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

A. Petrosoniak, MD, M. Fan, MHSc, P. Trbovich, PhD, K. White, S. Pinkney, MHSc, PEng, M. McGowan, MHK, A. Gray, MD, D. Campbell, MD, S. Rizoli, MD PhD, C. Hicks, MD, Med, St. Michael's Hospital, Toronto, ON

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

R. Purssell, MD, J. Godwin, MD, A. Kestler, MD, R. Stenstrom, MD, PhD, C. DeWitt, MD, F.X. Scheuermeyer, MD, R. Balshaw, PhD, J. Buxton, MBBS, V. Ho, MD, BSc, R. Brar, BSc, A. Aquino, BSc, J. Blackbourn, J.R. Brubacher, MD, University of British Columbia, Vancouver, BC

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 were ultrapotent opioids are commonly ingested. All health records will have been reviewed and the data analysis completed by May 2017.

Keywords: opioid, overdose, fentanyl

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