Introduction: Nova Scotia has a province wide reperfusion strategy for the treatment of patients presenting with acute ST-Elevation Myocardial Infarction (STEMI). Patients are referred for primary percutaneous coronary intervention (PPCI) if a first medical contact to device time can be achieved within 90 to 120 minutes; otherwise, fibrinolytic therapy is administered, as per guideline recommendations. Since 2011, Nova Scotian paramedics have been providing prehospital fibrinolysis (PHF) and prehospital catheterization (cath) lab activation for STEMI patients outside and within the PPCI catchment area, respectively. Patients who received fibrinolysis are transferred to a PCI facility if rescue PCI is required or if there are other indications for urgent intervention. This province wide approach is unique and the objective of this retrospective cohort study is to compare the impact of this approach on the primary outcome of 30-day mortality. **Methods:** For the study period, July 2011 to July 2013, STEMI patients who were diagnosed prehospital or in the ED who subsequently underwent reperfusion therapy were identified in the Emergency Health Services (EHS), Cardiovascular Information Systems (CVIS) and Cardiovascular Health Nova Scotia (CVHNS) databases. Baseline demographics and outcomes were then compared according to the treatment received: 1) PHF; 2) ED Fibrinolysis (EDF); 3) prehospital activated PPCI (EHS PPCI); and 4) ED activated PPCI (ED PPCI). **Results:** There were a total of 1107 STEMI patients identified during the study period, of whom 742 received lytic therapy (146 PHF; 596 EDF) and 332 underwent PPCI (202 EHS PPCI; 130 ED PPCI). Demographic variables were similar across the groups. The primary outcome of 30-day mortality was not significantly different across groups: 5 (3%) in PHF, 26 (4%) in EDF, 8 (4%) in EHS to PPCI and 2 (2%) in ED to PPCI. The number of rescue PCIs was 28 (19%) in PHF and 102 (17%) in EDF. Other outcomes (key timestamps) are pending. **Conclusion:** Our results show that the 30-day mortality was lowest for patients undergoing PPCI and slightly less for patients receiving pre-hospital fibrinolytic compared to those receiving ED fibrinolytic with no difference in the proportion requiring subsequent rescue PCI. The majority of patients in rural areas received EDF as opposed to PHF; pending results will show if this represents a delay in patient presentation after symptom onset.

Keywords: prehospital, fibrinolysis

LO027

Cervical spine injury in trauma patients 65 years and older immobilised in the prehospital setting

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Introduction: Following a protocol derived from the Canadian C-spine Rule (CCR), patients 65 years and older transported by ambulance after trauma require full spinal immobilisation. Immobilisation complicates the transport and the evaluation; potential side effects have been recognized. The aim of this study was to evaluate the effect of mechanism of trauma and age on the rate of cervical injury in a geriatric population. **Methods:** We conducted a retrospective observational study on patients 65 years and older transported by ambulance to a level-one trauma center from March 2008 to October 2013. The outcome was the rate of clinically important cervical spine injury (CICSI), defined as any fracture, dislocation or ligamentous injury needing treatment or specialised follow up. The rate was calculated in the geriatric population and in the subgroup of patients with minor trauma, defined as a fall from a standing height, a chair or a bed. We then looked at the rate of CICSI based on age to define a subgroup at lower risk of lesion. **Results:** We included 1221 patients with a mean age of 80 y.o. (SD = 8), 739 women (61%). CICSI was found in 53 patients (4.3%, 95% CI 3.2-5.4). This is similar to the rate found in patients 65 years and older in the NEXUS population (4.6%) and the CCR population (6.0%). The mechanism of injury was a minor trauma for 716 patients (59%). Of those, 24 patients (3.4%, 95% CI 2.1-4.7) had CICSI. The rate increased after 85 y.o in both the overall population (3.4% vs 6.4%) and the minor trauma subgroup (2.6% vs 4.4%). **Conclusion:** The subgroup of patients 65-84 y.o. with a minor trauma had the lower rate of cervical spine injury (2.6%). In a lot of prehospital systems, those patients are not systematically immobilised for transport. It will be interesting to review the files of all patients with CICSI to identify any possible case that would have been missed without the age criteria.

