

opportunity to assist with this standardization prior to residency training. The objective of this descriptive review was to describe our institution's EM pre-internship boot camp in the context of current literature and to summarize the state of EM boot camp curricula across all reported EM residency programs. **Methods:** The description of our two-day boot camp included its curriculum design, required preparation and resources, and a detailed timeline of each day's events. To compare our boot camp to current literature, a comprehensive search of both primary and gray literature was performed. **Curriculum, Tool or Material:** Our institution's boot camp is two days of teaching focused on clinical knowledge and procedural competency, with a large component centered on simulation. Day one consisted of an introduction to the boot camp, a review of crisis resource management principles and advanced cardiac life support (ACLS) algorithms, ACLS simulation sessions, and small group skill sessions on common emergency department procedures. Day two contained a point of care ultra sound lecture, an ultrasound guided central venous catheterization session, pigtail and chest tube insertion sessions, and high-fidelity simulation cases. In comparison to the other pre-internship boot camps that were identified in the literature, our boot camp offers a unique focus and format. **Conclusion:** This review is the first to report on an EM-specific boot camp at a non-American institution, and it provides a framework for the development and refinement of pre-internship EM boot camps at other universities. **Keywords:** boot camp, innovations in EM education, simulation

MP25

Implementation of pain order sets to decrease the time to analgesics in the emergency department: a quality improvement initiative in progress

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Background: Acute pain is a common presentation in the Emergency Department (ED) and inadequacy in its treatment can lengthen stay. Earlier analgesia use and discharge has been associated with positive patient experiences and improved pain management. Validated 'fast-track pathways' to aid physician decision making in analgesic administration is associated with decreased waiting times in renal colic diagnoses. **Aim Statement:** Our aim was to create an order set, for an approach to patients with acute pain, to reduce median time from point of triage to analgesia. We sought to reduce median time by 15 minutes, for ED patients with renal colic in the three months after implementation as compared to three months before. **Measures & Design:** We used a literature review and comparison to existing order sets at other EDs to design our draft. We focused our evaluation on patients with renal colic. We underwent multiple revisions based on stakeholder feedback and educated both physician and nursing teams about the order set. The utilization, however, was at physician discretion. We implemented the order set on March 30, 2017. After three months, an electronic retrospective chart review identified patients with a final renal colic diagnosis. For each patient, we captured triage time using electronic records and time to analgesia with the medication cart. Utilization of order sets was confirmed via manual chart audit. **Evaluation/Results:** A run chart showed worsening times after the intervention. Median time to analgesia in minutes, 3 months prior (n = 90) and post (n = 93) intervention, increased from 228 to 310 minutes, although the range was very large. Chart audits demonstrated a considerably low uptake of the order set with a small gradual increase from 0% to 20% over the 3-month period.

Discussion/Impact: There was insufficient uptake of the Acute Pain order set preventing impact on time to analgesia. Changes in occupancy likely contributed to the worsening times. There was an increase in utilization over the 3-month period and could be due to increased awareness. This demonstrates that interventions require more than implementation to be effective. Difficulties in implementation were due to the document not being readily available. We have organized the nursing staff to attach order sets onto charts based on triage assessment and will re-assess with another PDSA cycle after this intervention.

Keywords: pain, quality improvement and patient safety, renal colic

MP26

Development and evaluation of a novel emergency physician fan-out mechanism at an urban centre for use in mass casualty incidents

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Background: Understaffing in mass casualty incidents limits flow in the overwhelmed emergency department, which is further compounded by inefficient use of those same human resources. Process mapping analysis of a "Code Orange" exercise at a tertiary academic hospital exposed the failures of telephone-based emergency physician fan-out protocols to address these issues. As such, a quality improvement and patient safety initiative was undertaken to design, implement, and evaluate a new mass casualty incident fan-out mechanism. **Aim Statement:** By February 2019, emergency physician fan-out will be accomplished within 1 hour of Code Orange declaration, with a response rate greater than 20%. **Measures & Design:** Process mapping of a Code Orange simulation highlighted telephone fan-out to be ineffective in mobilizing emergency physicians to provide care in mass casualty incidents: available staff were pulled from their usual duties to help unit clerks unsuccessfully reach off-duty physicians by telephone for hours. Stakeholders subsequently identified automation and computerization as a compelling change idea. A de-novo automated bidirectional text-messaging system was thus developed. Early trials were analyzed for process measures including fan-out speed, unit clerk involvement, and physician response rate, with further large-scale tests planned for early 2019. **Evaluation/Results:** Only 50% of telephone fan-out was completed after a 2-hour exercise despite 3 staff supplementing the 2 on-shift unit clerks, with a 4% physician response rate. In contrast, data from initial trials of the automated system suggest that full fan-out can be performed within 1 hour of Code Orange declaration and require only 1 unit clerk, with text-messages projected to yield higher physician response rates than telephone calls. Early findings have thus far affirmed stakeholder sentiments that automating fan-out can improve speed, unit clerk efficiency, and physician response rate. **Discussion/Impact:** Automated text-message systems can expedite fan-out protocol in mass casualty incidents, relieve allied health staff strain, and more reliably recruit emergency physicians. Large-scale trials of the novel system are therefore planned for early 2019, with future expansion of the protocol to other medical personnel under consideration. Thus, automated text-message systems can be implemented in urban centres to improve fan-out efficiency and aid overall emergency department flow in mass casualty incidents.

