

methods, and creation of a clinical pathway may help address the rate of over-transfusion.

Keywords: blood transfusion, Choosing Wisely, audit

P127

Paramedics perception of working in Nova Scotia's collaborative emergency centres

S. Whalen, BSc, J. Goldstein, PhD, R. Urquhart, PhD, A. Carter, MD, MPH, Dalhousie University, Halifax, NS

Introduction: The Collaborative Emergency Centre (CEC) model of health care delivery was implemented in rural Nova Scotia in July 2011 without an identifiable, directly comparable precedent. It features interprofessional teams working under one roof with the goal of providing improved access to timely primary health care, and appropriate access to 24/7 emergency care. One important component of the CEC model is overnight staffing by a paramedic/registered nurse team consulting with an offsite physician via telephone. Our objective was to ascertain the attitudes, feelings and experiences of paramedics working within the CEC construct. **Methods:** We conducted a qualitative study, guided by the principles of grounded theory. Semi-structured telephone interviews were carried out by the principal investigator with paramedics with experience working in a CEC in the province of Nova Scotia. Interviews were recorded, transcribed and analyzed. Analysis involved an inductive and deductive grounded approach using constant comparative analysis. Data collection and analysis continued until thematic saturation was reached. **Results:** Fourteen paramedics participated in the study. The majority were male ($n = 10$, 71%), with a mean age of 44 years ($STD = 8.8$) and mean experience as a paramedic of 14 years ($STD = 9.7$). Four major themes were identified from the data: 1) leadership support, encompassing support from Emergency Health Services and Government prior to and after implementation of the model, 2) team work and collaboration, including interprofessional relationships among members of the healthcare team, 3) value to patients and the communities, and 4) professional and personal benefits of working in CECs. **Conclusion:** Paramedics have found working in CECs to be both professionally and personally rewarding. They perceive the CEC model to be of great value to the patients and communities it serves. Key lessons that might help future expansion of the model in Nova Scotia and other jurisdictions across the country include the importance of building and strengthening relationships between paramedics and nurses, and the need for greater feedback and support from leadership.

Keywords: collaborative emergency centres, qualitative, paramedics

P128

The novel application of eye-tracking for the cognitive task analysis of expert physician decision-making while leading real-world traumatic resuscitations

M. White, MD, MSc, D. Howes, MD, R. Egan, PhD, H. Braund, MEd, A. Szulewski, MD, Queen's University, Kingston, ON

Introduction: Resuscitation is a dynamic, complex and time-sensitive field which encompasses management of both critically-ill patients as well as large multidisciplinary teams. Expertise in this area has not been adequately defined, and to date, no research has directly examined the decision-making and cognitive processes involved. The evolving paradigm of competency-based medical education (CBME) makes better defining expertise in this field of critical importance to aid in the development of both educational and assessment methods.

The technique of cognitive task analysis (CTA) has been used in a variety of fields to explicate the cognitive underpinnings of experts. Experts, however, often have limited insight and incomplete recall of their decision-making processes. We hypothesized that the use of eye-tracking, which provides the combination of first-person video as well as an overlying gaze indicator, could be used to enhance CTA to better understand the defining characteristics of experts in resuscitation.

Methods: Over an 18-month period a sample of 11 traumatic resuscitations were obtained, each led by one of four pre-selected expert physicians outfitted with the Tobii Pro Eye-Tracking Glasses. After each resuscitation, the participant was debriefed using a cued-recall, think-aloud protocol while watching his or her corresponding eye-tracking video. A subsequent qualitative analysis of the resulting video and debrief transcript was performed using an ethnographic approach to establish emerging themes and behaviours of the expert physicians. **Results:** The expert participants demonstrated specific, common patterns in their cognitive processes. In particular, participants exhibited similar anticipatory and visual behaviours, dynamic communication strategies and the ability to distinguish between task-relevant and task-redundant information. All participants reported that this technique uncovered otherwise subconscious aspects of their cognition.

Conclusion: The novel combination of eye-tracking technology to supplement the CTA of expert resuscitators enriched our understanding of expertise in this field and yielded specific findings that can be applied to better develop and assess resuscitation skills.

