curriculum mapping, competence committees and programmatic assessment had been completed by >90% of programs, while <50% of programs had engaged off-service rotations. **Conclusion:** Measuring readiness for change aids in the identification of factors that promote or inhibit successful implementation. These results highlight several areas where programs struggle in preparation for CBD launch. Emergency medicine training programs can use this data to target additional implementation support and ongoing faculty development initiatives.

Keywords: Competence by Design, implementation, residency education

LO79

The variable landscape of resident selection: A study of Canadian Royal College emergency medicine training programs

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Introduction: Little is known about how Royal College emergency medicine (RCEM) residency programs are selecting their residents. This creates uncertainty regarding alignment between our current selection processes and known best practices and results in a process that is difficult to navigate for prospective candidates. We seek to describe the current selection processes of Canadian RCEM programs. **Methods:** An online survey was distributed to all RCEM program directors and assistant directors. The survey instrument included 22 questions consisting of both open-ended (free text) and closed-ended (Likert scale) elements. Questions sought qualitative and quantitative data from the following 6 domains; paper application, letters of reference, elective selection, interview, rank order, and selection process evaluation. Descriptive statistics were used. **Results:** We received responses from 13/14 programs for an aggregate response rate of 92.9%. A candidate's letter of reference was identified as the single most important item from the paper application (38.5%). Having a high level of familiarity with the applicant was considered to be the most important characteristic of a reference letter author (46.2%). Respondents found that providing a percentile rank of the applicant was useful when reviewing candidate reference letters. Once the interview stage is reached, 76.9% of programs stated that the interview was weighted at least as heavily as the paper application; 53.8% weighted the interview more heavily. Once final candidate scores are established for both the paper application and the interview, 100% of programs indicated that further adjustment is made to the rank order list. Only 1/13 programs reported ever having completed a formal evaluation of their selection process. **Conclusion:** The information gained from this study helps to characterize the landscape of the RCEM residency selection process. We identified significant heterogeneity between programs with respect to which application elements were most valued. Canadian emergency medicine residency programs should re-evaluate their selection processes to achieve improved consistency and better alignment with selection best practices.

Keywords: emergency medicine, residency, selection

LO80

Perfecting practice for rare procedures: a simulation-based, multi-centre randomized trial

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Introduction: Mastery learning, which deconstructs a complex task into sequential sub-steps combined with deliberate practice to achieve each step in sequence, represents an important method to enhance simulation-based procedural skills training. However, the evidence to support the effectiveness of this theory to improve learning is lacking. This study compared mastery learning using deliberate practice with self-guided practice on skill performance of a rarely performed, life-saving procedure, a bougie-assisted cricothyroidotomy (BAC). **Methods:** In this multi-centre, randomized study at five North American emergency medicine (EM) residency training programs, we assigned 166 EM postgraduate trainees to either mastery learning and deliberate practice (ML + DP) or self-guided practice for BAC. Three blinded airway experts independently evaluated BAC skill performance by video review before (pre-test) and after (post-test) each training session. The primary outcome was post-test skill performance using a 5-point global rating score (GRS). A secondary outcome, defined a priori, was performance time to complete the BAC skill (chronometry). **Results:** There was no significant difference in post-test BAC performance after ML + DP or self-guided practice. Performance scores improved for both groups by 13% from the pre-test to post-test (F $(1,138) = 43$, $p < 0.001$). Overall, time to complete the BAC improved significantly from pre-test (87.6 seconds) to posttest (54.1 seconds), (F, $1,149) = 122$, $p < 0.001$). At post-test, the ML + DP group performed the skill 7.4 seconds faster than the self-guided practice group (F $(1,150) = 6.77$, $p < 0.01$). **Conclusion:** Mastery learning coupled with deliberate practice provides systematic and focused feedback during skill acquisition. However, it is resource intensive and its efficacy is not fully defined. In this study, MP + DP did not result in improved global performance; it did result in faster performance times, a relevant finding for time-sensitive procedures. These results are important for educators who seek to optimize technical skills training in a competency-based model of medical education. Our findings suggest that time-sensitive procedures might benefit from ML + DP teaching strategies to enhance time to procedural performance.

Keywords: deliberate practice, procedural skills, simulation

LO81

The use of in situ simulation to improve emergency department staff comfort with the management of high acuity, low occurrence cases

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Introduction: In the emergency department (ED), high-acuity presentations encountered at low frequencies are associated with reduced staff comfort. Previous studies have shown that simulation can improve provider confidence with practical skills and management of presentations in various fields of medicine. The present study examined the effect of in situ simulation on interprofessional provider comfort with the identification and management of high-acuity low-frequency events in the ED. It further assessed the feasibility of implementing weekly simulation as an interprofessional education initiative in a high-volume ED. **Methods:** This was a retrospective pretest post-test quasi-experimental design. Weekly in situ simulation events were facilitated by an interdisciplinary team in a high-volume ED in Hamilton, Ontario that sees an average of 185 patients per day. To date, 34 simulation events were held between January 18, 2019 and November 22, 2019, and included neonatal, paediatric and

