

examines the perceived versus actual success rate of landmarking the cricothyroid membrane by resident and staff emergency physicians using obese and non-obese models. **Methods:** Five male and female volunteers were selected as models. Each model was placed supine, and a point-of-care ultrasound expert landmarked the borders of each cricothyroid membrane. 20 residents and 15 staff emergency physicians were given one attempt to landmark five models. Data was gathered on each participant's perceived likelihood of success and attempt difficulty. Overall accuracy and accuracy stratified by sex and obesity status were calculated. **Results:** Overall landmarking accuracy amongst all participants was 58% (SD 18%). A difference in accuracy was found for obese males (88%) versus obese females (40%) (difference = 48%, 95% CI = 30–65%,  $p < 0.0001$ ); and non-obese males (77%) versus non-obese females (46%) (difference = 31%, 95% CI = 12–51%,  $p = 0.004$ ). There was no association between perceived difficulty and success (correlation = 0.07, 95% CI = -0.081–0.214,  $p = 0.37$ ). Confidence levels overall were higher amongst staff physicians (3.0) than residents (2.7) (difference = 0.3, 95% CI = 0.1–0.6,  $p = 0.02$ ), but there was no correlation between confidence in an attempt and its success ( $p = 0.33$ ). **Conclusion:** We found that physicians demonstrate significantly lower accuracy when landmarking cricothyroid membranes of females. Emergency physicians were unable to predict their own accuracy while landmarking, which can potentially lead to increased failed attempts and longer time to secure the airway. Improved training techniques and a modified approach to cricothyrotomy may reduce failed attempts and improve the time to secure the airway.

**Keywords:** cricothyroid, cricothyrotomy, landmarking

### P033

#### Procedural skills training in emergency medicine physicians within the Edmonton zone: a needs assessment

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**Introduction:** Procedural skills are a key component of an emergency physician's practice. The Edmonton Zone is a health region that comprises twelve tertiary, urban community and rural community emergency departments (EDs) and represents over three hundred emergency physicians. This study describes the current attitudes toward procedural skill competency, current procedural skill practices, and the role for educational skills training sessions among emergency medicine physicians within a geographical health region. **Methods:** Multicenter descriptive cross-sectional survey of all emergency medicine physicians working at 12 emergency departments within the Edmonton Zone in 2019 ( $n = 274$ ). The survey underwent several phases of systematic review; including item generation and reduction, pilot testing, and clinical sensibility testing. Survey items addressed current procedural skill performance frequency, perceived importance and confidence, current methods to maintain competence, barriers and facilitating factors to participation in a curriculum, preferred teaching methods, and desired frequency of practice for each procedural skill. **Results:** Survey response rate was 53.6%. Variability in frequency of performed procedures was apparent across the type of hospital sites. For majority of skills, there was a significantly positive correlation between the frequency at which a skill was performed and the perceived confidence performing said skill. There was inconsistency and no significant correlation with perceived importance, perceived confidence, or frequency performing a given skill and the desired frequency of training for that skill. Course

availability (76.2%) and time (72.8%) are the most common identified barriers to participation in procedural skills training. **Conclusion:** This study summarized the current emergency department procedural skill practices and attitudes toward procedural skill competency and an educational curriculum among emergency medicine physicians in Edmonton. This represents a step towards targeted continuing professional development in the growing realm of competency-based medical education.

