

CI 0.5-3.5%). Of the PERC negative patients, 291/291 (100.0%; 95% CI 98.7-100.0%) had a D-dimer test done, and 33/291 (11.3%; 95% CI 8.2-15.5%) had a CT angiogram. If PERC was used, CT/VQ imaging would have been avoided in 33/1,097 (3%; 95% CI 2.2-4.2%) patients and the D-dimer would have been avoided in 291/1,097 (26.5%; 95% CI 24.0-29.2%) patients. **Conclusion:** If the PERC rule was used in all patients with suspected PE, fewer patients would have further testing. The false negative rate for the PERC rule was low.

Keywords: pulmonary embolism, D-dimer, diagnosis

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Transforming emergency stroke care through innovation: Canada's first stroke ambulance

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Introduction: A two-year Stroke Ambulance (SA) pilot project was implemented at the University of Alberta Hospital (UAH) in February, 2017, the first in the world to utilize this specialized technology in a rural setting. The primary objective is to evaluate clinical and economic implications of timely SA assessment and treatment of hyperacute stroke patients who present to non-stroke centres in rural Alberta and might otherwise have received delayed treatment, or not at all, due to prolonged transfer times. **Methods:** A steering committee and seven working groups were established, with representation from Alberta Health Services (AHS) programs impacted, to ensure comprehensive project development and implementation. The SA portable CT scanner, point of care laboratory, and videoconference system facilitate diagnosis of stroke in the field. The multidisciplinary team includes a stroke fellow, advanced & primary care paramedics, registered nurse, CT technologist, and telestroke physician. When not dispatched, the team provides stroke expertise and patient care in the emergency department (ED) and diagnostic imaging. The service model includes suspected stroke patients presenting to non-stroke centres within a 250 Km radius of Edmonton (Phase I); patients presenting to Edmonton Zone (EZ) hospitals without CT capability and/or tPA protocols (Phase 2); and expedited transport from EZ hospitals to the UAH for urgent endovascular therapy (EVT) (Phase 3). A health economic analysis will compare stroke ambulance care with standard care. **Results:** The SA has responded to 54 dispatches, 13 patients thrombolized and 3 patients receiving EVT. Median rendezvous to CT time was 10 minutes, median rendezvous to tPA time was 21 minutes, and mean time from symptom onset to tPA was 180 minutes. There were no complications. After SA imaging and assessment, 18 patients were repatriated back to their local community hospital, avoiding unnecessary admission to tertiary care. **Conclusion:** Our preliminary experience demonstrates that the SA offers a novel approach to performing timely evaluation and treatment of suspected stroke from non-stroke centres and may serve as an excellent triage mechanism, reducing avoidable admissions to overcapacity tertiary care EDs. The SA team provides added value to the ED with stroke expertise and patient care. A comprehensive health economic analysis will determine cost-effectiveness and whether spread is feasible.

Keywords: stroke, innovation, transforming

P106

Systemic thrombolysis for suspected high-risk pulmonary embolism: a retrospective medical record review

