

EPAs completed. **Methods:** We designed an intervention consisting of clinical cases that were reviewed by national EPA experts who identified which EPAs could be assessed from each case. A case-based session was incorporated into the 2019 CBME orientation for The McMaster Emergency Medicine Program. Postgraduate Year (PGY)1 residents read the cases and discussed which EPAs could be obtained with PGY2/faculty facilitators. The number of EPAs completed in the first two blocks of PGY1 was determined from local program data and Student's t-test was used to compare averages between cohorts. **Results:** We analyzed data from 22 trainees (7 in 2017, 8 in 2018, and 7 in 2019). In the first two blocks of PGY1, the intervention cohort (2019) had a significantly higher average number of EPAs completed per trainee (47.4 [SD 11.8]) than the historical cohort (25.3 [SD 6.7]) ( $p < 0.001$ ) (Cohen's  $d = 2.3$ ). No significant difference existed in the number EPAs obtained between the 2017/2018 cohorts, with averages of 24.3 [SD 6.8] and 26.1 [SD 7.0] per trainee respectively ( $p = 0.6$ ). **Conclusion:** Implementation of a case-based orientation led by CBME-experienced facilitators nearly doubled the EPA acquisition rate of our PGY1s. The consistent EPA acquisition by the 2017/2018 cohorts suggest that the post-intervention increase was not solely due to developed familiarity with the CBME curriculum.

**Keywords:** competency based medical education, entrustable professional activity, orientation

### LO73

#### Are women under-represented in emergency medicine residency programs across Canada?

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**Introduction:** 2018 data from the Canadian Medical Association website shows that of practicing emergency physicians country-wide, only 31% were female. While there are some studies that examine the number and proportion of Canadian female applicants applying to surgical specialties, there are very few studies that are specific to emergency medicine (EM), and none that are Canadian in scope. Given the changing gender ratio of graduating medical students in Canada, the primary objective of this study is to assess the mean proportion and trends in proportion of females who applied and matched to English-language Canadian EM programs including Canadian College of Family Physicians emergency medicine certificate (CCFP-EM) and Fellow of the Royal College of Physicians of Canada emergency medicine (FRCPC-EM), family medicine (CCFP) programs, and all specialties combined. **Methods:** A retrospective data analysis on residency match results from 2013-2019 inclusively was performed. Data was accessed through a freedom of information request from the Canadian resident matching service (CaRMS). The mean proportions and trends in the proportions of females applying and matching to CCFP-EM, FRCPC-EM, CCFP, and all specialties were computed. Cochran-Armitage trend of test was used for analysis. **Results:** From 2013-2019, the mean (SD) percentage of females who applied and matched respectively were as follows: CCFP-EM [44.4 (3.5);46.0(4.5)]; FRCPC-EM [41.3(4.1);44.0 (4.5)], CCFP [56.5 (1.3);61.0(1.9)], all specialties [54.0(1.1);55.5(0.9)]. There was a significant increase in the proportion of female applying to the FRCPC-EM ( $p < 0.0001$ ), CCFP ( $p = 0.0002$ ), and all disciplines ( $p = 0.0013$ ). There was no significant change in the proportion of females applying for the CCFP-EM program ( $p = 0.6435$ ). **Conclusion:** Our study shows that there is an increasing trend in the

percentage of female applicants in all programs except the CCFP-EM program, where it remained statistically the same over time. There was a consistent percentage of applied versus matched female applicants over time for both CCFP-EM and FRCPC-EM programs. However, the percentage of females applying or matching to both CCFP-EM and FRCPC-EM programs remained less than 50%. Further research could focus on evaluating reasons for program choice, in order to further increase the percentage of female medical students and residents applying and matching to both emergency medicine programs.

**Keywords:** Canadian resident matching service, gender, residency

### LO75

#### Does the Ottawa emergency department shift observation tool give more useful information – assessing the utility of transitioning to a novel, entrustability based assessment tool in the emergency department

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**Introduction:** The Ottawa Emergency Department Shift Observation Tool (O-EDShOT) was recently developed to assess a resident's ability to safely run an ED shift and is supported by multiple sources of validity evidence. The O-EDShOT uses entrustability scales, which reflect the degree of supervision required for a given task. It was found to discriminate between learners of different levels, and to differentiate between residents who were rated as able to safely run the shift and those who were not. In June 2018 we replaced norm-based daily encounter cards (DECs) with the O-EDShOT. With the ideal assessment tool, most of the score variability would be explained by variability in learners' performances. In reality, however, much of the observed variability is explained by other factors. The purpose of this study is to determine what proportion of total score variability is accounted for by learner variability when using norm-based DECs vs the O-EDShOT. **Methods:** This was a prospective pre-/post-implementation study, including all daily assessments completed between July 2017 and June 2019 at The Ottawa Hospital ED. A generalizability analysis (G study) was performed to determine what proportion of total score variability is accounted for by the various factors in this study (learner, rater, form, pgly level) for both the pre- and post-implementation phases. We collected 12 months of data for each phase, because we estimated that 6-12 months would be required to observe a measurable increase in entrustment scale scores within a learner. **Results:** A total of 3908 and 3679 assessments were completed by 99 and 116 assessors in the pre- and post- implementation phases respectively. Our G study revealed that 21% of total score variance was explained by a combination of post-graduate year (PGY) level and the individual learner in the pre-implementation phase, compared to 59% in the post-implementation phase. An average of 51 vs 27 forms/learner are required to achieve a reliability of 0.80 in the pre- and post-implementation phases respectively. **Conclusion:** A significantly greater proportion of total score variability is explained by variability in learners' performances with the O-EDShOT compared to norm-based DECs. The O-EDShOT also requires fewer assessments to generate a reliable estimate of the learner's ability. This study suggests that the O-EDShOT is a more useful assessment tool than norm-based DECs, and could be adopted in other emergency medicine training programs.

