

classification. **Results:** We obtained satisfactory hair and urine samples from 18 cases (median [IQR] age 27 [20,31] years; 12 male) and 13 controls. THC and CBN concentrations were higher in cases than controls (THC 240 [120,820] vs 99 [73, 290] pg/mg; CBN 63 [33, 260] vs 15 [negative, 76] pg/mg; each $P < 0.05$). CBD and THC-COOH were often unquantifiable to undetectable in both cases and controls. **Conclusion:** Hyperemesis cannabis patients have substantially higher hair cannabinoid concentrations than their peers without vomiting, although there is some overlap. The association cannot demonstrate a direct dose-response with THC—confounding (e.g. other cannabinoids, external smoke deposition), altered metabolism and reverse causation (e.g. seeking temporary symptom relief by using more cannabis) could also yield a positive association. Nevertheless, these findings support counselling patients with hyperemesis to reduce or discontinue using cannabis. They also support national regulatory initiatives including education, labelling, and progressive taxation based on potency intended to discourage excessive use.

Keywords: cannabis, hyperemesis, drug abuse

P005

Consultations in the emergency department: a systematic review

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Introduction: Consultation in the emergency department (ED) is a common component of emergency health care. Consultation is defined as a case in which an ED physician (EP) requests the services of another physician (consultant) for an ED patient to assist, advise, and/or transfer care when the care required is beyond the expertise of the EP's practice. While consultation is generally considered required and beneficial for patient care, consultation can also have a negative impact by incurring delays in patient flow and disposition. These delays contribute to ED crowding, patient dissatisfaction and, in some cases, worse health outcomes. Using an a priori protocol and accepted methodology, the aim of this systematic review was to update a previous review on the same topic and determine the proportion of 1) ED visits that involve consultation and 2) consultation cases that result in admission. PROSPERO registration number: CRD42017054054. **Methods:** Literature search involved multiple electronic databases (e.g., MEDLINE and EMBASE) and grey literature (e.g., Google Scholar and conference abstracts). Study selection was conducted independently by two reviewers and determined by consensus among the two reviewers with disagreements resolved by a third party. Data extraction was conducted independently by two reviewers and determined by consensus among the two reviewers with disagreements resolved by a third party. A descriptive analysis was conducted. Outcome measure data were aggregated and reported with suitable descriptive statistics such as raw or weighted mean, median, or proportion with 95% confidence interval. **Results:** Literature search yielded 1,584 studies, of which 65 were included. Two-thirds of studies were conducted in USA or Canada. Of the 65, 54 were focused on a particular patient group or consulting specialty (e.g., psychiatry) while 11 considered the general ED population. Of these 11, the median proportion of ED visits involving consultation was 26%. The median proportion of cases with consultation that resulted in admission was 60%. **Conclusion:** Consultations in the ED are quite common and many of these cases result in admission. Given their frequency of occurrence and increasing ED crowding, efforts to reduce consult delays and expedite disposition appear warranted.

Keywords: consultation, admission

P006

Characterizing patients with newly-diagnosed diabetes mellitus in the emergency department: A one-year health records review