Keywords: prehospital, immobilization, geriatrics

LO028

Prospective validation of an iOS app to evaluate tremor in patients with alcohol withdrawal syndrome

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Introduction: Ideal management of alcohol withdrawal syndrome (AWS) incorporates a symptom driven approach, whereby patients are regularly assessed using a standardized scoring system (Clinical Institute Withdrawal Assessment for Alcohol-Revised; CIWA-Ar) and treated according to severity. Among the domains assessed by the CIWA-Ar, tremor is the most objective indicator of withdrawal severity, however, the ability of clinicians to reliably quantify tremor is highly dependent on experience. The objective of this study was to prospectively validate an objective, reliable tool to standardize and quantify the severity of alcohol withdrawal tremor using the built-in accelerometer of an iOS application. **Methods:** A prospective observational study of patients ≥ 18 years presenting to an academic emergency department in alcohol withdrawal was conducted from Oct 2014 to Aug 2015. Assessments were videotaped by a research assistant and subsequently reviewed by 3 clinical experts, blinded to the primary clinical assessment. Tremor severity was scored using the 8-point CIWA scale (0 = no tremor, 7 = severe tremor). Accelerometer derived results were compared to expert assessments of each video. Inter-rater agreement was estimated using Cohen's kappa (k) statistic. **Results:** 76 patients with 78 tremor recordings were included. Accelerometer derived tremor scores matched exactly with expert assessor scores in 36 (46.2%) cases, within 1 point for 73 (93.6%) cases and differed by $\geq$ 2 points in 5 (6.4%) cases. The overall kappa for agreement within 1 point for tremor severity was 'very good' 0.92 (95% CI: 0.86, 0.99). **Conclusion:** iOS accelerometer based assessment of the tremor component of the CIWA-Ar score is reliable and has potential to more accurately assess the severity of patients in alcohol withdrawal. We anticipate this resource will be easily disseminated and will impact and improve the care of patients with alcohol withdrawal.

Keywords: alcohol withdrawal, validation, interrater agreement

LO029

Undetected serious medical illness in mental health patients seen in an academic emergency department

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Introduction: Mental health concerns make up 5-10% of all adult presentations to Canadian emergency departments (ED). One challenge

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for the emergency physician (EP) is determining if a patient with a mental health concern has concomitant underlying medical illness. We defined "serious medical illness" (SMI) as a pathological condition that requires inpatient treatment on a medical or surgical ward. SMI undetected by emergency physicians in patients presenting with mental health concerns may result in adverse patient outcomes. The aim of this study was to determine the prevalence, timing, and etiology of undetected SMI in the ED among adult patients presenting with mental health concerns. **Methods:** A retrospective chart review was performed on all patients age 18 and older who presented to the ED at Victoria Hospital, London Health Sciences Centre between October 1, 2014 and April 30, 2015, who were subsequently referred to psychiatry by the EP. The primary outcome was the number of patients transferred to a medicine or surgery inpatient unit for treatment of their SMI within seven days of psychiatry admission from the ED. **Results:** 1,255 patients were referred to psychiatry during the study period. 803 patients were admitted and 452 were discharged. Of the admitted patients, 14/803 patients (1.7%) met our primary outcome. The mean age of patients in the SMI group (n = 14) was 64 years. The mean age in the non-SMI group (n = 1,241) was 38. In the SMI group, 3/14 patients died, 2/14 patients required an ICU admission, and 2/14 patients underwent a surgery for their missed SMI. The average length of psychiatry admission prior to transfer was 3.7 days. The average length of medical/surgical admission after transfer from psychiatry was 8.3 days. Undetected diagnoses included NSTEMI, serotonin syndrome, lithium toxicity, thoracic aortic aneurysm, gastrointestinal stromal tumour, forearm abscess, Parkinsonian crisis, and others. **Conclusion:** This chart review demonstrated a 1.7% rate of undetected serious medical illness in patients who presented to the ED with mental health concerns. Adverse outcomes included death, ICU admissions, and surgeries. This rate is similar to other studies on the topic. The SMI group tended to be older than the non-SMI group. This research may have implications on the appropriate workup and disposition of elderly patients presenting to the ED with mental health concerns.

