

MP19**Creation and implementation of an educational emergency medicine clinical handbook**

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Innovation Concept: Medical students often face challenges when entering clerkship. The abundance of teaching tools and online resources make it difficult for learners to navigate and apply knowledge in a clinical setting. Although valuable study aids exist across Emergency Medicine (EM) clerkship curriculums, a convenient resource tailored to junior learners for on-shift use is lacking. We created an academic resource with the intent of assessing student engagement with the handbook. **Methods:** Ottawa's Clerkship Guide to Emergency Medicine was developed using information from a commonly used EM textbook and relevant literature. After a comprehensive peer-review by staff EM physicians, the resource was published online and made available to learners in March 2018. To assess utility of this resource, a national survey was administered followed by a Likert-type analysis. Website metrics and the survey results were used to guide a sustainable model for annual student-driven resource updates. **Curriculum, Tool or Material:** The handbook contains high-yield EM topics organized into one-page summaries. The main sections include resuscitation, symptoms-based approach, and medical emergencies. Students can access the handbook online, via mobile app, or use a printable version. Over 7300 unique downloads have occurred since launch. Our national survey revealed that of the total respondents (N = 171, 93.6% 3rd-year clerks, 31.6% uOttawa students), 97.1% (n = 166) had used the handbook on shift. A majority were able to find an answer to their clinical question either fully (53%, n = 88) or partially (46.4%, n = 77) and many would recommend this resource as-is (62.7%, n = 104) or with some modifications (34.3%, n = 57). Compared to the student's preferred clinical resource, mean Likert-type scores showed a significant ($p < 0.01$) positive difference in favor of the handbook regarding themes of organization (3.83 vs. 4.38), length (3.43 vs. 4.76) and ease in accessibility (3.46 vs. 4.79). **Conclusion:** The value of this handbook for junior learners entering their acute care rotation is evident. We demonstrated that student uptake of this handbook was robust. Compared to commonly used resources, students felt this handbook was more organized, concise in length, and easy to integrate into their clinical workflow. Implementation of this handbook across Canadian EM curriculums may bridge the EM knowledge gap in junior learners and off-service residents.

Keywords: clinical handbook, innovations in EM education, study guide

MP20**Resuscitative thoracotomy: development of a video curriculum to teach a rare procedure**

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Innovation Concept: Resuscitative thoracotomy (RT) is a life-saving procedure in select trauma patients. However, RT is infrequently performed, limiting trainee exposure. In a survey of American training programs, graduating residents had performed an average of 3 RTs. There is no published data regarding the number of RTs observed and performed by Canadian trainees. We theorized that RT procedural exposure and comfort level would be low in emergency medicine

(EM) trainees at our institution due to lack of exposure. Thus, we aimed to create a first person procedural video using local resources to teach RT. **Methods:** We first created a needs assessment survey conducted within Western University Division of Emergency Medicine over two months in 2018. Senior residents observed an average of 1.5 RT procedures and participated in an average of 0.6. Furthermore, 88% of senior residents cited a lack of confidence in their ability to perform this procedure and 87% indicated an instructional video would be a valuable educational tool. We created a video described in detail below. Prior to video distribution a survey was distributed asking respondents to list the critical steps in performing an RT. Participants were then asked to view the video and complete the survey again. Responses were scored by two independent reviewers.

Curriculum, Tool or Material: An immersive cadaveric simulation video was developed in collaboration with a trauma surgeon at our institution. The video reviewed our thoracotomy tray, RT indications/contraindications, and demonstrated a narrated first-person RT on a floppy embalmed cadaver. Potential difficulties encountered during the procedure are highlighted throughout the video with troubleshooting tips suggested. **Conclusion:** We had 46 survey respondents from our division (25 residents and 21 consultants). After viewing the video, procedural step scores were significantly higher for junior FRCPC ($p = 0.001$), senior FRCPC ($p = 0.013$), and CCFP-EM ($p < 0.001$) residents as well as consultants ($p = 0.016$). There was also an increase in the number of respondents who reported confidence in their ability to perform RT post-video (n = 4 pre-video; n = 11 post-video). This video is an inexpensive, effective way to teach the critical procedural steps of RT and can be easily adapted for use at other institutions. Next steps for further education in this topic include development of a hands-on cadaveric simulation curriculum for residents.

Keywords: innovations in EM education, resuscitative thoracotomy, trauma education

MP21**A brief educational session is effective for teaching emergency medicine residents resuscitative transesophageal echocardiography**

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Innovation Concept: Resuscitative clinician-performed transesophageal echocardiography (TEE) is a relatively new ultrasound application that has the potential to guide the management of critically ill patients in the emergency department. The objective of this study was to determine the effectiveness of a brief training workshop for teaching a resuscitative TEE protocol to emergency medicine residents using a high-fidelity simulator. **Methods:** Emergency medicine residents with no prior TEE experience that were rotating through a university-affiliated emergency department were invited to participate in the study. Participants completed a questionnaire and baseline skill assessment using a high-fidelity simulator. The training session included a 20 minute lecture followed by 10 simulated repetitions of a 5-view TEE sequence with instructor feedback. Learning was evaluated by a skill assessment immediately after training and a transfer test 1-2 weeks after the training session. Ultrasound images and transducer motion metrics were captured by the simulator for blinded analysis. The primary outcome of this study was the percentage of successful views before and after training as determined by two blinded reviewers using an anchored scoring tool. Secondary