**Keywords:** assessment, entrustability, Ottawa Emergency Department Shift Observation Tool

**LO76****Effect of task interruptions training on the quality of simulated ALS**

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**Introduction:** Task interruptions are reportedly frequent disturbances for emergency physicians performing advanced life support (ALS). The aim of this study was to evaluate the benefit of adding task interruptions in ALS simulated training session. **Methods:** We conducted a multi centered randomized controlled trial in four emergency departments of a university hospital in Paris, France. Each emergency team included one resident, one nurse and one emergency physician. The teams were randomized for the nature of their training session: control (without interruption) or realistic (with interruptions). The interruption consisted of an interfering family member speaking a foreign language, and of repetitive phone calls during ALS. After the first training session, teams were evaluated on a second realistic session with task interruptions. The primary outcome was non-technical skills assessed with the TEAM score during this evaluation session. We also measured the no flow time, and the Cardiff score, which reflects the quality of ALS: including chest compression depth and rate, no flow time. **Results:** On a total of 23 included teams, 12 had a control training session and 11 with task interruptions. Baseline characteristics and TEAM score were similar between the two groups (Mean difference: 3,3 [-2,2; 8,9];  $p = 0,26$ ). During the evaluation session, the TEAM score was lower for “realistic” teams (mean difference -8 [95% confidence interval -13; -3]). We also report a higher no flow time and similar overall Cardiff score. **Conclusion:** In this simulated ALS study, the presence of disturbances during simulation seemed to worsen the quality of training. This study highlights the negative consequences of task interruptions in emergency medicine.

**Keywords:** advanced life support, simulation, task interruptions

**LO77****Performance enhancing psychological skills in clinical simulation**

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**Introduction:** Clinical simulations in are designed to evoke feelings of stress and uncertainty in order to mimic challenges that learners will face in the real world. When not managed properly, these sources of extraneous cognitive load cause a burden on working memory, leading to a hindered ability to acquire new information. The “Beat the Stress Fool” (BTSF) protocol is a performance-enhancing tool designed to reduce cognitive overload during acute care scenarios. It involves breathing exercises, positive self-talk, visualization, and deliberate articulations. This study aims to validate the BTSF protocol as a method for reducing cognitive load using both psychometric and physiologic measures. **Methods:** Data collection took place during the Queen's University “Nightmares-FM” course. This clinical simulation program involves team-based scenarios designed to teach the fundamentals of acute care to first-year family medicine residents. Participants were divided equally into experimental and control groups based on pre-existing cohorts. Participants completed a baseline state-trait anxiety inventory and a demographics survey. The experimental group was guided through the BTSF protocol prior to

each of 16 simulations; in both groups, physiologic and psychometric cognitive load measurements were collected for the alternating team leader. Galvanic skin response (GSR) and heart rate (HR) were collected during a 15-second baseline and throughout each simulation using a Shimmer 3 GSR+ wearable sensor. Self-reported cognitive load was assessed after each scenario using the 9-point Paas scale.

**Results:** The mean Paas scores for the BTSF group were significantly lower than the control group (6.2 vs 6.9,  $p < 0.05$ ), indicating lower subjective cognitive load. GSR signal magnitude ( $p = 0.086$ ), spike amplitude ( $p = 0.066$ ), and spike density ( $p = 0.584$ ) were also lower in the BTSF group. There was no difference in HR between groups. There was not a significant correlation between self-reported cognitive load and the normalized physiologic measures. **Conclusion:** The results demonstrate the effectiveness of the BTSF protocol in lowering the amount of perceived mental effort required to perform clinical simulation tasks. These findings were mirrored in the galvanic skin response signal, though our study was likely underpowered for significance. This is the first study to validate a proof-of-concept for the BTSF protocol in learners during simulated training.

**Keywords:** cognitive load, physiologic measures, psychometric measures

**LO78****Ready for launch? A survey of readiness factors among 2019 Competence By Design launch disciplines**

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**Introduction:** A critical component for successful implementation of any innovation is an organization's readiness for change. Competence by Design (CBD) is the Royal College's major change initiative to reform the training of medical specialists in Canada. The purpose of this study was to measure readiness to implement CBD among the 2019 launch disciplines. **Methods:** An online survey was distributed to program directors of the 2019 CBD launch disciplines one month prior to implementation. Questions were developed based on the R=MC2 framework for organizational readiness. They addressed program motivation to implement CBD, general capacity for change, and innovation-specific capacity. Questions related to motivation and general capacity were scored using a 5-point scale of agreement. Innovation-specific capacity was measured by asking participants whether they had completed 33 key pre-implementation tasks (yes/no) in preparation for CBD. Bivariate correlations were conducted to examine the relationship between motivation, general capacity and innovation specific capacity. **Results:** Survey response rate was 42% ( $n = 79$ ). A positive correlation was found between all three domains of readiness (motivation and general capacity,  $r = 0.73$ ,  $p < 0.01$ ; motivation and innovation specific capacity,  $r = 0.52$ ,  $p < 0.01$ ; general capacity and innovation specific capacity,  $r = 0.47$ ,  $p < 0.01$ ). Most respondents agreed that successful launch of CBD was a priority (74%). Fewer felt that CBD was a move in the right direction (58%) and that implementation was a manageable change (53%). While most programs indicated that their leadership (94%) and faculty and residents (87%) were supportive of change, 42% did not have experience implementing large-scale innovation and 43% indicated concerns about adequate support staff. Programs had completed an average of 72% of pre-implementation tasks. No difference was found between disciplines ( $p = 0.11$ ). Activities related to