management decisions such as blood transfusion (Hb <70) and use of proton pump inhibitors (PPI) also warrant evaluation. The aim of this study was to compare the timing and appropriateness of endoscopy and blood transfusion and proton pump inhibitor (PPI) use in a tertiary care setting to the standard of care. **Methods:** A retrospective cohort study was conducted to examine the management of patients presenting with UGIB to the ED in 2016 using a standard chart review methodology. TANDEM and EDIS (Emergency Department Information System) databases were queried to identify patients using specified ICD 10 codes and the CEDIS (Canadian Emergency Department Information System) presenting complaints of vomiting blood or blood in stool/melena. Outcome measures included: patient characteristics, the GBS to determine appropriateness of endoscopic intervention, diagnoses, blood transfusion indications and utilization of oral or intravenous PPIs. Data were entered into a REDCap database and analyzed using standard non-parametric statistical tests. **Results:** A total of 200 patients, 59% male (118/200), mean age 59 years (range 18 - 92 years) were included. The median GBS was 9. 79% of patients (157/200) underwent endoscopy during the hospital visit: 30% of patients with GBS 0-3 (13/43) and 80% patients with GBS 4 (125/157) underwent endoscopy 24 hours. The two most common endoscopic diagnoses were peptic ulcers (39%, 61/157) and varices (18%, 28/157), while 14% (22/157) had a normal diagnosis or mild gastritis. 174/200 patients (87%) were given IV or oral PPI in the ED whereas the remaining 26 (13%) did not receive PPI in hospital. 46% of patients (89/194) received blood transfusion, but only 51% (45/89) were administered based on the 70 g/L threshold while in 40% (36/89) of patients the less restrictive threshold of 90 g/L was used. **Conclusion:** A majority of UGIB patients presenting to a tertiary hospital ED appropriately received endoscopy 24 hours based on a GBS score 4. PPI use was appropriate but a proportion of patients received inappropriate blood transfusions.

Keywords: gastrointestinal bleeding, outcomes, management

P133

Meteorological predictors of epidemic orthopedic trauma in Calgary

C. Schweitzer, MPhil, BSc, D. Wang, MSc, E. S. Lang, MD, CM, University of Calgary, Calgary, AB

Introduction: On March 16 2017, emergency departments and urgent care centres (collectively, EDs) in Calgary saw 3 times the number of fall-related ED visits, and 8 times the number of ED orthopedic consultations and admissions than the daily average for March 2014-2016. Fall-related injuries have significant associated morbidity and burden of disease, as well as cost to the health care system, caregivers and society. The purpose of this study was to use regression analysis to generate best fit models and identify weather and temporal variables which predict the frequency of fall-related ED visits, orthopedic consultations and admissions in winter (November-March). **Methods:** Daily number of ED visits, orthopedic consults, and orthopedic admissions for presenting complaint of Lower Extremity Injury, Upper Extremity Injury, or with an ED diagnosis of Fracture or Fall, were obtained for winter months from November 1 2013 to March 31 2017 from the Alberta Health Services ED database. Weather data was obtained from Environment Canada. Linear and multiple regression were performed to evaluate the predictive value of individual weather and temporal parameters, and derive the best-fitting model to predict the number of ED visits, orthopedic consultations, and orthopedic admissions. **Results:** Individual predictive factors ($p < 0.05$) were month, temperature, overnight temperature drop from >0C to <0C, day of the week, amount of snow on the ground at 05:00, post-chinook day (chinooks are a warm winter wind in Calgary that can cause large temperature swings), maximum wind gust speed, and presence of precipitation. The best-fit multivariable models predicting fall-related ED visits (F-stat = 15.36, R2 = 0.171), orthopedic consults (F-stat = 6.369, R2 = 0.048), and orthopedic admissions (F-stat = 8.658, R2 = 0.126) were statistically significant (probability of F-statistics all <0.0001). **Conclusion:** This study is, to the best of our knowledge, the first to use multiple regression to compute models using weather and temporal variables that can predict fall-related ED visits, orthopedic consults and admissions. This information could be used to alert the population regarding an increased fall and fracture risk ahead of the weather occurrence, as well as municipal snow and ice clearing services, who may be able to mitigate that risk. The ability to predict the frequency of fall-related injuries could enable EDs, EMS, orthopedic services, and hospitals to adjust resource and staffing allocation in anticipation of increases in fall-related injuries.