Keywords: disaster medicine, mass casualty incidents, quality improvement and patient safety

MP27

Designing team success - an engineering solution to avoid chest tube equipment chaos using best available evidence, consensus and prototyping

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Background: Chest tube insertion is a time and safety critical procedure with a significant complication rate (up to 30%). Industry routinely uses Lean and ergonomic methodology to improve systems. This process improvement study used best evidence review, small group consensus, process mapping and prototyping in order to design a lean and ergonomically mindful equipment solution. **Aim Statement:** By simplifying and reorganising chest tube equipment, we aim to provide users with adequate equipment, reduce equipment waste, and wasted effort locating equipment. **Measures & Design:** The study was conducted between March 2018 and November 2018. An initial list of process steps from the best available evidence was produced. This list was then augmented by multispecialty team consensus (3 Emergency Physicians, 1 Thoracic Surgeon, 1 medical student, 2 EM nurses). Necessary equipment was identified. Next, two prototyping phases were conducted using a task trainer and a realistic interprofessional team (1 EM Physician, 1 ER Nurse, 1 Medical student) to refine the equipment list and packaging. A final equipment storage system was produced and evaluated by an interprofessional team during cadaver training using a survey and Likert scales. **Evaluation/Results:** There were 47 equipment items in the pre-intervention ED chest tube tray. After prototyping 21 items were removed while nine critical items were added. The nine items missing from the original design were found in four different locations in the department. Six physicians and seven RNs participated in cadaver testing and completed an evaluation survey of the new layout. Participants preferred the new storage design (Likert median 5, IQR of 1) over the current storage design (median of 1, IQR of 1). **Discussion/Impact:** The results suggest that the lean equipment storage is preferred by ED staff compared to the current set-up, may reduce time finding missing equipment, and will reduce waste. Future simulation work will quantitatively understand compliance with safety critical steps, user stress, wasted user time and cost.

Keywords: chest tube, lean, quality improvement and patient safety

MP28

Reigniting improvements in emergency departments – New approaches to resolving unsolvable problems

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Background: In 2016 The Fraser Health Authority's Emergency Network established a priority to standardize patient access and flow through their 13 emergency departments (ED). A Model of Care (MOC) was developed after an extensive review of the literature and current practices across BC. **Aim Statement:** The ED Model of Care (MOC) specifies best practice expectations with respect to emergency patient access and flow. Rather than a 'top-down' mandate of expected practices, the MOC provided the opportunity for site-based teams to promote solutions that were 'locally actioned and regionally enabled'. **Measures & Design:** ED Quality Improvement (QI) teams were developed at all sites. The ED Network developed a "QI

Bootcamp", a one-day course focused on imparting tools to drive improvements, providing a baseline understanding of how to launch and sustain local QI initiatives. Using Prosci's change approach, an emphasis was placed on using local ingenuity to implement plans, analyze feedback and diagnose gaps. This approach measured utilization of the changes to tangibly link initiatives and change to specific outcomes. As part of this strategy, an online scorecard was created to measure local results against best practice outcomes. The scorecard tracked quantitative access metrics such as ED Length of Stay (EDLOS), Left Without Being Seen rate, and triage time. Measures such as forming a QI team, identifying a QI project and completing a PDSA cycle were included in the scorecard. **Evaluation/Results:** The MOC change management strategy was launched in May of 2018. By December 2018 all 13 EDs had formed a local QI team and identified a project. Twelve sites had completed at least one PDSA cycle and 10 sites had at least 75% of their members attend the QI Bootcamp. The scorecard displayed improvements in flow metrics. Highlights include the average arrival to triage time decreasing by 36% at one site, EDLOS for moderately ill patients decreased from 4.8 to 3.4 hours at another, and a community hospital had low acuity patient EDLOS decrease from 3.52 to 2.37 hours. **Discussion/Impact:** A standardized approach to patient access and flow in the ED (MOC), combined with the engaging grass roots approach to inspiring local innovation, allied with a concrete change management approach demonstrated significant results for patients accessing and moving through EDs. This pattern that is more likely to sustain itself because the results are felt and locally owned.

Keywords: emergency access, patient flow, quality improvement and patient safety

MP29

Community based naloxone usability testing

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Background: In Alberta in 2016 more people died from an opioid overdose than from motor vehicle crashes. Naloxone is an opioid antagonist - it can reverse an opioid overdose for a period of 30 to 60 minutes. Naloxone kits are available free at emergency departments and community organizations around the province with training provided at the point of pickup. It is possible that training may be refused or may be forgotten and people are often left to rely solely on the instructions included in the kit. Human centred design can improve the way people interact with overdose instructions. **Aim Statement:** This study will measure the effectiveness and usefulness of prototype community naloxone kit instructions over a six month period of time (2018) in Calgary and Edmonton with the aim to use human centred design principles to improve the way people interpret emergency overdose response directions. **Measures & Design:** Information design experts engaged people with lived experience to provide a process map outlining the current role that educational materials and instructions for community naloxone kits play in responding to an opioid overdose. Alberta Health Services (AHS) Human Factors, in collaboration with AHS harm reduction developed the protocol and administered pre- and post-questionnaire and specific 'performance checkpoints' intended to measure effectiveness and usefulness. A simulated overdose including a mannequin, injection trainer and anatomical paper diagram was designed and a community naloxone kit with instructions setting was provided. Participants were recruited through harm reduction nurses with