

low risk MHI patients between the ages of 65-79 present with abnormal CT findings or require neurosurgical intervention when compared to patients over 80 years of age as one of the criteria used in the CCTHR is the age threshold of 65. A secondary objective of this study was to explore abnormal CT rates across these age groupings for otherwise low risk patients on anticoagulants. **Methods:** A retrospective chart review was conducted on all patients over the age of 65 that received a head CT for a MHI in the Kelowna General Hospital ED between 2006-2016. The imaging results for all patients that had no other risk criteria of the CCTHR other than age were reviewed & rates of pathological findings were compared between patients ages 65-79 & 80+ for both patients on anticoagulants & those not on anticoagulants. Differences in rates by age were compared for statistical significance using the chi-squared & Fisher's exact test. **Results:** To date 248 patients have been reviewed & meet the criteria of being >65 & with no other CCTHR criteria. 65% of patients were female & 30% of patients were on anticoagulants. For the patients that were not on anticoagulants, 6 of the 75 (8%) individuals between 65-79 & 9 of the 94 (10%) of those over 80 had abnormal findings on CT ($p = 0.128$). **Conclusion:** Preliminary results of this study population indicate that there are a significant number of abnormal CT findings in patients under the age of 80 suggesting that patients ages 65-79 without any other CCTHR criteria may still benefit from a head CT. Chart reviews are ongoing & updated results including findings for anti-coagulated patients will be presented at CAEP 2017.

Keywords: Canadian CT Head Rules, minor head injury, elderly

P100

Iterative prototype development of a mobile tele-simulation unit for remote training: an update

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Introduction/Innovation Concept: Rural and remote practice of emergency medicine presents unique challenges, particularly when faced with infrequently encountered cases and procedures. Simulation-based training is a valuable tool in the acquisition and maintenance of knowledge and skills; however, simulators are often located in larger centers and they are not widely outside these centers due to geographic, cost and time constraints. Mobile tele-simulation has the potential to overcome barriers but challenges such as comfort, technical issues and ability to teach desired content via tele-simulation must be addressed. We are developing a mobile-tele-simulation unit (MTU) prototype that will enable emergency medicine practitioners and trainees to access simulation-based instruction in rural and remote settings. **Methods:** Through application of a mixed-methods approach with input of a multidisciplinary team we are iteratively developing an MTU prototype to assess key factors in design and function, including: technical issues, environmental features, and human factors. The Delphi method is being used to collect input from experts on key design components and feedback is also being collected from trainees after participating in trial deployments of the MTU in different educational and environmental settings. **Curriculum, Tool, or Material:** The effective application of the MTU in a variety of learning settings will be optimized through ongoing evaluation in the iterative design cycle. Feedback to ensure a quality learning experience in the MTU will direct features of physical design and technical performance that can be applied in deployment of the unit. In addition, challenges to the delivery of module content and instructional modality/ features of lessons to be executed will be important considerations as we move toward developing content that can effectively be taught using the MTU. **Conclusion:** To ensure

effective use of tele-simulation in the delivery of a meaningful simulation experience to rural and remote trainees a number of important challenges must be overcome. We describe our evolving multi-disciplinary mixed-methods approach to develop an effective mobile tele-simulation unit.

Keywords: innovations in emergency medicine education, simulation, rural medicine

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Quality of life in patients discharged from the emergency department with atrial fibrillation or flutter (AF/AFL): a prospective cohort study

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Introduction: Following an emergency department (ED) presentation for acute atrial fibrillation and/or flutter (AF/AFL), patients often experience anxiety, depression and impaired health-related quality of life (QoL). Emergency physicians may prescribe appropriate thromboembolic (TE) prophylaxis upon discharge; however, the QoL of these patients is unclear. This study measured the QoL of patients with AF/AFL following discharge to determine the factors associated with QoL. **Methods:** Patients ≥ 18 years of age identified by the attending physician as having a diagnosis of acute AF/AFL confirmed by ECG were prospectively enrolled from three Edmonton, AB EDs. Using standardized enrollment forms, trained research assistants collected data on patient demographics factors and management both in the ED and at discharge. Patients' health-related QoL was assessed up to 20 days after their initial ED visit by a telephone interview based on six domains of the short-form 8 health survey. **Results:** From a total of 196 enrolled patients, 121 (62%) were male and the mean age was 63 years (standard deviation ± 14). Most patients had previous history of AF/AFL (71%), and emergency physicians had the opportunity to treat or revise TE prevention therapy in 19% of the patients. The majority (89%) were discharged with prescriptions for antiplatelet or anticoagulant agents, and 188 (96%) were contacted by telephone at a median of 7 days. Most patients rated their overall health between good and excellent (70%); however, 30% assessed their health as fair or very poor. Many also reported having physical limitations (54%), difficulties completing their daily work (42%), bodily pain (32%) and limitations in social activities (32%). Finally, some patients reported having low energy (25%). At follow up, patients receiving adequate TE prevention rated their health to be similar to those without adequate TE prevention (30% vs 23%; $p = 0.534$). **Conclusion:** Overall, patients with acute, symptomatic AF/AFL seen in the ED have impairments in health-related QoL following discharge from the ED. Many factors contribute to this impairment; however, providing patients with appropriate TE prophylaxis at discharge did not explain these findings. Further research is required to explore the impact of AF/AFL on patient's health-related QoL after discharge from the ED.