Keywords: eye-tracking, cognitive task analysis, expertise

P129

The Calgary Stampede: effects on emergency and urgent care department utilization during a Canadian mass gathering

C. Wong, MD, H. Qian, MD, A. McRae, MD, Y.J. Li, PhD, D. Wang, MSc, University of Calgary, Calgary, AB

Introduction: The Calgary Stampede is a two-week mass gathering occurring annually in July. Clinicians have anecdotally noted increases in emergency department (ED) and urgent care (UC) visits, especially for complaints related to substance misuse and violence. Our objectives were: 1) to determine if there is an increase in overall visits to EDs and UCs during the Stampede, and 2) to determine if there are increases in presentations related to trauma, violence, or intoxication. **Methods:** This observational study used prospectively collected administrative data from five EDs and two UCs in Calgary. For the years 2013 to 2016, daily average data during Stampede dates were compared to the data from the 21 days immediately preceding and following the event. Dates were selected to incorporate a similar proportion of weekends and weekdays in the Stampede and non-Stampede periods. The primary outcome was daily average ED and UC utilization. Secondary outcomes included time of arrival, utilization by demographic groups, complaint category at triage, or International Statistical Classification of Diseases, 10th revision (ICD-10) diagnosis. **Results:** The study period included 263 380 individual ED and UC visits (34 492 Stampede and 228 888 non-Stampede visits). Daily average ED and UC visits increased by 2.1% ($p < 0.0001$) during the Stampede period. Increases in utilization were identified in specific subgroups: male, ambulance arrival, and nighttime arrival between 2000 and 0400 (all $p < 0.05$). The Stampede period saw a marked increase in CTAS 1 visits (16.2%, $p < 0.01$), triage complaints of lacerations (12.4%, $p < 0.0001$) and blunt trauma (19.4%, $p < 0.0001$), and the ICD-10 diagnosis of substance misuse (23.9%, $p = 0.01$). Visits triaged to the minor treatment areas increased by 9.5% ($p < 0.0001$), again most markedly at night (15.3%, $p < 0.0001$).

No differences were detected for triage complaints of altered level of consciousness, sexual assault, head or neck injury, limb injury, or social problems. **Conclusion:** The Calgary Stampede provokes appreciable changes in overall ED and UC utilization, with marked increases in nighttime visits, visits by men, trauma or substance abuse-related complaints, and minor treatment visits. This data may be useful in manpower planning to ensure optimal patient flow and service delivery during mass gatherings.

Keywords: mass gathering, utilization, stampede

P130

Learning through simulation-a debriefing faculty development course

K.G. Woolfrey, BSc, MD, Western University, Hamilton, ON

Introduction/Innovation Concept: Introduction of a new simulation program including structured debriefing represents a substantial challenge. Debriefing performance is critical for facilitating learning in simulation. However, many faculty members are unfamiliar with the debriefing process. Faculty receives no training for conducting impactful and safe debriefs. Consequently, they are uncomfortable and often disengaged. We designed, implemented, and evaluated an innovative faculty-debriefing curriculum. Do professional development efforts in simulation debriefing teaching result in improved engagement in simulation teaching by faculty, increased comfort with simulation teaching, and an acceptance of a critical thinking framework for simulation teaching? **Methods:** We designed the curriculum to include the flipped classroom and deliberate practice models. Participants (n = 26; 42% of Emergency Medicine Faculty) were pre-circulated course materials, and then attended a full day course to introduce the simulation setting, the equipment, and two practice scenarios. Each scenario was followed by a group debrief. Twenty-one participants (80.7% response rate) completed pre and post course surveys; we analyzed the data using descriptive statistics. **Curriculum, Tool, or Material:** Results: Descriptive findings from a pre-course and post-course survey were conducted. Prior to participating in the innovation, 75% had participated in simulation teaching at Western, but only 30% of this faculty being comfortable with this teaching format. 65% of participants had no formal simulation training and 95% had no training in debriefing. Results of the post-course survey revealed 100% satisfaction with the flipped classroom model; and 48% and 52% were extremely likely and very likely to attend future faculty development courses respectively. 100% of participants felt comfortable in participating in debriefing post simulation teaching with 50% feeling comfortable to do this independently without a co-debriefer. 100% of participants felt that the critical thinking framework that was presented in the course for a debriefing model would translate into their clinical teaching in the future. **Conclusion:** Faculty development has a critical role to play in promoting academic excellence and innovation. Faculty development programs must respond to the changes in medical education. This education project integrated a unique model of learning for faculty, engaged faculty, and increased their comfort level for teaching in simulated setting and utilizing structured debriefing.