outcomes included time to scan completion and diagnostic accuracy on the transfer test. Assessment scores were compared using a two-tailed t-test. **Curriculum, Tool or Material:** 22 of 25 (88%) of invited residents agreed to participate in the study. Percentage of successful views increased from 44.5% (SD 27.9) at baseline to 98.6% (SD 3.5) after training ($p < 0.001$), and was 86.8% (SD 12.1) on transfer testing ($p < 0.001$). Time to complete the scan was 330 seconds at baseline, 125 seconds after training ($p < 0.001$), and 184 seconds ($p < 0.001$) in the transfer test. Participants made the correct diagnosis in 75% (SD 25.6) of the cases in the simulated patient encounter. The descending aorta view had the highest success rate (93.2%) and the midesophageal long axis view had the lowest success rate (75.0%). **Conclusion:** A brief simulation-based workshop was effective for teaching emergency medicine residents a five-view resuscitative TEE protocol. Future studies are needed to determine optimal methods for long-term skill retention.

Keywords: innovations in EM education, simulation, transesophageal echocardiography

MP22

Guiding practice transition with a faculty mentorship program
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Innovation Concept: Transition to independent practice is challenging and early career physicians are more prone to burnout and error. Despite recommendations for formal mentorship to support physicians, only 43.6% of US academic Emergency Medicine departments have such programs. We describe an innovative mentorship program designed to support these early career physicians and enhance quality of care, career longevity, and wellness. We operationalized mentorship in which experienced, highly regarded, empathic mentors guide mentees in their personal and professional development. **Methods:** In this program two Emergency Physician mentors were teamed with each newly hired Emergency Physician. Mentees could request their own mentors, and teams were matched on the basis of shared personal and academic interests. Mentors received academic funding and training on good mentorship practice, roles and responsibilities, and feedback. Teams had to meet formally at least twice a year, with additional contact as needed. While mentees set the meeting agenda, teams were also encouraged to address four main areas. These areas were identified from a targeted needs assessment and literature review. They include: 1) clinical process and care, 2) departmental structure and culture, 3) teaching and scholarship, and 4) physician wellness. After meetings, mentees summarized and submitted the topics discussed and reflected on action plans. An oversight committee supported the program. **Curriculum, Tool or Material:** All nine (9) newly hired physicians joined the program in Fall 2018. As of December 2018, six (6) teams have had formal meetings. They discussed the following areas: clinical processes and care (50%), departmental structure and culture (100%), teaching and scholarship (67%), and physician wellness (100%). Other areas discussed include: academic career, financial planning, and networking. Teams spent 20-60% of the time formulating steps to achieve mentee career goals. They spent 40-60% of the time discussing skills and resources needed. End of year program evaluation will include outcomes such as satisfaction, value, effectiveness, projects, promotions, and awards. The results will shape future program design. **Conclusion:** We implemented a mentorship program for newly hired Emergency Physicians. As

mentorship is integral to successful transition to independent practice, this program model could be highly beneficial to other academic Emergency Medicine departments.

Keywords: faculty development, innovation in EM education, mentorship

MP23

Giving medical students what they deserve - a rigorous, equitable and defensible CaRMS selection process

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Innovation Concept: The fairness of the Canadian Residency Matching Service (CaRMS) selection process has been called into question by rising rates of unmatched medical students and reports of bias and subjectivity. We outline how the University of Saskatchewan Royal College emergency medicine program evaluates CaRMS applications in a standardized, rigorous, equitable and defensible manner. **Methods:** Our CaRMS applicant evaluation methods were first utilized in the 2017 CaRMS cycle, based on published Best Practices, and have been refined yearly to ensure validity, standardization, defensibility, rigour, and to improve the speed and flow of data processing. To determine the reliability of the total application scores for each rater, single measures intraclass correlation coefficients (ICCs) were calculated using a random effects model in 2017 and 2018. **Curriculum, Tool or Material:** A secure, online spreadsheet was created that includes applicant names, reviewer assignments, data entry boxes, and formulas. Each file reviewer entered data in a dedicated sheet within the document. Each application was reviewed by two staff physicians and two to four residents. File reviewers used a standardized, criterion-based scoring rubric for each application component. The file score for each reviewer-applicant pair was converted into a z-score based on each reviewer's distribution of scores. Z-scores of all reviewers for a single applicant were then combined by weighted average, with the group of staff and group of residents each being weighted to represent half of the final file score. The ICC for the total raw scores improved from 0.38 (poor) in 2017 to 0.52 (moderate) in 2018. The data from each reviewer was amalgamated into a master sheet where applicants were sorted by final file score and heat-mapped to offer a visual aid regarding differences in ratings. **Conclusion:** Our innovation uses heat-mapped and formula-populated spreadsheets, scoring rubrics, and z-scores to normalize variation in scoring trends between reviewers. We believe this approach provides a rigorous, defensible, and reproducible process by which Canadian residency programs can appraise applicants and create a rank order list.

Keywords: applicant evaluation, Canadian residency matching service (CaRMS), innovations in EM education

MP24

The University of Ottawa's Department of Emergency Medicine pre-internship boot camp: a descriptive review

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Innovation Concept: Emergency Medicine (EM) residency programs in Canada have transitioned to competency based medical education and the first stage of the curriculum focuses on standardizing learner competency. Pre-internship boot camps provide a focused