Keywords: mental health, undetected medical illness

LO030

Inter-rater agreement of nurse and clinical expert tremor assessments for patients with alcohol withdrawal syndrome in the emergency department

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Introduction: Of the domains assessed by the CIWA-Ar, tremor is the most objective, and reliable clinical symptom of alcohol withdrawal syndrome. Even so, anecdotal evidence suggests that the ability of health care workers to reliably rate tremor severity is highly variable, and there is no high quality, readily available training to teach this competency. Improper evaluation and interpretation of tremor may result in under or over treatment, posing serious risks to patient safety, prolonging emergency department (ED) length of stay, and increasing the likelihood of complications/hospital admission. The objective of this study was to prospectively compare tremor assessment scores assigned by nurses and clinical experts for patients with alcohol withdrawal syndrome in the ED. **Methods:** A prospective observational study was conducted for patients ≥18 years presenting to an academic ED in alcohol withdrawal from Oct 2014 to Aug 2015. Individual tremor assessments were videotaped by a research assistant and subsequently reviewed by 3 clinical experts, blinded to the primary clinical assessment. Tremor severity was scored using the 8-point CIWA scale (0 = no tremor, 7 = severe tremor). Tremor severity scores assigned in real-time by the nurses were compared to expert assessments of each video. Inter-rater agreement was estimated using Cohen's kappa (*k*) statistic. **Results:** 31 patients with 62 tremor recordings were included. Nurse-derived tremor scores matched exactly with expert assessor scores in 11 (17.7%) cases, within 1 point for 29 (46.8%) cases and differed by ≥ 2 points in 33 (53.3%) cases. The overall kappa for agreement within 1 point for tremor severity was 'fair' 0.39 (95% CI: 0.25, 0.53). **Conclusion:** These results confirm the high variability in the assessment of alcohol withdrawal tremor by health care workers. Future research should focus on ways to improve the accuracy of tremor in alcohol withdrawal patients, and the development and implementation of an educational program to improve the individual competencies of clinical staff in the recognition and treatment of alcohol withdrawal in the ED.

Keywords: alcohol withdrawal, tremor, inter-rater agreement

LO031

The epidemiology of emergency department visits for dog-related injuries in Alberta

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Introduction: Injuries due to interactions with dogs (e.g. bites, collisions, etc) are an important public health concern from both a health and an economic perspective. The consequences of these injuries can be both physical (injury, pain, infection, disfiguration) and psychological. The purpose of this study is to understand the prevalence and characteristics of dog-related injuries among patients presenting to Alberta emergency departments (EDs). Further, this study describes the burden of these injuries on ED economic health care resources. **Methods:** This retrospective, administrative database cohort study utilised the National Ambulatory Care Reporting System (NACRS) to identify all visits made to Alberta EDs in fiscal years 2010/11 through 2014/15 for dog-related injuries. ED visits where the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canada (ICD-10-CA) code "W54-Bitten or Struck by Dog" appeared in the first four diagnosis fields were captured. The Canadian Institute for Health Information costing model utilising the Comprehensive Ambulatory Classification System and Resource Intensity Weights was employed to calculate average unit health care costs for ED visits excluding physician fees. Data were analyzed using descriptive statistics. **Results:** During the 5 year study period, Albertans made 21,821 ED visits for dog-related injuries. The ED visit rate was highest in children under 2 years of age, namely 234 per 100,000 for males and 206 per 100,000 for females. ED visit rates were highest for patients residing in the northern health region of the province (220/100,000) compared to metropolitan areas (90/100,000 and 64/100,000 for Edmonton and Calgary zones respectively). One third of visits occurred in the summer months, with a greater proportion of visits occurring on the weekend (34.4%). The predominant areas of injury were wrist/hand/fingers (n = 7756 visits; 35.5%) and head/face/neck (n = 5152 visits; 23.6%). In 287 visits (1.3%), the patient was admitted to hospital. ED visit costs were highest for children 4 years of age and younger ($243.86/visit; $p < 0.001$). **Conclusion:** Dog-related injuries result in a substantial number of ED visits and significant costs in Alberta. Understanding the characteristics of these injuries provides an opportunity for prevention, including strategies focussed on higher risk groups involving children and residents of rural areas.

Keywords: injury

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