Keywords: innovations in emergency medicine education, simulation, faculty development

P131

Risk factors for recurrent emergency department visits for hyperglycemia in patients with diabetes mellitus

J.W. Yan, MD, MSc, K. Gushulak, MD, M. Columbus, PhD, K. Van Aarsen, MSc, A. Hamelin, BSc, G.A. Wells, PhD, I.G. Stiell, MD, MSc, Western University, London, ON

Introduction: Patients with poorly controlled diabetes mellitus may present repeatedly to the emergency department (ED) for management and treatment of hyperglycemic episodes, including diabetic ketoacidosis and hyperosmolar hyperglycemic state. The objective of this study was to identify risk factors that predict unplanned recurrent ED visits for hyperglycemia in patients with diabetes within 30 days of initial presentation. **Methods:** We conducted a one-year health records review of patients ≥ 18 years presenting to one of four tertiary care EDs with a discharge diagnosis of hyperglycemia, diabetic ketoacidosis or hyperosmolar hyperglycemic state. Trained research personnel collected data on patient characteristics and determined if patients had an unplanned recurrent ED visit for hyperglycemia within 30 days of their initial presentation. Multivariate logistic regression models using generalized estimating equations to account for patients with multiple visits determined predictor variables independently associated with recurrent ED visits for hyperglycemia within 30 days. **Results:** There were 833 ED visits for hyperglycemia in the one-year period. 54.6% were male and mean (SD) age was 48.8 (19.5). Of all visitors, 156 (18.7%) had a recurrent ED visit for hyperglycemia within 30 days. Factors independently associated with recurrent hyperglycemia visits included a previous hyperglycemia visit in the past month (odds ratio [OR] 3.5, 95% confidence interval [CI] 2.1-5.8), age < 25 years (OR 2.6, 95% CI 1.5-4.7), glucose > 20 mmol/L (OR 2.2, 95% CI 1.3-3.7), having a family physician (OR 2.2, 95% CI 1.0-4.6), and being on insulin (OR 1.9, 95% CI 1.1-3.1). Having a systolic blood pressure between 90-150 mmHg (OR 0.53, 95% CI 0.30-0.93) and heart rate > 110 bpm (OR 0.41, 95% CI 0.23-0.72) were protective factors independently associated with not having a recurrent hyperglycemia visit. **Conclusion:** This unique ED-based study reports five risk factors and two protective factors associated with recurrent ED visits for hyperglycemia within 30 days in patients with diabetes. These risk factors should be considered by clinicians when making management, prognostic, and disposition decisions for diabetic patients who present with hyperglycemia.

Keywords: diabetes mellitus, risk factors, recurrent visits

P132

Development and implementation of an intubation registry within a Canadian tertiary-care hospital

J.H. Yoo, MD, J. Trojanowski, MD, M. Laberge, D. Griesdale, MD, J.R. Brubacher, MD, Vancouver General Hospital, Vancouver, BC

Introduction: Intubation is a high-risk procedure that is frequently performed within the ED. Few Canadian centres have a system in place to monitor intubation frequency, indications, methods used, operator characteristics, first-pass success, and adverse event rates. There are no published data on the frequency of success or complications of emergency airway management in Canada. An airway registry would be a valuable quality improvement (QI) tool for assessing the impact of practice changes such as pre-intubation checklists and for identifying patients with "difficult airways." We describe the development and implementation of an airway registry in a Canadian tertiary-care centre. **Methods:** We created a collaborative working group with staff from EM, ICU, Respiratory Therapy (RT), and Privacy. An airway data form was created. Over a 3 month trial period, the form was completed by RTs following each non-OR intubation. At our centre, RTs are present at every intubation outside of the OR. If a patient was intubated outside of the hospital, forms were completed using verbal handover. RTs also provided constructive feedback and after 3 months the form was revised and finalized. Medical student volunteers entered data from the