovations and Lessons Learned (117)

#### Authors:

Dawn Harris, University of Michigan, Ann Arbor, USA  
Larry Gruppen, University of Michigan, Ann Arbor, USA

**Presenter(s):** Dawn Harris, University of Michigan, USA

#### Abstract:

**Background:** The University of Michigan is one of the largest public research institutions in the United States. The Master of Health Professions Education (MHPE) program is currently the only competency-based masters program at the UM and possibly the only completely competency-based masters program in health professions education in the world. The MHPE program is EPA based, not time based, so learners earn their degree by selecting and submitting a combination of Entrustable Professional Activities (EPAs) that map onto 12 core competencies. The EPAs provide a framework for learning about educational theory, practice, and outcomes through the learner's current professional responsibilities (e.g., designing a curriculum).

**Purpose:** Lack of institutional administrative support is the biggest challenge in fitting a competency-based educational program into a traditional, time-based credit hour environment. There are no examples within the UM or outside to draw from. As such, many processes and procedures did not exist and had to be developed and adapted to fit into the legacy system.

The individualized character of the program allows a student to develop a custom learning plan that allows each student to progress through the program at their own pace. This presents programmatic challenges for tracking learner progress because each learning plan is tailored to the learner and every EPA submission is unique.

**Intervention:** To overcome the challenges, we created courses in the legacy system as placeholders and register students for one course each semester. We also created a database to track and archive student demographics, student academic progress, and programmatic data.

**Results/Applications:** After 5 years, the program currently has 23 learners enrolled in the program and 7 graduates. 100 EPAs have been submitted and assessed to date.

**Future Directions:** Finding synergies with the residency and medical school programs that take advantage of the innovations developed for the MHPE.

**1350-1355**

## **#P2.17 Clerkship Assessment Tools During the Transition to Undergraduate Competency Based Medical Education (CBME) (86)**

### **Authors:**

Mila Kolar, Queen's University, Kingston, Ontario, Canada  
Eleni Katsoulas, Queen's University, Kingston, Ontario, Canada  
Andrea Winthrop, Queen's University, Kingston, Ontario, Canada  
Ayca Toprak, Queen's University, Kingston, Ontario, Canada  
Andrea Winthrop, Queen's University, Kingston, Ontario, Canada  
Lindsay Davidson, Queen's University, Kingston, Ontario, Canada

**Presenter(s):** Mila Kolar, Queen's University, Canada

### **Abstract:**

Reframing medical education within the CBME context, with the use of Entrustable Professional Activities (EPAs) requires changes to systems of assessment including increased frequency of formative and summative assessments, and increased specificity and quality of feedback.

As part of undergraduate medical education (UGME) competency-based curricular framework at Queen's University School of Medicine we developed new formative workplace-based assessment tools to meet the increasing demand to accurately document direct observation of learners' performance in the clinical learning environment.

Our initial goal was to replace the existing formative workplace-based assessment form, which included Likert scale and check boxes, with two behavioral-anchored rubrics to increase specificity and quality of feedback for the Surgery Clerkship.

As part of the overall development of the UGME procedural skills curriculum, a separate system of assessment for Clerkship procedural skills was also developed concurrently (Patterson, Katsoulas, Hastings, Sanfilippo, & Jaeger, 2017).

Ultimately, two rotation specific rubrics for the Surgery clerkship and procedural skills rubrics were developed.

The rubrics identify areas that provide "opportunities for growth" for students, areas they are still developing (i.e. "approaching standard"), and areas in which they are "achieved the standard." The standard here is defined by the behavioral anchors. Assessor feedback during development of rubrics assisted in ensuring that metrics of performance accurately reflect reasonable expectations of students.

Development of an assessment system for the Surgery Clerkship rotation, based on rubrics with explicit behavioral descriptor support faculty and residents to formulate judgments about a student's clinical performance, enhanced the quality of feedback to students, helped course director to monitor students' progress over the course of their rotations and to identify students in need of additional support earlier in their clinical training. Rubric-based assessment tools can be a valuable form of assessment within an EPA/CBME curricula.