Keywords: quality of life

P102

Education and training on mild traumatic brain injury among emergency department physicians: a systematic review

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Introduction: Mild traumatic brain injury (mTBI) is the most common emergency department (ED) brain injury presentation in Canada; however, an evidence-practice gap in mTBI management exists among ED

physicians, evidenced by significant practice variation. This review aimed to identify mTBI education and training directed at ED physicians and its relationship with practice patterns and physician knowledge. **Methods:** A comprehensive literature search of four bibliographic databases and the grey literature was performed using the keywords: concussion, mTBI, medical education, and continuing medical education. Included studies were required to report on mTBI education received by practicing ED physicians. Two independent reviewers screened unique citations for relevance and reviewed the full-texts of relevant articles. Two independent reviewers assessed methodological quality using the Methodological Index for Non-Randomized Studies. Data were extracted in duplicated onto standardized forms. Throughout the review process, discrepancies were adjudicated by an independent third party. **Results:** A total of 409 unique results were retrieved, and five studies were included. None of the included studies were of high methodological quality. Included studies assessed mTBI educational toolkits (n = 3), conference presentations and academic journal articles (n = 1), and pediatric fellowship training (n = 1). Training primarily occurred after residency (i.e., continuing professional development) and focused on awareness and management of mTBI. Three studies measured ED physicians self-reported knowledge uptake and retention, and all three studies reported positive changes in knowledge uptake including self-reported increases in appropriate return-to-school and return-to-play recommendations. An increase in appropriate return-to-school/sports recommendations was reported in one study, measured by surveying parents of children diagnosed with mTBI. **Conclusion:** After a systematic and comprehensive search, few studies on mTBI education or training targeting ED physicians were identified and focused on process change rather than outcomes, highlighting an evidence-practice gap that needs to be addressed to improve mTBI patient care. Existing mTBI knowledge translation, including EDP education, needs to be optimized to effectively disseminate evidence-based best-practices for mTBI management in the ED.

Keywords: medical education, concussion

P103

A human factors-based framework analysis for patient safety: the trauma resuscitation using in situ simulation team training (TRUST) experience

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Introduction: Effective trauma resuscitation requires a coordinated team approach, yet there is a significant risk for error. These errors can manifest from sequential system-, team- and knowledge based failures, defined as latent safety threats (LSTs). In situ simulation (ISS), a point-of-care training strategy, provides a novel prospective approach to identify factors that impact patient safety. This study quantified and formulated a hierarchy of LSTs during risk-informed ISS trauma resuscitations. **Methods:** At a Level 1 trauma centre, we conducted 12 multi-disciplinary, unannounced ISSs to prospectively identify trauma-related LSTs. Four, risk-informed scenarios were developed based on 5 recurring themes found within the trauma program's morbidity and mortality process. The actual, on-call trauma team participated in the study. Simulations were video recorded with 4 cameras, each positioned at a different angle. Using a framework analysis methodology, human factors experts transcribed and coded the videos. Thematic structure was established deductively based on existing literature and inductively based on observed ISS events. All LSTs were prioritized for future patient safety, systems and ergonomic interventions using the

Healthcare Failure Mode and Effect Analysis (HFMEA) matrix. **Results:** We identified 893 LSTs from 12 simulations. LST analysis resulted in 8 themes subcategorized into 43 codes. Themes were associated with team-, knowledge- or system-related issues. The following themes emerged: situational awareness, provider safety, mental model alignment, team/individual responsibility, team resources, equipment considerations, workplace environment and clinical protocols. The HFMEA hazard scoring process identified 13 high priority codes that required urgent attention and intervention to mitigate negative patient outcomes. **Conclusion:** A prospective, video-based framework analysis represents a novel and robust approach to LST identification within trauma care. Patterns of LSTs within and between simulations provide a high degree of transparency and traceability for an inter-professional trauma program review. Hazard matrix scoring facilitates the classification and prioritization of human factors interventions intended to improve patient safety.

Keywords: trauma, simulation, patient safety

P104

Emergency department opioid overdose study: prevalence of adverse outcomes

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Introduction: The following adverse outcomes have been described in patients treated in hospital for opioid overdose: pulmonary edema, cardiac dysrhythmias, neurologic injury secondary to hypoxia, prolonged opioid toxicity, recurrent opioid toxicity. In addition, patients who take an overdose of fentanyl may develop fentanyl induced chest rigidity, a life-threatening complication that appears to be uniquely related to fentanyl. The prevalence of adverse outcomes and the clinical course of patients that develop these complications have been described in patients who have taken an overdose of heroin. However, in British Columbia there has been a dramatic increase in the number of patients who overdose on fentanyl and other ultrapotent opioids. The proportion of illicit drug overdose deaths in British Columbia for which fentanyl was detected was only 5% in 2012 but, by 2016, this proportion had increased to 62%. It is very important to know the prevalence of adverse outcomes and the clinical course of patients that develop these adverse outcomes in patients with an overdose of fentanyl or another ultrapotent opioid. **Methods:** We are completing a retrospective cohort study to evaluate the prevalence of the following adverse outcomes for patients treated in hospital for an opioid overdose: i) pulmonary edema, ii) cardiac dysrhythmias, iii) fentanyl induced chest rigidity, iv) neurologic injury secondary to hypoxia, v) prolonged opioid toxicity, vi) recurrent opioid toxicity. Health records of patients treated for opioid overdose in the emergency departments of six greater Vancouver hospitals from Jan 1, 2014 to Dec 31, 2016 are being reviewed. **Results:** All Institutional approvals have been obtained. The dataset of 3600 ED visits for opioid overdose has been obtained and 160 health records have now been reviewed as of January 8, 2017. We will describe the type and prevalence (with 95% confidence intervals) of complications sustained by these patients. **Conclusion:** The results of this study will guide management of opioid overdose in a setting where ultrapotent opioids are commonly ingested. All health records will have been reviewed and the data analysis completed by May 2017.

Keywords: opioid, overdose, fentanyl