

framework and an inductive analysis. **Results:** 95/480 (19.8%) staff completed free text survey questions on simulation. Deductive analysis of data from this narrative survey results using the RC framework domains identified examples of shared goals, shared knowledge, communication, and mutual respect. Two major themes from the inductive analysis – “Behaviour, process and system change”, and “Culture and relationships” – aligned closely with findings from the RC analysis, with additional themes of “Personal and team learning” and the “Impact of the simulation experience” identified. **Conclusion:** Our findings suggest that an established trauma simulation program can have a profound impact on the relational aspects of care and the development of a collaborative culture, with perceived tangible impacts on teamwork behaviours and institutional systems and processes. The RC framework – shared knowledge, shared goals and mutual respect in the context of communication that is timely, accurate, frequent and problem-solving based – can provide a common language for simulation educators to design and debrief simulation exercises that aim to have a translational impact.

Keywords: ethnography, simulation, trauma

MP22

Using galvanic skin response to identify resuscitation expertise in a pulmonary embolism simulation exercise

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Introduction: As physicians gain expertise in clinical settings, they are able to handle progressively more information, in both complexity and magnitude, as an organized schema. Expert physicians then, will be more likely to function with less cognitive load—the amount of mental effort someone exerts within their short-term working memory. Expert physicians will also retain more working memory capacity to process information during medical emergencies than novice physicians. While a physician's ability to process medical information may have implications for handling medical emergencies, there is a paucity of empirical research examining the link between physicians' expertise and biometric measures of cognitive load. Using galvanic skin response (GSR) as a surrogate measure of cognitive load, we assess whether average cognitive load differs significantly between expert and novice physicians in a pulmonary embolism simulation exercise. **Methods:** We analyzed GSR data ($n = 39$) from a 10-minute simulated pulmonary embolism exercise among 18 faculty physicians and 21 residents. Cluster and factor analyses were used to identify novice, intermediate, advanced, and expert physicians with based on participants' GRS scores. One-way ANOVA was used to analyze group differences. Descriptive statistical techniques were also used to describe the distribution of GRS expertise by participants' level of training. **Results:** Contrary to expectation, we found more than two groups of resuscitation expertise in the simulation exercise. Respectively, we identified 7.7% and 20.5% of participants as novice and expert physicians. About 36% of participants were classified as intermediate (35.9%) physicians while another 36% were classified as having an advanced (35.9%) expertise in resuscitation. All the novice physicians identified were found to be PGY1 and PGY2 resident residents. A third (33.3%) of faculty physicians and 9.5% of residents were identified as experts. As expected, average GSR score for experts ($\bar{x} = 0.60\mu S$, $SD = 0.26$) was significantly ($F = 137.6$, $p < 0.001$) lower than the average GSR for novices ($\bar{x} = 5.55\mu S$, $SD = 0.99$), intermediate ($\bar{x} = 2.84\mu S$, $SD = 0.40$), and advanced ($\bar{x} = 1.57\mu S$, $SD = 0.28$) physicians. **Conclusion:** GSR measures of cognitive load may be used to

identify resuscitation expertise in managing pulmonary embolism and related medical conditions through simulation exercises.

Keywords: cognitive load, resuscitation, simulation

MP23

Mixed methods analysis of an automated e-mail audit and feedback intervention for fostering emergency physician reflection

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Innovation Concept: Emergency physicians (EP) rarely receive timely, iterative feedback on clinical performance that aids their reflective practice. The Calgary zone ED recently implemented a novel email-based alert system wherein an EP is notified when a patient whose ED care they were involved in is admitted to hospital within 72-hours of discharge from an index ED visit. Our study sought to evaluate the general acceptability of this form of audit and feedback and determine whether it encourages practice reflection.

Methods: This mixed methods realist evaluation consisted of two sequential phases. An initial quantitative phase used data from our electronic health record and a survey to examine the general features and acceptability of 72-hour readmission alerts sent from May 2017-2018. A subsequent qualitative phase involved semi-structured interviews exploring the alert's role in greater depth. Quantitative data were summarized using descriptive statistics and qualitative data were analyzed using thematic and template analysis techniques. Results of both phases were used to guide construction of context-mechanism-outcome statements to refine our program theory. **Curriculum, Tool, or Material:** 4024 alerts were sent over a 1-year period, with each physician receiving approximately 17 alerts per year (Q1: 7, Q3: 25, IQR: 18). The top five CEDIS complaints on index presentations were abdominal pain, flank pain, shortness of breath, vomiting and/or nausea, and chest pain (cardiac features). The majority of re-admissions (78.6%) occurred within 48 hours after discharge. Immediate alert survey feedback provided by EP's noted that 52.65% ($N = 471$) of alerts were helpful. Thematic analysis of 17 semi-structured interviews suggests that the alert was generally acceptable to physicians. However, certain EPs were concerned that the alert impacted hire/fire decisions even when leadership didn't endorse this sentiment. Physicians who didn't believe alerts were involved in hire/fire decisions, described greater engagement in the reflective process. Conversely, physicians, who believed alerts were involved in hire/fire decisions, were more likely to defensively change their practice. **Conclusion:** Most EPs noted that timely notification of 72-hour readmissions made them more mindful of documenting discharge instructions. Our implementation of a 72-hour readmission alert was an acceptable format for audit and feedback and appeared to facilitate physician reflection under certain conditions.