## **1230-1400 #I MEET THE EXPERTS SESSIONS**

Location: Wettstein, 2<sup>nd</sup> Floor, CCB

## 1400-1515 #J SIMULTANEOUS SESSIONS

### #J1 Oral Innovations and Lessons Learned: CBME Outcomes / Program Evaluation

Chairperson:

Time: 1400-1515

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

#### 1400-1415

##### #J1.1 Entrada CBME Assessment Completion Rates: An Early Performance Indicator of Queen's Success (30)

###### Authors:

Laura McEwen, Queen's University, Kingston, Canada

Andrew Dos-Santos, Queen's University, Kingston, Canada

**Presenter(s):** Laura McEwen, Queen's University, Canada

###### Abstract:

**Background:** On July 1st 2017, with permission from the Royal College of Physicians and Surgeons of Canada, Queen's University launched competency-based educational models across 29 residency programs.

**Purpose:** Although this innovation is being studied extensively through a robust evaluation process, given the magnitude of this initiative it was important to identify early performance indicators. Given the emphasis on assessment in CBME implementation we identified CBME assessment completion rates as useful early performance indicator of implementation.

**Intervention:** Leveraging our powerful Entrada assessment and evaluation platform we were able to configure reports that indicated how many CBME assessments had been triggered and the percentage of those completed, broken down by program. Initially these reports were generated for institutional overview purposes, but have since evolved to include program specific automated reports distributed on a monthly basis.

**Results:** The initial report generated in late-September 2017 indicated 2163 CBME assessments had been triggered institution-wide with 91% of those actually completed at the time of report. The second institution-wide report run in early October showed an additional 368 CBME assessments triggered and maintained the 91% completion rate. Subsequent monthly institution-wide reports for November and December 2017, and January 2018 indicated 631, 616, and 842 assessments had been triggered respectively institution-wide, with completion rates of 88%, 86%, and 84% respectively.

**Future Directions:** Obviously, CBME assessment completion rates are crude performance indicators. They lack the richness of important relational information like the number of faculty and residents in a program, residents' stage of development, number of EPAs associated with those stages, locations where assessments were completed, and the quality of resident performance across EPAs. However, this data represents initial steps towards meaningful data mining that can be leveraged to monitor and inform decision making about CBME implementation in the form of in-depth learning analytics going forward.

#### 1415-1430

##### #J1.2 Establishing comparability of core EPAs within a specialty: the significance of context (39)

###### Authors:

Josephine Boland, College of Anaesthetists of Ireland, Dublin, Ireland

Damian Castanelli, Monash University, Melbourne, Australia

Janice Chisholm, Dalhousie University, Halifax, Canada

Eilis Condon, College of Anaesthetists of Ireland, Dublin, Ireland

Janice Chisholm, Dalhousie University, Halifax, Canada

Ian Graham, Australian and New Zealand College of Anaesthetists, Melbourne, Australia

Gerstan Jonker, University of Utrecht, Netherlands

Adi Marty, University Hospital Zurich, Zurich, Switzerland

Jennifer Woods Christchurch Hospital, Christchurch, New Zealand

Jennifer Weller, University of Auckland, Auckland, New Zealand

**Presenter(s):** Josephine Boland, College of Anaesthetists of Ireland, Ireland

###### Abstract:

**Background:** When implementing CBME, international collaboration at the specialty level holds the tantalizing possibility of broader perspectives, shared learning, multi-site research and evidence based reform. The Intercollegiate Collaboration on CBME in Anaesthesia (ICCA) was founded in 2017 with these aims in mind.

There is evidence of variability in anaesthesia training programmes and certification processes across the EU. This phenomenon is unlikely to be confined to Europe or to anaesthesia. EPAs have been advocated as a potential 'common

currency' which could facilitate comparisons of programmes and their graduates, and even serve as a driver for achieving greater comparability of outcomes, in the interest of patient care.