Keywords: orthopedic, weather, fall

P134

Escape game as a theatre-based simulation for teamwork skills training in undergraduate medical education

A. V. Seto, BHSc, MD, University of Calgary, Calgary, AB

Introduction: Teamwork skills are essential in emergency presentations. When training medical students to manage acute care cases, simulation is frequently the educational tool. However, simulation content is often medically-focused, and post-simulation debriefs may not prioritize discussion of teamwork skills, as time is limited. Furthermore, debriefing both medical and teamwork aspects of a case may add to the learners cognitive load. This innovation uses an escape game as a non-clinical simulation to gamify teamwork skills training, with a focus on the collaborator CanMEDS role. In the entertainment industry, escape games are activities where teams solve a series of puzzles together to ultimately escape a room. **Methods:** 2 groups of 5 second-year medical students piloted the escape game, created within a simulation theatre, designed to surface teamwork competencies under the four University of Calgary Team Scheme domains (adapted from CIHCs National Interprofessional Competency Framework and TeamSTEPPS): Leadership/Membership, Communication, Situation Monitoring, and Collaborative Decision-Making/Mutual Support. During the game, facilitators noted examples of students strengths and challenges in demonstrating teamwork competencies. Post-game, a debrief and written reflective exercise enabled students to analyze successes and challenges in demonstrating teamwork competencies, propose solutions to teamwork challenges, and write 3 goals to improve teamwork skills. All competencies listed under each Team Scheme domain represented themes used in a thematic analysis to uncover students reported teamwork challenges. **Results:** Each escape game is a 30-minute teamwork activity where 5 students collaborate to complete 8 puzzles, which do not require medical knowledge, in order to win. Briefing is scheduled for 15-minutes, whereas post-game debriefing and reflection is 45-minutes. **Conclusion:** Escape games can highlight strengths and challenges in teamwork and collaboration amongst second-year medical students. Every competency under the Team Scheme domains was highlighted by the escape game pilots, touching on both strengths and challenges, for which students demonstrated, debriefed, and reflected upon. Students self-documented teamwork challenges include issues surrounding task-focused, closed-loop communication, and frequent reassessments. Advantages of this innovation include its use as a learning progression towards acute care simulations, portability and affordability, potential interprofessional use, and customizability. Additional training time may be required to orient facilitators to this

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atypical simulation. The escape game will launch in MDCN490 for second-year medical students and is scheduled prior to their acute care simulations. Further teamwork challenges identified at that time will help inform teamwork curriculum development for year 3.
Keywords: innovations in emergency medicine education, simulation, teamwork

P135

Frequent emergency department use as an independent factor associated with mortality in substance and opioid misuse: a retrospective analysis of linked databases

J. Moe, MD, MSc, MA, C. Camargo, MD, DrPH, R. Davis, ScD, S. E. Jelinski, PhD, DVM, B. H. Rowe, MD, MSc, University of British Columbia Department of Emergency Medicine, Vancouver General Hospital, Vancouver, BC

Introduction: Substance and opioid misuse present significant illness burdens in Emergency Departments (EDs). Understanding risk factors for mortality in these patients is urgently needed to allow targeted prevention. This studys objective was to determine whether frequent ED use is independently associated with mortality among patients with substance and opioid misuse, and secondarily, whether degree of frequent use influences mortality risk. **Methods:** This is a retrospective cohort study in Alberta, Canada. National Ambulatory Care Reporting System ED data was linked to Vital Statistics mortality data using postal code, birthdate, and sex. All adults (18 years old at index visit, i.e. first visit made in the study year) with substance or opioid misuse (defined by ICD-10 codes) from April 1, 2012 to March 31, 2013 were included. Frequent use was defined by 5 ED visits in the 12 months prior to index visit. The primary outcome was mortality within 90 days, and secondarily, within 30 days, 365 days, and 2 years post-index visit. Mortality was compared using Kaplan-Meier curves and Cox regression adjusting for age, sex and income. Degree was examined by subcategorizing frequent use into 5-10, 11-15, 16-20, and >20 visits. **Results:** Overall, 16,389 patients made 24,880 visits for substance misuse, and 1787 patients made 2241 visits for opioid misuse. Frequent vs. non-frequent substance misusers were older, more often female, lower income, more often of rural residence, and arrived more by ambulance for lower acuity visits that were hospitalized less often. Compared to frequent substance misusers, frequent opioid misusers were more often female, of non-rural residence, arrived less often by ambulance, and made higher acuity visits that were hospitalized more often. Among substance misuse patients, 97.1% (95% CI: 96.6, 97.7) of frequent users vs. 98.0% (95% CI: 97.7, 98.2) of non-frequent users were alive at 2 years. Frequent use was significantly associated with mortality at 365 days (HR 1.36 [95% CI: 1.04, 1.77]) and 2 years (HR 1.32 [95% CI: 1.04, 1.67]) but not at 90 or 30 days. Subcategorized by degree, frequent use was significantly associated with mortality only for patients with >20 visits/year at 365 days (HR 1.88 [1.03, 3.44]) and 2 years (HR 1.89 [1.10, 3.22]). Among opioid misuse patients, there was no difference in mortality between frequent and non-frequent ED users at any time point. However, subcategorized by degree, a significant association was seen for those with 16-20 visits/year at 365 days (HR 3.62 [95% CI:1.13, 11.66]), and 2 years (HR 3.37 [95% CI: 1.05, 10.81]). **Conclusion:** In substance misuse patients, frequent ED use was significantly associated with long-term but not short-term mortality. Mortality risk for substance and opioid misuse patients was concentrated in extremely frequent users suggesting that the highest frequency presenters should be targeted for prevention.
Keywords: substance-related disorders, opioid-related disorders, public health