**Keywords:** clinical competence, emergency medicine, medical education

### P034

#### Computed tomography rates for emergency department super-users

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**Introduction:** Most emergency departments (ED) in Canada have a population of high frequency users that present to the ED on a regular basis. These patients are well described in the literature and typically defined by a frequency of 8–10 visits/year. In Thunder Bay, Ontario we have a significant population of patients that present more often than we have termed “super-users”. These patients often are typically from a vulnerable population with multiple co-morbidities and a high mortality rate. Although their risk for poor health outcomes is well recognized, both the chronicity and complexity of their symptoms often contributes to diagnostic dilemmas. The decision to order a computed tomography (CT) scan can be a difficult balance between ruling out life threatening diagnoses and exposing the patient to excessive radiation. Our objective was to describe how often these super-users of the ED received a CT scan and what types of imaging were completed. **Methods:** The Thunder Bay Regional Health Sciences Centre is a geographically isolated hospital in Northwestern Ontario with the next closest hospital based CT scanner greater than 300 km away. Based on previous literature and our preliminary scoping of the super-user group, we have identified a minimum of 25 visits as the threshold. A retrospective chart review was conducted for the year 2017 using our electronic medical record. Patient demographic data was collected along with the type and number of CT scans into a standardized collection tool. **Results:** Our preliminary results showed that our total population of super-users was 75 patients with an average of 32 visits to the ED per year. A total of 76% of the patients had a CT scan completed at least once. On average these patients have a CT during 10% of their visits with head CT comprising 50% of the imaging and abdominal/pelvis imaging comprising another 45%. For 20% of these super-users, they had CTs on 20% of their visits. From this population, only 10% of the patients had surgery in 2017 while 7% of visits required admission to hospital. The most common diagnoses for these patient visits relate to mental health/addictions, gastrointestinal complaints and infection. **Conclusion:** This study has shown that a significant number of our super-user population are receiving multiple CTs. Our next step is collect data on individual radiation doses and calculate exposure risks. We hope to inform policy and decision-makers who are developing programs to treat the underlying cause of their high resource use.

**Keywords:** computed tomography, emergency department, super-user

**P035****Improving emergency department outcomes for Alberta seniors**

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**Introduction:** In 2010, Alberta Health Services (AHS) introduced Transition Coordinators (TC), a unique nursing role focused on assessment of elderly patients to support safe discharge home. The objective of this study is to describe patient characteristics to predict safe discharge for seniors ( $\geq 65$  years of age) and identify barriers that can be used to improve ED outcomes for these patients. **Methods:** Two trained research assistants conducted a chart review of the TC referral form and the ED Information System (EDIS) for patients seen by TCs between April and June 2017. Information on patient characteristics, existing home care and community services, the index ED visit and subsequent revisits were extracted. Data were entered into a purpose-built database in REDCap. A descriptive analysis was conducted; results are reported as mean  $\pm$  standard deviation (SD), median (interquartile range [IQR]), or proportions, as appropriate. **Results:** A total of 1411 patients with TC referral forms were included (779 [55%] female). The majority of these patients were  $\geq 65$  (1350 [96%]) with a mean age of  $82 \pm 9.6$ . The majority of patients were triaged as a CTAS of 3 (835 [59%]) with the most common reasons for presentation including: shortness of breath (128 [9%]), abdominal pain (94 [6.7%]), and general weakness (81 [5.7%]). Nearly one third of patients (391 [30%]) were already receiving home care services; (96 [7%]) received a new home care referral as a result of their ED visit. Of all the patients, 1111 (79%) had comorbidities (median: 3 [IQR: 1 to 5]). Overall, 38% ( $n = 536$ ) patients had visited the ED in the 12 months prior to the index with a median of 2 [IQR: 1 to 4] visits. On average, patient's length of stay for their index visits was  $12 \pm 0.35$  hours. Admissions occurred for 599 [42%] patients with delays being common; the mean time between the decision to admit and the patient leaving the ED was  $6 \text{ hrs} \pm 0.23$ . **Conclusion:** Seniors in the ED are complex patients who experience long lengths of stay and frequent delays in decision-making. Upon discharge, few patients receive referrals to community supports, potentially increasing the likelihood of revisits and readmissions. Future studies should assess whether the presence of TCs is associated with better outcomes in the community. **Keywords:** transitions in care