**Purpose:** Developing a shared EPA was initially identified as a potential project for the ICCA. As implementation of EPAs was already underway, however, developing a process for establishing comparability of core EPAs was deemed more fruitful and appropriate. Basic General Anaesthesia was selected as the example, in the contexts of Canada, Ireland, Netherlands, and Australia/New Zealand.

**Intervention:** The process involved analysing national contexts, relevant drivers and existing competency frameworks. Lists of EPAs at a national level were shared and compared. Details of a core EPA for anaesthesia were examined, including work based assessment tools, the criteria for entrustment and the process for determining clinical competence.

**Results:** There is evidence of an inevitable process of 'localisation' as EPAs are implemented at national level. While the competencies associated with a core EPA may be broadly comparable, differences can be observed in terms of terminology, scope, specificity and variations in assessment which reflect cultural practices and norms.

**Future direction:** As CBME advances internationally, EPAs have potential as a 'common currency' to facilitate recognition and greater comparability of outcomes. International collaboration and research can drive evidence based reform in CBME, with the support of an enabling platform.

## 1430-1445

### #J1.3 8-year outcomes of implementing competency-based medical education training in orthopaedic surgery: lessons learned from the University of Toronto experience (96)

#### Authors:

Polina Mironova, Division of Orthopaedic Surgery, Toronto, Ontario, Canada  
Susan Glover-Takahashi, Postgraduate Medical Education, University of Toronto, Toronto, Ontario, Canada  
Richard Reznick, Department of Surgery, Queen's University at Kingston, Kingston, Ontario, Canada  
William Kraemer, Division of Orthopaedic Surgery, Toronto, Ontario, Canada  
Richard Reznick, Department of Surgery, Queen's University at Kingston, Kingston, Ontario, Canada  
Benjamin Alman, Department Orthopaedic Surgery, Duke University, Durham, North Carolina, USA  
Peter Ferguson, Division of Orthopaedic Surgery, Toronto, Ontario, Canada

**Presenter(s):** Markku Nousiainen, Division of Orthopaedic Surgery, University of Toronto, Canada

#### Abstract:

**Background:** The Division of Orthopaedic Surgery at the University of Toronto implemented a pilot residency training program that used a competency-based framework in July of 2009. The first of its kind in North America, the competency-based curriculum (CBC) deployed an innovative, modularized approach that dramatically intensified both the structured learning elements and the assessment processes.

**Methods:** This presentation discusses the initial curriculum design of the CBC pilot program; the refinement of the curriculum using curriculum mapping that allowed for efficiencies in educational delivery; details of evaluating resident competence; feedback from external reviews by accrediting bodies; and trainee and program outcomes for the first eight years of the program's implementation.

**Results:** Feedback from the residents, the faculty, and the postgraduate residency training accreditation bodies on the CBC has been positive and suggests that the essential framework of the program may provide a valuable tool to other programs that are contemplating embarking on transition to competency-based education.

**Conclusions:** While the goal of the program was not to shorten training per se, efficiencies gained through a modular, competency-based program have resulted in shortened time to completion of residency training for some learners, with the benefit of increased assessment and formative and summative feedback for all trainees.

## 1445-1500

### #J1.4 Supervisory versus co-activity: comparing language used to assess EPAs in medical students (109)

#### Authors:

Kimberly Lomis, Vanderbilt, Nashville, USA  
William Cutrer, Vanderbilt, Nashville, USA

**Presenter(s):** Kimberly Lomis, Vanderbilt University School of Medicine, USA

#### Abstract:

**Background:** Internationally, undergraduate medical education programs are considering the framework of entrustable professional activities to assess medical student readiness for transition to graduate medical education. Capturing the "ad hoc" entrustments of clinical supervisors contributes to the body of evidence needed to render summative entrustment decisions.