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Introduction: Current treatment guidelines advocate for the aggressive management of both high-risk and subsets of moderate-risk pulmonary embolism (PE) with fibrinolytic therapy. However, there is limited evidence on the risks and benefits of fibrinolytic therapy in PE, with mortality improvement still to be proven. This study aimed to report the incidence of major bleeding and death after thrombolysis for PE. **Methods:** A health records review was performed on data from two hospitals between 2007 and 2017. Pharmacy identified all patients who had received either alteplase or tenecteplase. Trained abstractors reviewed each chart to determine the indication for thrombolytic therapy. Patients were included if they received systemic thrombolysis for diagnosed or presumed PE. Data was extracted on 30-day mortality, International Society of Thrombosis and Hemostasis defined major bleeding within 30 days, premonitory anticoagulant and antiplatelet prescription, age, sex, comorbidities, renal function, history of bleeding, type and dose of thrombolytic and category of PE (high or moderate risk). **Results:** 1,534 patients were identified, of which 72 received systemic thrombolysis for PE. The median age was 57, 34 were male, 17 with a history of venous thrombosis and 12 with cancer. Fifty-four were classified as having high-risk PE, of whom 39 received cardiopulmonary resuscitation (CPR) when thrombolysis was administered. Formal confirmatory imaging for PE was obtained in only 23/39 patients who were in cardiac arrest. Eighteen patients were classified as moderate-risk PE. The incidence of major bleeding was 28/54 (52%, 95% CI 39-65%), and 3/18 (17%, 95% CI 6-39%) for the high and moderate risk groups respectively. There were 4 intracranial bleeds, all in the high-risk PE group. The only significant predictor of major bleeding was the need for CPR at the point of administration of the thrombolytic agent (OR 2.6, 95% CI 1.0-7.5, adjusted for age). Thirty-four patients died within 30 days (47%, 95% CI 36-59%), all in the high-risk PE group. Death was not associated with any demographic variable on univariate analysis. Death occurred in 28/39 (72%, 95% CI 56-83%) patients who received CPR and 6/33 (18%, 95% CI 9-34%) who did not. **Conclusion:** We found a high incidence of 30-day major bleeding and death following administration of thrombolysis for PE which will help inform future prognostic discussions in our institution.

Keywords: pulmonary embolism, thrombolysis, bleeding

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The development of a mentorship based, near-peer simulated resuscitation training program for medical trainees

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Introduction: High quality Cardiopulmonary Resuscitation (CPR) saves lives, however skill retention after standard Basic Life support (BLS) courses has been shown to be poor. Our goal was to develop a student-run, mentorship based program to allow repetitive practice of BLS skills while minimizing resource commitment and time requirements. **Methods:** We developed a top down training program that relied on online teaching resources, regular simulation training and near-peer feedback. First year medical students were given the opportunity to participate in the program and baseline CPR quality was documented. They were then divided into intervention and control groups. The intervention group participated in bi-monthly 40-minute small group training sessions directed by senior medical students and monitored by a staff physician. The control group received no further training. At the end of the 8-month study period CPR quality was documented for all participants. **Results:** We included data from 54 medical students. Overall compression depth and rate were monitored using Laderall SimMan 3G(TM) high-fidelity CPR mannequins. Average rate and depth of compression were significantly improved in the intervention group relative to both the control group that did not

receive training, as well as relative to the intervention groups own pre intervention values (both with p values below 0.05 using Mann-Whitney tests and an intention to treat analysis for loss to follow up). **Conclusion:** Our study demonstrated a significant improvement in CPR quality as a result of our intervention. Survey data also indicated positive feedback from participants in relation to comfort with in-hospital CPR. As such we intend to continue to run this program, identifying participants each year whom can move into training and leadership roles to help foster CPR and basic resuscitation in our medical community.

Keywords: innovations in emergency medicine education, near-peer, cardiopulmonary resuscitation

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Cannabis hyperemesis syndrome within emergency department users in the Calgary health region: a retrospective analysis