**P036****Sensitivity and false negatives in the use of a prehospital sepsis alert**

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**Introduction:** Prehospital sepsis alerts assist paramedics in identifying patients with sepsis and in communicating this diagnosis to receiving facilities. Following the prospective implementation study of our regional systemic inflammatory response syndrome-based alert criteria (Alert), the purpose of this sub-study was to determine the cause of Alert false negatives (patients without an Alert that subsequently met sepsis criteria in the Emergency Department (ED)). Additionally, the sensitivity of the Alert for detecting sepsis was compared to the Quick Sequential Organ Failure Assessment (qSOFA) and Hamilton Early Warning Score (HEWS). **Methods:** This study was an additional analysis of the prospective Alert implementation study. Included patients were  $\geq 18$  years old, transported by a regional

Emergency Medical Service and met severe sepsis or septic shock criteria (SS/SS, 2012 Surviving Sepsis Guidelines) in regional EDs in 2013. False negative patients were identified prospectively and reviewed by comparing paramedic determined Alert status to the retrospective application of the Alert criteria to Paramedic Call Report (PCR) data. The Alert sensitivity was first calculated from prospective data, then retrospective sensitivities of the Alert, qSOFA and HEWS were calculated by retrospectively applying these tools to PCRs, using ED diagnosis of SS/SS as reference standard. **Results:** In 2013, 229 patients met SS/SS criteria in the ED and had PCRs available; 115 (50.2%) were male and median age [interquartile range] was 76.0 [63.0-84.0]. Of 229, 149 (65.0%) arrived in the ED without an Alert (false negatives) and 46 (30.9%) of these met Alert criteria retrospectively and were therefore missed by paramedics. Sensitivity of the Alert was 34.9% when applied by paramedics and 41.5% when applied retrospectively to PCRs. The retrospective sensitivities of the qSOFA and HEWS were 37.6% and 67.7%, respectively. **Conclusion:** In ED patients diagnosed with SS/SS who arrived with no Alert, the majority (69.1%) were missed by the Alert criteria, rather than by paramedic application of the tool. The Alert had a sensitivity of 34.9%. When applied retrospectively and compared to the Alert, qSOFA had similar sensitivity and HEWS had increased sensitivity. Future research should focus on deriving improved alerts or implementing those with higher accuracy, such as HEWS.

**Keywords:** emergency medical services, pre-alert, sepsis

**P037****Adherence to the Canadian CT Head Rule in a Nova Scotian emergency and trauma centre**

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**Introduction:** Choosing Wisely Nova Scotia (CWNS), an affiliate of Choosing Wisely Canada™ (CWC), aims to address unnecessary care and testing through literature-informed lists developed by various disciplines. CWC has identified unnecessary head CTs among the top five interventions to question in the Emergency Department (ED). Zyluk (2015) determined the Canadian CT Head Rule (CCHR) as the most effective clinical decision rule in adults with minor head injuries. To better understand the current status of CCHR use in Nova Scotia, we conducted a retrospective audit of patient charts at the Charles V. Keating Emergency and Trauma Center, in Halifax, Nova Scotia. **Methods:** Our mixed methods design included a literature review, retrospective chart audit, and a qualitative audit-feedback component with participating physicians. The chart audit applied the guidelines for adherence to the CCHR and reported on the level of compliance within the ED. Analysis of qualitative data is included here, in parallel with in-depth to contextualize findings from the audit. **Results:** 302 charts of patients having presented to the surveyed site were retrospectively reviewed. Of the 37 cases where a CT head was indicated as per the CCHR, a CT was ordered 32 (86.5%) times. Of the 176 cases where a CT head was not indicated, a CT was not ordered 155 (88.1%) times. Therefore, the CCHR was followed in 187 (87.8%) of the total 213 cases where the CCHR should be applied. **Conclusion:** Our study reveals adherence to the CCHR in 87.8% of cases at this ED. Identifying contextual factors that facilitate or hinder the application of CCHR in practice is critical for reducing unnecessary CTs. This work has been presented to the physician group to gain physician engagement and to elucidate enablers and barriers to guideline adherence. In light of the frequency of CT heads ordered EDs, even a small reduction would be impactful.