between. At each session, participants completed a one-minute pre-test of CC performance, viewed a one-minute training video, practiced CCs for two minutes with real-time feedback, and completed a one-minute post-test. Performance parameters measured were CC depth, rate, release, and hand positioning. A final "compression score" assessed integrated performance across these parameters and served as our primary outcome. Participants also reported pre- and post-training comfort with performing CCs which served as our secondary outcome. **Curriculum, Tool or Material**: Our "Quick Refresher Sessions" (QRS) were completed by participants independently without requiring an assessor or facilitator. A manikin with the ability to record and provide real-time quantitative feedback on CC quality was connected to a laptop running a customized interface. Participants typed in an individualized code and were guided through their six-minute sessions automatically. **Conclusion**: Immediately following the first training session, subjects had significant improvement in compression score ($p < 0.001$) and skill comfort ($p < 0.001$). At eight months, both intervention groups, q2m and q4m, achieved higher compression scores than control ($p = 0.001$ and $p = 0.011$) and showed greater increase in comfort level ($p = 0.002$ and $p = 0.010$). Performance between intervention groups at eight months was not statistically different. Overall, we conclude that independent QRS training every two or four months led to improved CC quality and provider comfort. Future directions include increasing sample size and tailoring training intervals to individual performance.

Keywords: automated real-time feedback, innovations in EM education, resuscitation medicine

LO84

Ready to run the show: development of a new instrument for assessing resident competence in the emergency department

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Innovation Concept: The outcome of emergency medicine training is to produce physicians who can competently run an emergency department (ED) shift. While many workplace-based ED assessments focus on discrete tasks of the discipline, others emphasize assessment of performance across the entire shift. However, the quality of assessments is generally poor and these tools often lack validity evidence. The use of entrustment scale anchors may help to address these psychometric issues. The aim of this study was to develop and gather validity evidence for a novel tool to assess a resident's ability to independently run an ED shift. **Methods**: Through a nominal group technique, local and national stakeholders identified dimensions of performance reflective of a competent ED physician. These dimensions were included in a new tool that was piloted in the Department of Emergency Medicine at the University of Ottawa during a 4-month period. Psychometric characteristics of the items were calculated, and a generalizability analysis used to determine the reliability of scores. An ANOVA was conducted to determine whether scores increased as a function of training level (junior = PGY1-2, intermediate = PGY3, senior = PGY4-5), and varied by ED treatment area. Safety for independent practice was analyzed with a dichotomous score. **Curriculum, Tool or Material**: The developed Ottawa Emergency Department Shift Observation Tool (O-EDShOT) includes 12-items rated on a 5-point entrustment scale with a global assessment item and 2 short-answer questions. Eight hundred and thirty-three assessment were completed by 78 physicians for 45 residents. Mean scores differed significantly by training level ($p < .001$) with junior residents receiving lower ratings (3.48 ± 0.69) than intermediate residents who received lower ratings (3.98 ± 0.48) than senior residents (4.54 ± 0.42). Scores did not vary by ED treatment area ($p > .05$). Residents judged to be safe to independently run the shift had significantly higher mean scores than those judged not to be safe (4.74 ± 0.31 vs 3.75 ± 0.66; $p < .001$). Fourteen observations per resident, the typical number recorded during a 1-month rotation, were required to achieve a reliability of 0.80. **Conclusion**: The O-EDShOT successfully discriminated between junior, intermediate and senior-level residents regardless of ED treatment area. Multiple sources of evidence support the O-EDShOT producing valid scores for assessing a resident's ability to independently run an ED shift.