obstetric emergencies, and adult codes. There was an average of 20 patients presenting to the ED during these events. Events included a debrief, and typically lasted 60 minutes in total. Participants included individuals from various disciplines working on shift at the time of the event. Questionnaires were administered via email following the event, in which participants were asked to rank their comfort with emergency codes before and after the simulation using two 5-point Likert scales. The data from 39 questionnaires was analyzed. T-tests were used to analyze differences in self-reported comfort scores. **Results:** Questionnaire responders included nurses (41%), respiratory therapists (26%), resident physicians (10%), paramedics (3%), attending physicians (3%), students of various disciplines (10%) and other (7%). 38% of participants reported increases in comfort following simulation when compared to prior. Using the 5-point scale, the average reported score for comfort pre-simulation was 3.59 (95% CI 3.30–3.88), and the average post-simulation score was 3.97 (95% CI 3.76–4.19, p = 0.03). **Conclusion:** Our results demonstrate that weekly interprofessional in situ simulation is feasible in a high-volume ED, and significantly improves self-reported provider comfort with the identification and management of high-acuity, low-frequency events. This warrants the implementation of this simulation design to improve staff confidence and has implications for its potential role in improving team dynamics and patient safety.
Keywords: Interprofessional, Simulation

LO82

Exploring eye-tracking technology to assess competency in point-of-care ultrasound

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Introduction: Assessment of point-of-care ultrasound (POCUS) competency has been reliant on practical, visual and written examinations performed 1-on-1 with an examiner. These tools attempt to assess competency through subjective ratings, checklists and multiple-choice questions that are labour intensive using surrogate measures. Eye-tracking has been used on a limited basis in various fields of medicine for training and assessment. This technology explores visual processing and holds great promise as a tool to monitor training progress towards the development of expertise. We hypothesize that eye-tracking may differentiate novices and experts as they progress to become competent in interpretation of POCUS images and provide an objective measure in assessment of competency. **Methods:** Medical students, residents and attending physicians working in an academic emergency department were recruited. Participants viewed a series of 16 ultrasound video clips in a POCUS protocol for Focused Assessment using Sonography in Trauma (FAST). The gaze pattern of the participants was recorded using a commercially available eye-tracking device. The primary outcome was the gaze parameters including total gaze time in the area of interest (AOI), average time to fixation on the AOI, number of fixations in the AOI and average duration of first fixation on the AOI. Secondary outcome was the accuracy on the interpretation of the FAST scan. **Results:** Four novices and eight experts completed this study. The total gaze time in the AOI (mean +/- SD) was 76.72 +/- 18.84s among experts vs 53.64 +/- 10.33s among novices (p = 0.048), average time to fixation on the AOI was 0.561 +/- 0.319s vs 1.048 +/- 0.280s (p = 0.027),

number of fixations in the AOI was 158.9 +/- 29.0 vs 121.8 +/- 17.5 (p = 0.042) and average duration of first fixation was 0.444 +/- 0.119s vs 0.390 +/- 0.024s (p = 0.402). The accuracy of the answers was 79.7 +/- 14.1% vs 45.3 +/- 21.9% (p = 0.007). **Conclusion:** In this pilot study, eye tracking shows potential to differentiate between POCUS experts and novices by their gaze patterns. Gaze patterns captured by eye tracking may not necessarily translate to cognitive processing. However, it allows educators to visualise the thought processes of the learner by their gaze patterns and provide insight on how to guide them towards competency. Future studies are needed to further validate the metrics for competency in POCUS applications.
Keywords: eye tracking, medical education, ultrasound

LO83

Effect of the transition to an entrustability scale on assessor stringency and leniency on daily encounter cards in emergency medicine

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Introduction: Workplace based assessments (WBAs) are integral to emergency medicine residency training. However many biases undermine their validity, such as an assessor's personal inclination to rate learners leniently or stringently. Outlier assessors produce assessment data that may not reflect the learner's performance. Our emergency department introduced a new Daily Encounter Card (DEC) using entrustability scales in June 2018. Entrustability scales reflect the degree of supervision required for a given task, and are shown to improve assessment reliability and discrimination. It is unclear what effect they will have on assessor stringency/leniency – we hypothesize that they will reduce the number of outlier assessors. We propose a novel, simple method to identify outlying assessors in the setting of WBAs. We also examine the effect of transitioning from a norm-based assessment to an entrustability scale on the population of outlier assessors. **Methods:** This was a prospective pre-/post-implementation study, including all DECs completed between July 2017 and June 2019 at The Ottawa Hospital Emergency Department. For each phase, we identified outlier assessors as follows: 1. An assessor is a potential outlier if the mean of the scores they awarded was more than two standard deviations away from the mean score of all completed assessments. 2. For each assessor identified in step 1, their learners' assessment scores were compared to the overall mean of all learners. This ensures that the assessor was not simply awarding outlying scores due to working with outlier learners. **Results:** 3927 and 3860 assessments were completed by 99 and 116 assessors in the pre- and post-implementation phases respectively. We identified 9 vs 5 outlier assessors (p = 0.16) in the pre- and post-implementation phases. Of these, 6 vs 0 (p = 0.01) were stringent, while 3 vs 5 (p = 0.67) were lenient. One assessor was identified as an outlier (lenient) in both phases. **Conclusion:** Our proposed method successfully identified outlier assessors, and could be used to identify assessors who might benefit from targeted coaching and feedback on their assessments. The transition to an entrustability scale resulted in a non-significant trend towards fewer outlier assessors. Further work is needed to identify ways to mitigate the effects of rater cognitive biases.
Keywords: assessment, entrustability, rater bias