**Purpose:** Supervisory scales have been proposed as a facile tool to capture clinical supervisor impressions of student readiness. However, some educators report that individual faculty members are uncomfortable with recommending supervision for future activities. A co-activity model, in which the supervisor reports retrospectively how much they had to intervene as a learner completed a task, has been suggested as an alternative “frontline” tool. The relationship (if any) between co-activity and supervisory ratings is not known.

**Interventions:** Our institution is participating in the US national pilot of the AAMC Core EPAs for Entering Residency. We added both a supervisory and a co-activity scale to the assessment forms completed by clinical supervisors for a given student encounter. We have conducted response-process interviews to solicit assessor impressions of the two formats.

**Results/applications:** Both scales offer potential, however early findings indicate that there is not a direct correlation between the two scales. Lower scores on co-activity (eg, providing more guidance) does not seem to preclude willingness to recommend indirect supervision. Interviews reveal an expected impact of teaching: that supervisor co-activity in one instance should prepare the student to perform more independently in the future.

**Future directions:** Attempting to translate from co-activity assessments to summative entrustment decisions may underestimate learner readiness for indirect supervision. By the time of the CBME Summit, we will have amassed over 1000 assessment forms that utilize both scales, and will conduct more interviews to enable additional analysis.

**References:** Chen supervisory scale (Chen et al 2015) and the Ottawa co-activity scale (Rekman et al 2016).

## 1500-1515

### #J1.5 Evaluating CBME programs to examine change in residents' self-reported perceptions of their specialty from residency entrance to residency exit (151)

#### Authors:

Ivy Oandasan, College of Family Physicians of Canada, University of Toronto, Canada  
Deena M. Hamza, University of Alberta, Edmonton, Canada  
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**Presenter(s):** Ivy Oandasan, College of Family Physicians of Canada, University of Toronto, Canada

#### Abstract:

**Background:** Triple C is a competency-based medical education (CBME) initiative introduced by the College of Family Physicians of Canada (CFPC) in 2010 which offered a guide of competencies, how to provide learning experiences to enable acquisition, and how to assess outcomes. The CFPC created a program evaluation plan that included feedback from residents with opportunities for comparison from beginning of residency and upon completion, collected through the Family Medicine Longitudinal Survey (FMLS). **Research Question:** Do perceptions of family medicine (FM) residents change from entry to exit after CBME curriculum? **Methods:** Secondary analysis of de-identified FMLS data from residents in 16/17 programs at residency entry (T1, 2014) and exit (T2, 2016) (n=420). **Results:** Over 90% of residents agreed with feeling proud to become a Family Physician; that patients value the discipline; and that FM provides a unique contribution from other specialties. This agreement was consistent over time with no statistically significant change. Interestingly, a significant proportion of T2 respondents felt the government does not perceive Family Medicine as essential to the health care system, a notable reduction from T1 responses ( $p < 0.001$ ). This finding was not found to be correlated with practice intentions. **Conclusion:** Through methods used to evaluate CBME programs, change in perceptions can provide useful information for broader stakeholder groups. If a key outcome for CBME is to produce physicians ready and willing to practice in their field, negative perceptions developed during training may influence this. For countries trying to advance the value of primary care specialties, understanding the possible impact of the hidden curriculum, which is often out of the control of medical education, may be useful. Using multiple methods to evaluate CBME programs, such as self-report surveys and interviews may provide rich and valuable insight into areas needing further examination, that may have been otherwise unknown or overlooked.

### #J2 Workshop: Practical strategies to achieving social accountability in postgraduate medical education (102)

Time: 1400-1515

Location: Helvetia 1, 1<sup>st</sup> Floor, CCB

#### Presenter(s):

Tim Dubé, McGill University, Montreal, Canada  
Armand Aalamian, McGill University, Montreal, Canada  
Carlos Gomez-Garibello, McGill University, Montreal, Canada  
Evelyn Constantin, McGill University, Montreal, Canada  
Carlos Gomez-Garibello, McGill University, Montreal, Canada