Keywords: entrustment, innovations in EM education, workplace-based assessment

LO85

Development of a competency based assessment tool for emergency department point of care ultrasound

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Innovation Concept: Assessment of residents' Point of Care Ultrasound (PoCUS) competency currently relies on heterogenous and unvalidated methods, such as the completion of a number of proctored studies. Although number of performed studies may be associated with ability, it is not necessarily a surrogate for competence. Our goal was to create a single Ultrasound Competency Assessment Tool (UCAT) using domain-anchored entrustment scoring. **Methods**: The UCAT was developed as an anchored global assessment score, building on a previously validated simulation-based assessment tool. It was designed to measure performance across the domains of Preparation, Image Acquisition, Image Optimization, and Clinical Integration, in addition to providing a final entrustment score (i.e., OSCORE). A modified Delphi method was used to establish national expert consensus on anchors for each domain. Three surveys were distributed to the CAEP Ultrasound Committee between July-November 2018. The first survey asked members to appraise and modify a list of anchor options created by the authors. Next, collated responses from the first survey were redistributed for a re-appraisal. Finally, anchors obtaining >65% approval from the second survey were condensed and redistributed for final consensus. **Curriculum, Tool or Material**: Twenty-two, 26, and 22 members responded to the surveys, respectively. Each anchor achieved >90% final agreement. The final anchors for the domains were: Preparation – positioning, initial settings, ensures clean transducer, probe selection, appropriate clinical indication; Image Acquisition – appropriate measurements, hand position, identifies landmarks, visualization of target, efficiency of probe motion, troubleshoots technical limitations; Image Optimization – centers area of interest, overall image quality, troubleshoots patient obstacles, optimizes settings; Clinical Integration – appropriate interpretation, understands limitations, utilizes information appropriately, performs multiple scans if needed, communicates findings, considers false positive and negative causes of findings. **Conclusion**: The UCAT is a novel assessment tool that has the potential to play a central role in the training and evaluation of residents. Our use of a modified Delphi method, involving key stakeholders in PoCUS education, ensures that the UCAT has a high degree of process and content validity. An important next step

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in determining its construct validity is to evaluate the use of the UCAT in a multi-centered examination setting.
Keywords: assessment, innovations in EM education, ultrasound

LO86

Improving time to analgesia administration for musculoskeletal injuries in the emergency department.

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Background: Greater than 80% of patient visits to emergency departments (EDs) are for a pain-related concerns. Approximately 38,000 patients per year have such complaints in our academic hospital ED. 3,300 (8.6%) of those visits are for musculoskeletal (MSK) pain (i.e. back or extremity injury/pain), which are typically triaged as low-acuity presentations, leading to longer times to clinician assessment. Delays to adequate analgesia result in unnecessary suffering, worse patient care and satisfaction, and increased patient complaints. **Aim Statement:** We aimed to reduce the time-to-analgesia (TTA; time from patient triage to receipt of analgesia) for patients with MSK pain in our ED by 55% (to under 60 minutes) in 9 months' time (May 2018). **Measures & Design**: Our outcome measures were TTA (in minutes) and ED length of stay (LOS; in minutes). Process measures included nurses' use of medical directive and rate of analgesia administration. Balancing measures included patient adverse events and time spent triaging for nurses. We utilized weekly data capture for the Statistical Process Control (SPC) chart, and we used Mann-Whitney U test for our before-and-after evaluation. Utilizing the Model for Improvement, we performed wide stakeholder engagement and root cause analyses, and we created a Pareto chart. This led to our Plan-Do-Study-Act (PDSA) cycles: 1) nurse-initiated analgesia (NIA) at triage; 2) new triage documentation aid for medication administration; 3) quick reference medical directive badge tag for nurses; 4) weekly targeted feedback of the project's progress at clinical team huddle. **Evaluation/Results:** TTA decrease from 129 minutes ($n = 153$) to 100 minutes (22.5%; $n = 87$, $p < 0.05$). ED LOS decreased from 580 minutes ($n = 361$) to 519 minutes (10.5%; $n = 187$; $p = 0.77$). Special cause variation was identified on the ED LOS SPC chart with eight consecutive points below the midline, after PDSA 1. The number of patients who received any analgesia increased from 42% ($n = 361$) to 47% ($n = 187$; $p = 0.13$). The number of patients who received medications via medical directives increased from 22% ($n = 150$) to 44% ($n = 87$; $p < 0.001$). Balancing measures were unchanged. **Discussion/Impact:** The significant reduction in the TTA and increase in the use of medical directives in the before-and-after analyses were likely due to our front-line focused improvements and deliberate nursing engagement. With continued success and sustainable processes, we are planning to spread our project to other EDs and broaden our initiative to all pain-related concerns.
Keywords: analgesia, pain management, quality improvement and patient safety