Keywords: feedback methods, innovations in EM education, mixed methods

MP24

Contagion: An innovative approach to learning the Orange Book and Choosing Wisely Canada guidelines around antimicrobial treatment

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Innovation Concept: The Orange Book (OB) identifies drugs approved on the basis of safety and effectiveness by the FDA and

serves as the gold standard reference for correct pharmacological therapies. It ties in closely with Choosing Wisely Canada (CWC) modeling good stewardship in antimicrobial prescriptions. The book focuses on passive didactic learning instead of active learning, which was shown to have a greater influence on prescribing behaviour. Educational video games, a form of active learning, have been shown to improve clinical skills in medical training. Contagion is a role-playing video game providing an active way of teaching antimicrobial components of the OB and CWC guidelines. **Method:** Phase I of Contagion was qualitatively tested on students and physicians at McMaster University for teaching effectiveness, applicability to real-life scenarios, and enjoyability. Post-game play 12 participants scored different aspects of the game on a Likert scale. **Curriculum, Tool, or Material:** The player is a rural physician treating infections in various communities. Each round, the player is given a crate of antibiotics. As communities are infected, the player is provided with clinical symptoms the patients present with. The player must identify the pathology and then correctly treat the communities. The player can treat empirically or order tests to identify the infectious organism. The player strategically navigates which communities to treat as there are limited actions per turn and the player must prevent communities from dying or infecting neighboring regions. Communities tend to build antibiotic resistance over time making first-line treatments unviable, thus careful strategizing and stewardship is essential. Active learning will occur when players are tasked with finding the correct answer to different presentations. After each turn, players will learn about the infecting organism, its phenotypes, and common infectious symptoms. This is considered passive learning. **Conclusion:** Contagion was well-received by physicians and medical students as an active learning tool to teach the OB and CWC guidelines. On preliminary user testing Contagion scored 5 in effectiveness in teaching treatments and 4.6 in teaching stewardship. An objective of this project is to perform large scale testing across schools to demonstrate the effectiveness of the learning components of the game. We hope to eventually create a tool that can be incorporated in continuing medical education for physicians.

Keywords: antibiotic stewardship, innovations in EM education, video-game based learning

MP25

Assessing the learning impact of the Northern City of Heroes public exhibit on bystander cardiopulmonary resuscitation response

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Innovation Concept: In Sudbury, ON 44% of out-of-hospital cardiac arrest (OHCA) patients receive bystander CPR (bCPR), and only 4.7% survive cardiac arrest. The Northern City of Heroes (NCH) community initiative was launched in April 2019 with a goal of improving survival from OHCA through hands-only bCPR in the municipality. One NCH initiative is an interactive exhibit at Science North, a science centre in Sudbury that hosts 250,000 visitors annually. The exhibit employs simulation trainers for CPR, accompanying signage and interactive elements. The goals of the exhibit are to activate bCPR, change and measure behaviours through exhibit interactions on how to deliver excellent CPR, and improve survival rates in OHCA patients. **Methods:** Data is being collected from

3000 visitors using self-reported surveying via SurveyGizmo to assess likelihood of performing bCPR, pre and post interacting with the exhibit. Visitor behaviour will be examined at the exhibit using video-recorded interactions and coding those behaviours using BORIS software. Behavioural data will be analyzed using the Visitor Engagement Framework (VEF) where initiation, transition and breakthrough learning-behaviours are coded and an exhibit Visitor Engagement Profile (VEP) is created. The VEF and VEP are tools used in informal learning settings to assess exhibit impacts on learning. **Curriculum, Tool, or Material:** The use of an easily-apprehensible, hands-on exhibit tool located in a public setting, such as a science centre, creates a platform for engaging large and diverse public audiences. This type of bCPR exhibit has not been implemented in other similar environments. The informal learning setting allows the science centre staff to engage in personalized interactions that can solidify the quality of learning and confidence in employing the new skills developed. **Conclusion:** The NCH exhibit and new strategies for embedding informal curriculum are powerful tools to reach diverse audiences, build knowledge and skills, and have a measurable impact on bCPR and OHCA survival rates. Data is being captured and tracked by Health Sciences North around the City of Greater Sudbury's bCPR and OHCA survival rates to monitor long-term impacts of the NCH community initiatives. Limitations of the study may be found in the focused demographics as well as the nature of self-reported learning. Future research directions include broader geographical surveying to assess improvements in community response to OHCA as a direct result of an interactive bCPR exhibit.

Keywords: bystander cardiopulmonary resuscitation, informal learning, innovations in EM education

MP26

The simulated newsroom: a novel educational intervention to teach advocacy skills to resident physicians

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Innovation Concept: Advocacy is a key competency of Canadian residency education, yet physicians seldom engage with supra-clinical advocacy efforts upon completion of training. Emergency medicine (EM) residency training may not equip graduates with the knowledge and skills required to engage as physician-advocates in their communities. Focused writing workshops may increase the confidence and ability of EM trainees to engage as health advocates. **Methods:** Following a literature review, simulated newsroom workshops were developed by two EM physicians with graduate-level journalism training and workplace experience. Participants were invited to participate in an audio-recorded focus-group and to submit their opinion editorial. Twelve participants registered for the workshops and six attended both sessions and the focus group; four submitted written work. Focus group transcripts and written work were qualitatively analysed to understand acceptability, feasibility, and how students might engage as future health advocates. **Curriculum, Tool, or Material:** The simulated newsroom consisted of participants acting as journalists and the expert facilitator acting as a news editor. The first workshop provided a framework for news judgement in a didactic session, followed by interactive exercises including: prioritization of news pitches, a simulated editorial meeting, and analysis of published news articles. The participants then drafted their own pitches for in situ feedback