#### Abstract:

Postgraduate medical education (PGME) is undergoing significant educational reform worldwide with the transformation of teaching and assessment practices to models of competency-based medical education (CBME). One of the underpinnings of CBME is the emphasis on accountability in response to patient and societal needs. In addition, the Health Advocate Role in the CanMEDS 2015 Physician Competency Framework encompasses the roles and responsibilities of physicians in advocating for the health needs of individuals and populations, which aligns closely with social accountability. However, the aspirational goals of social accountability present challenges for educational institutions and residency training programs including time constraints, buy-in from residents and faculty, and limited knowledge regarding how to develop curriculum and how to assess learners. This workshop aims to generate exchanges about the possibilities and opportunities that can shape the vision of social accountability in the context of PGME, for example through interprofessional and interdisciplinary collaboration, exploring graduates' practice location outcomes, and community service learning. This workshop provides participants with important lessons learned and practical approaches to strategic planning, curriculum development, methods of assessment, and research and scholarship. The workshop is designed for educators and learners involved (or interested in becoming involved) in social accountability initiatives in PGME and developing educational experiences that foster competency development. Irrespective of program size, number of residents and faculty, and readiness stage for CBME implementation, participants will have hands-on experience in a variety of different topics related to social accountability. The workshop is intended for participants at the beginner/intermediate-level. Participants are encouraged to bring their questions to the workshop for discussion.

### **#J3 Workshop: Mind Makeover: Cultivating a Growth Mindset in Trainees to Enhance Competency Based Outcomes (57)**

Time: 1400-1515

Location: Helvetia 2, 1<sup>st</sup> Floor, CCB

#### **Presenter(s):**

Teri Turner, Baylor College of Medicine, Houston, TX, USA

Melissa Carbajal, Baylor College of Medicine, Houston, TX, USA

#### **Abstract:**

Helping learners become reflective, competent physicians is an enormous and daunting task. As learners progress across the medical education continuum, they should increasingly become more responsible for their own growth as professionals. However viewing one's abilities as "fixed" or "innate" limits this potential for growth. The performance target for these trainees is perfection and doing those tasks they already do well. One's mindset also effects whether we choose to seek feedback and ultimately how we act upon this feedback. The goal of this session, is to help educational leaders and other faculty identify and use techniques which can help facilitate a shift from a fixed to a growth mindset. In essence creating a mind makeover to enable continuous professional development and success in our trainees. This session will use the principles outlined in "Mindset: The New Psychology of Success" by Carol Dweck, PhD. Participants will be challenged to shift their own thinking about intelligence as well as practice using teaching strategies, such as focusing on effort instead of praise to promote success. During the session, attendees will participate in small and large group activities and will craft interview questions to identify a growth mindset. Participants will also edit feedback phrases to move from praise to growth and practice coaching for improvement using the R2C2 facilitated reflective performance feedback model. The R2C2 model is an evidence-based model developed by Sargeant et al. and is composed of four components; 1) introduction and relationship building, 2) exploring reactions to and perceptions of the data/report, 3) exploring understanding of the content of the data/report and 4) coaching for performance change. Attendees will gain valuable insights and tools to identify and enhance the performance of all trainees regardless of their mindset.

### **#J4 Workshop: Walking the Path of the Elephant - Exploring User-Centered Implementation of CBME. Power by ICCA (Intercollegiate Collaboration on CBME in Anesthesia) (46)**

Time: 1400-1515

Location: Helvetia 7, 1<sup>st</sup> Floor, CCB

#### **Presenter(s):**

Adrian Marty, Institute of Anesthesiology at the University Hospital, Zurich, Switzerland

Gersten Jonker, Department of Anaesthesiology, University Medical Center, Utrecht, Netherlands

Jennifer Weller, Department of Anaesthesia, Auckland City Hospital, Auckland, New Zealand

Janice Chrisholm, Royal College of Physicians and Surgeons of Canada

Damian Castanelli, Department of Anaesthesia and Perioperative Medicine, Monash University, Melbourne, Australia