LO87

Impact of an evidence-based clinical pathway for suspected renal colic in low-risk patients with previous nephrolithiasis on CT utilization and emergency department throughput

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Background: Choosing Wisely (CW) recommends patients under age 50 with uncomplicated, recurrent renal colic do not require CT scans. Despite this, CT use has risen dramatically in the past two decades, resulting in unnecessary radiation, cost and prolonged length of stay (LOS). Additionally, a common alternative – formal ultrasound (US) – is not always available. Returning for US can add 10 hours to LOS. We introduced a clinical management pathway (CMP) for low-risk patients with renal colic utilizing point-of-care ultrasound (POCUS) and evaluated its impact on emergency department (ED) CT rates and LOS. **Aim Statement:** By April 2019, we aim to reduce CT utilization by 50% and time from physician initial assessment (PIA) to discharge by 1 hour for patients under age 50 presenting to Sunnybrook ED with uncomplicated, recurrent renal colic. **Measures & Design**: The primary intervention was a CMP developed collaboratively with local urologists. The CMP uses POCUS to assess for hydronephrosis (HN) as a marker of nephrolithiasis. Patients with HN receive follow-up in urology clinic without confirmatory imaging. Patients without HN proceed to usual care. An Ishikawa diagram helped identify barriers to success. Subsequent PDSA cycles included the introduction of reference cards, POCUS workshops and online modules. Outcome measures were ED CT utilization and PIA to discharge times. Process measures were referrals to urology clinic and proportion of patients receiving XR, US and no imaging. Balancing measures were urology CT utilization, alternate diagnoses and return ED visits. Data was plotted on a run chart. **Evaluation/Results:** Data collection is ongoing and will conclude by April 2019. Interim data shows patients enrolled in the CMP have a reduction in mean PIA-to-discharge time of 173 minutes. Fidelity – specifically, the willingness of ED physicians to use POCUS compared to the ease of ordering CTs – is the biggest challenge to success. **Discussion/Impact:** This study addresses the feasibility of CW recommendations and utilizes POCUS as a tool for recurrent renal colic. Collaboration with Urology will provide insight into the CMP's sustainability and downstream impact. Reduction of unnecessary CTs will lead to improved patient safety and reduced costs. Decreased PIA-to-discharge times will reduce overcrowding, shorten wait times and improve access to imaging for other patients. Finally, this project may encourage use of POCUS for low-risk patients with renal colic.
Keywords: point-of-care ultrasound, quality improvement and patient safety, renal colic

LO88

Reducing urine culture testing in the emergency department

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Background: The Choosing Wisely campaign aims to reduce unnecessary testing. Over testing for urinary tract infections and concomitant overtreatment of asymptomatic bacteriuria is a target of this campaign, aiming to decrease healthcare costs and the risks of side effects such as Clostridium difficile infection, adverse reactions, and antimicrobial resistance. During the study baseline (2017), 95 urine cultures (UC) were sent for every 1000 ED visits (9.5%). Of these, fewer than 20% were positive. **Aim Statement:** The aim of this improvement initiative was to reduce UC testing in the ED, by 50%, from a baseline average of nearly 100 cultures per 1000 ED patients visits, to 50 cultures per 1000 visits, by May 31st, 2018. **Measures & Design**: This was an interrupted time series study, analyzed using Statistical Process Control (SPC) methodology. Root

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