#C2 Oral Research: Assessment & Evaluation 1

Time: 1330 – 1500
Location: MR 111 – P1

#C2.1 (39)
Narrative comments for multisource feedback: An approach to guiding development of CanMEDS competencies

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

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

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

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

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

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

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

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

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

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

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

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**Veronica Wadey (Canada)**
**Douglas Archibald (Canada)**
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**Peter Ferguson (Canada)**

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

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

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

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

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

#C2.4 (139)
End-of-training EPAs for undergraduate medical education

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

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

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

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

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

#C2.5 (63)
A Cost Analysis of the use of Simulation for Teaching and Assessing Orthopaedic Residents: 5 Years of Experience from the Competency Based Curriculum at the University of Toronto

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Oleg Safir (Canada)
Richard Reznick (Canada)
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Sydney McQueen (Canada)
Benjamin Alman (USA)

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

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

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

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

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

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

#C2.6 (150)
How do newly qualified doctors (FY1s) evaluate the use of Competency-Based Education in their first year of practice?

Luke Forster (UK)

Background
Worked based assessments are an integral part of postgraduate medical education in the UK. There are minimum compulsory numbers that need completion on an electronic portfolio by newly qualified doctors (FY1s). These consist of DOPs, CEX, CBD and competence in ‘core procedures’.
The educational experience of junior doctors in the UK is usually evaluated using quantitative questionnaires. These identify issues but often don’t provide useful information to improve the educational programme.
This is a formative, qualitative evaluation of the educational experience of surgical FY1s and in particular the use of competence-based learning to enhance their learning.

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

Results
FY1s reported varying experiences of competency-based assessments as an educational tool: responses ranged from ‘very useful’ to ‘tick-box exercises’. On-calls involved clerking patients, receiving feedback from colleagues, performing practical skills under supervision and participating in consultant-led post-take ward rounds. The experience was challenging and stressful but was an excellent opportunity to improve and assess their competencies under supervision. They did report difficulties in getting consultants to complete such assessments.
‘Normal days’ had less educational focus with the workload they and their senior colleagues experienced restricting opportunities for work-based assessments and supervision.

Conclusions
Doctors had varying experiences of competency-based learning. Best learning occurred from registrar assessments during on-call shifts. Consultant assessments were variable, less frequent and often less rewarding. Normal ward shifts were less educational.
Additional benefits of competency based learning were building relationships with trainers and reward for additional/overtime work.
Proposed improvements to competency based learning included immediate completion of assessments, appropriate training for educators and the inclusion of detailed and personalised feedback.