Josephine Boland, College of Anaesthetists of Ireland, Dublin, Ireland

#### **Abstract:**



**Background:** Many experts have high expectations that the Competency-based Medical Education (CBME) movement will transform medical education. A range of frameworks, concepts and tools in medical education have been developed by clever and thoughtful educationalists and clinical subject matter experts with good intentions. If we take a look at the intended and the actual implementation process however, we often find modifications for real-world use (THE PATH). The extent of these modifications ranges from minor to major, potentially resulting in meaningless activities. They are the consequence of the need to adapt conceptual frameworks and tools to contextual factors, nationally and across medical specialties. Implementation is dependent on the socio-cultural environment in which supervisors and trainees operate. Reasons for low implementation fidelity could include time pressure, service priorities, faith in the tools, just “how things are done around here” or reform fatigue. A big part of the implementation gap is due to what is perceived as ‘resistance’ at the frontline by the actual users - the supervisors and the trainees (THE ELEPHANTS).

In order for CBME to be successful these concepts have to be translated and adapted for the frontline. This requires more meaningful involvement of ultimate users in the design process. Rather than frame ‘resistance to reform’ as ‘non-compliance’ we need to understand the world of the elephant better, in order to ‘walk their path’ and thereby achieve key intended goals of CBME.

**Purpose:** Using the wisdom of the crowd to collectively design an implementation strategy for CBME focusing on high usability (and maybe even desirability)

**Methods:** We will use the Stanford Design Thinking Method: Empathize, Define, Ideate, Prototype, Test

**Results/Conclusion:** The outcome will be several tangible prototypes of a user-friendly implementation of CBME. These prototypes can serve as catalysts for research or QI projects.

## **#J5 Workshop: Preparing Students for EPAs: How do we engage students in this evolving educational paradigm? (18)**

Time: 1400-1515

Location: Wettstein, 2<sup>nd</sup> Floor, Swissotel

### **Presenter(s):**

Maryellen Gusic, University of Virginia School of Medicine, Charlottesville, USA

Elizabeth Bradley, University of Virginia School of Medicine, Charlottesville, USA

Olle ten Cate, University Medical Center, Utrecht, Netherlands

Harm Peters, Charite University, Berlin, Germany

Student facilitators, To be determined

### **Abstract:**

As medical schools implement Entrustable Professional Activities (EPAs) as a framework for teaching and assessment, there is much discussion about developing the curricula, assessment systems, and faculty. Student development for learning and assessment is vital, but has not yet been thoroughly addressed in the literature. In this highly interactive workshop, we will explore how best to prepare students to learn and actively engage in curricula with increased observation and assessment of their performance. Effective preparation and support for students is critical not only to their academic success and but also to their psychological well-being.

Understanding the impact for learners, we will incorporate students in the session who will share their perspectives and experiences with entrustment based decision making. We will examine how workplace-based assessment can be used as a tool to cultivate an educational alliance between teachers and learners and identify strategies to empower learners to use feedback and data about their performance as an opportunity for continued learning. Using Deci and Ryan’s Self-Determination Theory as a foundation, we will examine how EPAs support an environment that contributes to learners’ intrinsic motivation (sense of competence, autonomy and relatedness) and to their professional identity formation. The audience will engage in discussions designed to help each participant leave the session with tools to use at their home institutions to plan and implement an assessment program that includes Entrustable Professional Activities.

## **COFFEE BREAK**

Time: 1515-1545

Location: 3<sup>rd</sup> Floor Foyer, CCB

## **#K PLENARY 4**

Time: 1545-1700

Location: San Francisco, 3<sup>rd</sup> Floor, CCB

### **#K1.1 Closing Plenary: Program Evaluation: How do we know it works?**

Chairperson: Olle ten Cate (Netherlands)

Time: 1545-1645

Presenter: Elaine van Melle (Canada)

### **#K1.2 Closing Remarks**

Time: 1645-1700

Presenter: Olle ten Cate (Netherlands)