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Introduction: Diabetes mellitus is an increasingly prevalent chronic condition that is usually managed in an outpatient setting. However, the emergency department (ED) plays a crucial role in the management of diabetic patients, particularly for those who are presenting with newly diagnosed diabetes. Little research has been done to characterize the population of patients presenting to the ED with hyperglycemia with no previous diagnosis of diabetes. The objective of this study was to describe the epidemiology, treatment, and outcomes of patients who were newly diagnosed with diabetes in the ED and to compare those with newly diagnosed type I versus type II diabetes. **Methods:** A one-year health records review of newly diagnosed diabetes patients ≥ 18 years presenting to one of four tertiary care EDs was conducted. All patients with a discharge diagnosis of hyperglycemia, diabetic ketoacidosis or hyperosmolar hyperglycemic syndrome were screened, but only those who did not have a previous history of diabetes were included. Trained research personnel collected data on patient characteristics, management, disposition, and outcome. Descriptive statistics were used to summarize the data where appropriate. **Results:** Of 645 patients presenting with hyperglycemia in the study period, 112 (17.4%) were newly diagnosed diabetes patients. Of these patients, 30 (26.8%) were later diagnosed with type I diabetes and 82 (73.2%) were diagnosed with type II diabetes. For the newly diagnosed type I patients the mean (SD) age was 27.6 (9.9) and the mean (SD) age for type II patients was 52.4 (14.1). Of all the new onset patients, 26.8% were diagnosed with diabetic ketoacidosis. The percentage of patients diagnosed with diabetic ketoacidosis was higher in type I than type II (63.3% vs 13.4%; $P < 0.01$). A total of 49 (43.8%) patients were admitted to the hospital, and more patients with type I were admitted compared to those with type II (66.7% vs 35.4 %; $P < 0.01$). **Conclusion:** Limited research has been done to describe patients newly diagnosed with diabetes in the ED. Patients with type I were found to be more likely to present to the ED with serious symptoms requiring admission to hospital. Our findings demonstrate that the ED may have a strong potential role for improving diabetic care, by providing future opportunities for education and follow-up in the ED to reduce complications, particularly in type I.

Keywords: diabetes, hyperglycemia

P007

A comparative analysis of qSOFA, SIRS and Early Warning Scores Criteria to identify sepsis in the prehospital setting

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Introduction: Early recognition of sepsis is key in delivering timely life-saving interventions. The role of paramedics in recognition of these patients is understudied. It is not known if the usual prehospital information gathered is sufficient for severe sepsis recognition. We sought to: 1) evaluate the paramedic medical records (PMRs) of severe sepsis patients to describe epidemiologic characteristics; 2) determine which severe sepsis recognition and prediction scores are routinely captured by paramedics; and 3) determine how these scores perform in the pre-hospital setting. **Methods:** We performed a retrospective review of patients ≥ 18 years who met the definition of severe sepsis in one of two urban Emergency Departments (ED) and had arrived by ambulance over

an eighteen-month period. PMRs were evaluated for demographic, physiologic and clinical variables. The information was entered into a database, which auto-filled a tool that determined SIRS criteria, shock index, prehospital critical illness score, NEWS, MEWS, HEWS, MEDS and qSOFA. Descriptive statistics were calculated. **Results:** We enrolled 298 eligible sepsis patients: male 50.3%, mean age 73 years, and mean prehospital transportation time 30 minutes. Hospital mortality was 37.5%. PMRs captured initial: respiratory rate 88.6%, heart rate 90%, systolic blood pressure 83.2%, oxygen saturation 59%, temperature 18.7%, and Glasgow Coma Scale 89%. Although complete MEWS and HEWS data capture rate was <17%, 98% and 68% patients met the cut-point defining “critically-unwell” (MEWS ≥ 3) and “trigger score” (HEWS ≥ 5), respectively. The qSOFA criteria were completely captured in 82% of patients; however, it was positive in only 36%. It performed similarly to SIRS, which was positive in only 34% of patients. The other scores were interim in having complete data captured and performance for sepsis recognition. **Conclusion:** Patients transported by ambulance with severe sepsis have high mortality. Despite the variable rate of data capture, PMRs include sufficient data points to recognize prehospital severe sepsis. A validated screening tool that can be applied by paramedics is still lacking. qSOFA does not appear to be sensitive enough to be used as a prehospital screening tool for deadly sepsis, however, MEWS or HEWS may be appropriate to evaluate in a large prospective study.