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Introduction: Cannabis hyperemesis syndrome (CHS) is associated with long-term, regular use of marijuana. CHS patients typically present to emergency departments (ED) during a hyper-emetic phase of paroxysmal nausea and vomiting. Despite extensive investigations as well as frequent ED presentations, CHS patients have a delayed time to diagnosis, and many are often missed. To date, there is a paucity of research examining CHS in emergency departments. Our objective was to identify CHS cases presenting to EDs within the Calgary health region, and to quantify the number of patients and frequency of ED visits for CHS. **Methods:** A retrospective chart review was performed on all patients who presented to any Calgary ED or urgent care center between January 1, 2015 and December 31, 2016 (ages 18-55 years) who had an ED discharge diagnosis of either nausea or vomiting alone, nausea with vomiting, or poisoning by cannabis, as identified in administrative data. Data abstraction from medical records was performed by trained personnel using standardized forms with comprehensive inclusion criteria for CHS. **Results:** The search strategy yielded a total of 320 ED visits from 156 individual patients. 55% of visits were by males, and 45% by females. The average age was 29.5 years. Of the 156 patients, 53% had cannabis use documented in the chart, with 51% reporting daily and/or regular cannabis use. Relief of symptoms from use of hot showers (a pathognomonic finding) was found in 17% of patients. 18% of patients (n=28) met criteria for CHS, and 28% (n=44) met partial criteria for CHS (having documented regular cannabis use, cyclic vomiting and abdominal pain) but no record of symptom resolution with cessation of cannabis use or from the use of hot showers. Patients meeting CHS criteria had an average of five repeat ED visits during the study period with 16% (n=12) of ED visits resulting in hospital admission. **Conclusion:** We identified a large cohort of patients with confirmed or suspected CHS. Given that nearly one third of the sample met partial criteria for CHS highlights the need for improved patient screening, as it is possible that this cohort may include missed cases. Further, many CHS patients are not responsive to first-line antiemetics and accurate diagnosis is crucial for managing these patients effectively in the ED. This is of particular importance given the admission rate for CHS and resulting burden on the health system.

Keywords: cannabis hyperemesis syndrome, cannabis, vomiting

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Education innovation: pediatric emergencies curriculum for emergency physicians

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Introduction: Tertiary care emergency departments (EDs) in large urban environments may have a low volume of high acuity pediatric presentations due to their proximity to dedicated children's hospitals or large community centres. This may lead to discomfort among emergency physicians (EPs) and registered nurses (RNs) in managing these patients and a waning of knowledge and skills for this unique population. Among the EP group at our institution, 68% indicated they managed pediatric patients in less than 25% of their shifts, 68% also indicated they were uncomfortable managing an undifferentiated critically unwell neonate and only 32% indicated they would be comfortable teaching pediatric topics to emergency medicine residents. At our institution, our innovation was to create a useful curriculum for certified EPs and RNs to improve the interdisciplinary teams comfort level, knowledge and skill set when managing pediatric emergencies. **Methods:** A needs assessment was undertaken of the EPs and RNs working in our centre. This information was used to develop intended learning outcomes in a collaborative manner with the clinical nursing educator and physician curriculum leads. The team further collaborated with the local simulation centre and a pediatric emergency physician from the local children's hospital. **Results:** A one-year, three-module curriculum was developed to cover the areas felt to be highest yield by the EP group: febrile illness, respiratory disease and critically ill neonates and infants. Each module contains three components: an in person interactive lecture delivered by an EP who routinely manages pediatric patients, either at a children's hospital or large community centre; an online component with e-mail blasts of high yield pediatric content; and, culminating in an interdisciplinary interdepartmental simulation held in situ. This latter is particularly important so that all members of the interdisciplinary team can practice finding and using equipment based on its actual location within the ED. Each component of each module is then evaluated by the participants to ensure improvement for subsequent delivery. **Conclusion:** Well delivered continuing professional development (CPD) will become increasingly important as competence by design becomes the model for maintenance of certification. Maintaining skills for pediatric patients is an important component of CPD for physicians working in general emergency departments that see a low volume of high acuity pediatric presentations. Our curriculum seeks to address this identified need in an innovative manner using a modular and interdisciplinary approach with a diversity of teaching methods to appeal to the learning styles among our health care team.

Keywords: innovations in emergency medicine education, pediatric emergency medicine, continuing professional development

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A prospective cohort study to evaluate sex differences in presentations and management for patients presenting to emergency departments with atrial fibrillation and flutter

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Introduction: Atrial fibrillation and flutter (AFF) represent the most common arrhythmia presentations to emergency departments (EDs). Some research suggests that women with AFF experience different symptoms, receive different treatment and have worse outcomes than men. This study explored sex differences in risk factors, medication, and outcomes before and after ED visits for acute AFF. **Methods:** Adult patients presenting to the one of three hospitals affiliated with the