P136

Evaluating the use of the YEARS clinical decision rule for diagnosing pulmonary embolism in the emergency department

S. Sharif, MD, C. Kearon, MB, PhD, M. Eventov, BSc, M. Li, MD, R. Jiang, P. Sneath, BSc, R. Leung, K. de Wit, MBChB, MSc, MD, Department of Medicine, Division of Emergency Medicine, McMaster University, Hamilton, ON

Introduction: Diagnosing pulmonary embolism (PE) can be challenging because the signs and symptoms are often non-specific. Studies have shown that evidence-based algorithms are not always adhered to in the Emergency Department (ED) and are often not used correctly, which leads to unnecessary CT scanning. The YEARS diagnostic algorithm, consisting of three items (clinical signs of deep vein thrombosis, hemoptysis, and whether pulmonary embolism is the most likely diagnosis) and D-dimer, is a novel and simplified way to approach suspected acute PE. The purpose of this study was to 1) evaluate the use of the YEARS algorithm in the ED and 2) to compare the rates of testing for PE if the YEARS algorithm was used. **Methods:** This was a health records review of ED patients investigated for PE at two emergency departments over a two-year period (April 2013-March 2015). Inclusion criteria were ED physician ordered CT pulmonary angiogram, ventilation-perfusion scan, or D-dimer for investigation of PE. Patients under the age of 18 and those without a D-dimer test were excluded. PE was considered to be present during the emergency department visit if PE was diagnosed on CT or VQ (subsegmental level or above), or if the patient was subsequently found to have PE or deep vein thrombosis during the next 30 days. Trained researchers extracted anonymized data. The rate of CT/VQ imaging and the false negative rate was calculated. **Results:** There were 1,163 patients that were tested for PE and 1,083 patients were eligible for our analysis. Of the total, 317/1,083 (29.3%; 95% CI 26.6-32.1%) had CT/VQ imaging for PE, and 41/1,083 (3.8%; 95% CI 2.8-5.1%) patients were diagnosed with PE at baseline. Three patients had a missed PE, resulting in a false negative rate of 0.4% (95% CI 0.1-1.2%). If the YEARS algorithm was used, 211/1,083 (19.5%; 95% CI 17.2-22.0%) would have required imaging for PE. Of the patients who would not have required imaging according to the YEARS algorithm, 8/872 (0.9%; 95% CI 0.5-1.8%) would have had a missed PE. **Conclusion:** If the YEARS algorithm was used in all patients with suspected PE, fewer patients would have required imaging with a small increase in the false negative rate.
Keywords: pulmonary embolism, D-dimer, diagnosis

P137

Automation of follow-up microbiology culture results in patients discharged from the emergency department

D. M. Shelton, MD, MSc, D. Hefferon, P. Sinclair, Z. Janicijevic, BScPA, Sunnybrook Health Sciences Centre, Toronto, ON

Introduction: At Sunnybrook Health Sciences Centres Emergency Department (ED), delays occurred in reporting positive microbiology culture results of patients discharged from the ED. Follow-up of culture results was driven by a manual paper based process that was inefficient and resulted in a one to three day delay in reporting results. The previous system was time consuming, labour intensive and prone to human error. Timely reporting of microbiology culture results is important to ensuring that patients receive optimal care. The aim is that >80% of positive microbiology culture results of patients discharged from Sunnybrook Health Sciences Centre ED will be followed-up within 24 hours of results being available from the lab. **Methods:** Outcome Measure Percentage of positive culture results followed up

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