

An episode of delirium increases hospital LOS by about a week and therefore could contribute to ED overcrowding.

**Keywords:** delirium, length of stay

#### LO023

##### Association between ED-induced delirium and cognitive & functional decline in seniors

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**Introduction:** Delirium is a common medical complication among seniors in hospital setting. In the emergency department (ED), its prevalence varies between 7 & 14%. Delirium is associated with increased mortality & longer hospital stay. This condition is also associated with functional & cognitive decline in hospitalized seniors and higher risk of institutionalization up to 2 years after their discharge. However, no data is currently available for ED patients. The aim of this study was to evaluate the association between ED-induced delirium and functional & cognitive decline in seniors at 60 days. **Methods:** This study is part of the *Incidence and Impact measurement of Delirium Induced by ED-Stay (INDEED)* study, an ongoing multicenter prospective cohort study in 5 Quebec EDs. Patients were recruited after 8 hours in the ED and followed up to 24h after admission. A 60-day follow-up phone assessment was also conducted. Delirium was measured by the validated Confusion Assessment Method & the Delirium Index. Functional status was measured by the validated OARS. Cognitive status was measured using the validated TICS-M. Functional and cognitive decline were obtained by comparing the baseline and 60-days follow-up scores. **Results:** 380 seniors were recruited and 280 had 60-day follow-up data available. ED-induced delirium was 8.4% of seniors. There was a difference in mean functional decline among seniors with and without ED-induced delirium 2.95(1.23-4.67) vs 1.55(1.20-1.91,  $p_{\text{wlicoxon}} = 0.05$ ) Proportion of seniors showing a decline  $\geq 2$  points on the OARS was significantly higher in those with ED-induced delirium (65.0 % vs 40.18 %,  $p = 0.03$ ). Seniors with ED-induced delirium also showed a significant decline in mean TICS scores [3.31 (0.82-5.84) vs -0.01 (-0.071-0.75)],  $p_{\text{wlicoxon}} = 0.009$ ]. There was no significant difference in the proportions of seniors showing a decline  $\geq 3$  OARS points between those with or without delirium ( $p = 0.06$ ). **Conclusion:** ED-induced delirium seems to be associated with poor functional and cognitive outcomes in older patients 60 days after discharge from the hospital. Further studies are required to confirm clinical importance ED-induced delirium delayed complication.

**Keywords:** delirium, geriatrics, emergency department

#### LO024

##### Time to perform ultrasound guided femoral nerve block in older hip fractures patients by emergency physicians

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**Introduction:** Ultrasound-guided femoral nerve block (USFNB) is optimal for providing analgesia for patients with hip fractures, but is rarely performed. Time of the procedure was cited as a barrier in our previous survey. **Methods:** We conducted a knowledge-to-practice intervention that included a two-hour training session on USFNB, use of a block kit, and reminders to improve uptake of USFNB. We measured the time it took for trained EPs to complete the block during a 20 month period. **Results:** Of

36 EPs, 34 (94.4%) were not routinely performing USFNB at the beginning of the study, and 4 declined to participate, leaving 30 participants who received training. The 30 trained EPs performed 100 USFNB over the next 20 months (range 1 to 20 blocks per EP). The mean reduction in pain was -4.47 on a 10 point numeric rating scale. The median time to perform the blocks was 15.0 minutes (IQR, 10 to 20 minutes), and 90 % of blocks took less than 30 minutes. The most common reason given for not performing a block was excessive clinical load. **Conclusion:** Given that we included 88.2% of eligible EP's and included the first time EP's performed a USFNB, our estimates of time to perform USFNB block should generalize to other Canadian academic ED's. Time to complete USFNB is in keeping with other commonly performed ED procedures and should not be a barrier to optimizing analgesia.

**Keywords:** older adults, hip fracture, regional anesthesia

#### LO025

##### In support of Choosing Wisely: variation in CT ordering for patients presenting to emergency with minor head injury

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**Introduction:** Individual and institutional disparities in CT imaging rates for patients with head injuries have long been recognized, leading to the development of well-validated clinical decision rules designed to standardize clinical practice. To assess their impact on current practice, we sought to evaluate variation in CT imaging by emergency physicians for patients presenting with head injury across the province of Alberta. **Methods:** A unique data warehouse merging administrative, clinical, and imaging platforms for 11 Alberta emergency departments (EDs) was created. Unique identifiers were obtained for all emergency physicians who were included in this analysis if they evaluated in excess of ten ED patients presenting with a chief complaint of "head injury". Patients with high triage acuity (CTAS 1) were excluded, as were patients who were admitted to hospital. Descriptive statistics were employed to describe variation between physicians and sites for a 24 month period from 2013-2015. **Results:** 311 emergency physicians treating 20,797 patient encounters for head injury were included. Overall a total of 8,245 head injury patients (40%) received one or more CT scans. Physician variation across the 11 sites ranged from 4% -100% of head injury patients receiving a CT. Within sites CT ordering between physicians varied from 9-fold (4% - 36%) at the lowest variation site, to more than 20-fold (4% - 90%) at the highest variation site. After removing the 5% lowest and highest ordering physicians, variation in ordering continued to range from 10% - 72%. No trends were observed across the two years examined. **Conclusion:** This is the largest study to date examining physician level variation in CT ordering practices for ED head injury patients. We have identified marked persistent practice variation despite the presence of well-validated clinical decision rules and a relatively low risk medicolegal environment. Variable risk tolerance and limited use of validated clinical decision rules are likely contributors making this area an ideal focus for targeted interventions to improve imaging appropriateness and reduce practice variation.

**Keywords:** Choosing Wisely, CT scans, practice variation

#### LO026

##### Outcomes of a provincial cardiac reperfusion strategy: a population-based, retrospective cohort study

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**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  $\geq 18$  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