

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 (≥ 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 ≥ 65 (1350 [96%]) with a mean age of 82 ± 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 ± 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 ≥ 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.

Keywords: clinical decision rule, computed tomography, minor head injury

P038

Comparison of diagnostic imaging rates between workplace and non-workplace injuries in the emergency department: a ten-year review

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Background: In Canada, injuries represent 21% of Emergency Department (ED) visits. Faced with occupational injuries, physicians may feel pressured to provide urgent imaging to facilitate expedited return to work. There is not a body of literature to support this practice. Twenty percent of adult ED injuries involve workers compensation. **Aim Statement:** Tacit pressures were felt to impact imaging rates for patients with workplace injuries, and our aim was to determine if this hypothesis was accurate. We conducted a quality review to assess imaging rates among injuries suffered at work and outside work. A secondary aim was to reduce the harm resulting from non-value-added testing. **Measures & Design:** Information was collected from the Emergency Department Information System on patients with acute injuries over the age of 16-years including upper limb, lower limb, neck, back and head injuries. Data included both workplace and non-work-related presentations, Canadian Triage and Acuity Scale (CTAS) levels and age at presentation. Imaging included any of X-ray, CT, MRI, or Ultrasound ordered in EDs across the central zone of Nova Scotia from July 1, 2009 to June 30, 2019. A total of 282,860 patient-encounters were included for analysis. Comparison was made between patients presenting under the Workers' Compensation Board of Nova Scotia (WCB) and those covered by the Department of Health and Wellness (DOHW). Imaging rates for all injuries were also trended over this ten-year period. **Evaluation/Results:** In patients between 16 and 65-years, the WCB group underwent more imaging (55.3% of visits) than did the DOHW group (43.1% of visits). In the same cohort, there was an overall decrease of over 10% in mean imaging rates for both WCB and DOHW between the first five-year period (2009-2013) and the second five-year study period (2013-2018). Imaging rates for WCB and DOHW converged with each decade beyond 35 years of age. No comparison was possible beyond 85-years, due to the absence of WCB presentations. **Discussion/Impact:** Patients presenting to the ED with workplace injuries are imaged at a higher rate than those covered by the DOHW. Campaigns promoting value-added care may have impacted imaging rates during the ten-year study period, explaining the decline in ED imaging for all injuries. While this 10% decrease in overall imaging is encouraging, these preliminary data indicate the need for further education on resource stewardship, especially for patients presenting to the ED with workplace injuries.

Keywords: quality improvement and patient safety, value-added care, workplace injuries

P039

Utilization of serum D-dimer assays and computed tomography pulmonary angiography (CTPA) scans in the diagnosis of pulmonary embolism among emergency department (ED) physicians

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Introduction: As the availability of Computed Tomography Pulmonary Angiography (CTPA) to rule out pulmonary embolism (PE) increases, so too does its utilization, and consequently overutilization. A variety of evidence-based algorithms and decision rules using clinical criteria and D-Dimer testing have been proposed as instruments to allow physicians to safely rule out a PE in low-risk patients. However, studies have shown mixed results with respect to both physician uptake of these decision rules and their impact on improving ordering practices among physicians. The objective of this study is to describe the prevalence of D-Dimer utilization among ED physicians and its impact on positive yield rates of CTPAs in a community setting. **Methods:** Data was collected on all CTPA studies ordered by ED physicians at two very high-volume community hospitals and an affiliated urgent care centre during the 2-year period between January 1, 2016 and December 31, 2017. For each CTPA, we determined if 1) a D-Dimer had been ordered prior to CTPA, if 2) the D-Dimer was positive, and if 3) the CTPA was positive for a PE. Using a chi-square test, we compared the diagnostic yield for those patients who had a D-Dimer prior to their CTPA and those who did not. **Results:** A total of 2,811 CTPAs were included in the analysis. Of these, 964 CTPAs (34.3%) were ordered without a D-Dimer. Of those 1,847 patients who underwent D-Dimer testing prior to the CTPA, 343 (18.7%) underwent a CTPA despite a negative D-Dimer. When compared as a group, those CTPAs preceded by a D-Dimer showed no significant difference in positive yields when compared to those CTPAs ordered without a prior D-Dimer (9.9% versus 11.3%, $p = 0.26$). **Conclusion:** The findings of this study present a complicated picture of the impact of D-Dimer utilization on CTPA ordering patterns. There is evidence of suboptimal uptake of routine D-Dimer ordering, and adherence to guidelines in terms of forgoing CTPAs in low-risk patients with negative D-Dimers. While this study design leaves unanswered the question of how many CTPAs were avoided as a result of a negative D-Dimer, the finding of a similar positive yield among those patients who had a D-Dimer ordered versus those who did not is interesting, and illustrative of the issues arising from the high false-positive rates associated with D-Dimer screening.

Keywords: computed tomography, overutilization, pulmonary embolism

P040

Retrospective assessment of discrepancies in preliminary radiological reports in the emergency department

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Background: Preliminary reports and subsequent immediate management decisions of radiological scans are often performed by emergency physicians and on-call radiology residents. Many academic hospitals have resident-only coverage for after-hour shifts. Generally, these preliminary reports are eventually reviewed by a staff radiologist, during which discrepancies may be identified. Depending on the severity of the discrepancy and the time taken to notify the treating physician, there is potential for significant impact on the patient's care. **Aim Statement:** In an attempt to identify and minimize errors in radiological readings, and to improve the communication of discrepancies, our project aims to retrospectively audit all radiological discrepancies that have occurred at The Ottawa Hospital's emergency departments from April 2018 to May 2019. **Measures & Designs:** A systematic review of all cases with noted radiological discrepancies was obtained from the Picture Archive and Communication System