Keywords: prehospital, sepsis, early recognition

P008

Implementation of a voluntary provincial knowledge translation intervention project to improve the appropriateness of CT imaging for patients with mild traumatic brain injury and suspected pulmonary embolism

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Introduction: Utilization of CT imaging has risen dramatically with increases in availability, but without corresponding improvements in patient outcomes. Previous attempts to improve imaging appropriateness via guideline implementation have met with limited success, with commonly cited barriers including a lack of confidence in patient outcomes, medicolegal risk, and patient expectations. The objective of this project is to improve CT utilization and appropriateness by addressing common barriers through clinical decision support (CDS) embedded in clinical practice. **Methods:** This matched-pair cluster-randomized trial saw 12 Alberta EDs with CT scanners randomized to receive CDS for diagnostic imaging. After extensive site engagement to recruit emergency medicine and diagnostic imaging leadership and stakeholders and understand local contexts, half of the sites received CDS for mild traumatic brain injury (MTBI) based on the Canadian CT Head Rule, while the remainder received CDS for suspected pulmonary embolism (PE), including the Pulmonary Embolism Rule-out Criteria (PERC), Wells Score, age-adjusted D-dimer and CT pulmonary angiography (CTPA) use. Hardcopy CT order forms including quantitative decision support, source literature and patient handouts were developed and adapted and integrated into workflow as per local site preference. Regular physician and site report cards on CT utilization and CDS use were also provided. The primary outcome was diagnostic imaging utilization for patients with MTBI and suspected PE. **Results:** During the study period, 144 emergency physicians at 6 EDs saw 3,278 patients with MTBI and 146 emergency physicians at six matched comparison EDs saw 18,606 patients with suspected PE. Use of CDS was highly variable by site, ranging from 0% to 29% of CT orders for MTBI and

from 13% to 75% of CTPA orders for suspected PE. Impact on CT utilization, appropriateness, diagnostic yield is currently under investigation, but is expected to be limited at many sites given the variable adoption of decision support. **Conclusion:** A comprehensive CDS intervention to improve evidence-based imaging has met with variable uptake. Meaningful and widespread sustained improvements in practice will likely require incentives, accountability measures and leadership authority to enforce change.

Keywords: decision support, diagnostic imaging, knowledge translation

P009

Improving elderly care transitions through the local adaptation and implementation of the Acute Care for Elderly (ACE) program

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Introduction: Decreasing readmission rates and return emergency department (ED) visits represent a major challenge for health organizations. Seniors are especially vulnerable to discharge adverse events which can result in unplanned readmissions and loss of physical, functional and/or cognitive capacity. The ACE Collaborative is a national quality improvement initiative that aims to improve care of elderly patients. We aimed to adapt Mount Sinai's Care Transitions program to our local context in order to decrease avoidable readmissions and ED visits among seniors. **Methods:** We performed a prospective pre/post implementation cohort study. We recruited frail elderly hospitalized patients (≥ 50 years old) discharged to home and at risk of readmission (modified LACE index score $\geq 7/12$). We excluded patients being discharged to long-term nursing homes or institutions. Our intervention is based on selected strategic ACE Care Transitions best practices: transition coach, telehealth personal response services and a structured discharge checklist. The intervention is offered to selected patients before hospital discharge. Our primary outcome is a 30-day post-discharge composite of hospital readmission and return ED visit rate. Our secondary outcomes are functional autonomy, satisfaction with care transition, quality of life, caregiver strain and healthcare resource use at recruitment and at 30-days follow-up. Hospital-level administrative data is also collected to measure global effect of practice changes. **Results:** The project is currently ongoing and preliminary results are available for the pre-implementation cohort only. Patients in this cohort ($n = 33$) were mainly men (61%), aged 75 ± 10 years and presented an OARS score (Activities of Daily Living instrument that ranges from 0-28) of 5.6 ± 4.9 . At 30 days post-discharge, the patients in our cohort had a 42.4% readmission rate (14 hospitalisations) and a 54.5% return ED visit rate (18 visits). For the same time period, readmission and return ED rates for all patients in the same corresponding age-group at the hospital level were 14.4% and 21.9%, respectively. Further results for our post-intervention cohort will be presented at CAEP 2017. **Conclusion:** Our cohort of elderly patients have high readmission and return ED visit rates. Our ongoing quality improvement project aims to decrease these readmissions and ED visits.

Keywords: discharge, geriatrics, implementation

P010

Code Silver: Lessons learned from the design and implementation of Active Shooter Simulation In-Situ Training (ASSIST)

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