MP08

A novel measure to capture transactional stress in paramedic services

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Introduction: In the past few years, there has been an increase in awareness of the challenge of managing work related stress in EMS. Extant research has liked different types of chronic and critical incident stress to stress reactions like posttraumatic stress. However, there is no tool to capture the transactional stresses which are associated with the day to day provision of service (e.g., dealing with offload delays or mandatory overtime) and interacting with allied professions (e.g., emergency department staff) or allied agencies (e.g., law enforcement). The purpose of this study was to develop and validate a measure which captured transactional stresses in paramedics **Methods:** An online survey was conducted with ten Canadian Paramedic Services with a 40.5% response rate (n = 717). Factor analysis was used to identify variation in responses related to the latent factor of transactional stress. The scale was validated using both exploratory and confirmatory factor analyses. **Results:** The sample of transactional stress questions was split to allow for multiple analyses (EFA n = 360/ CFA n = 357). In the exploratory factor analysis, principal axis factoring with an oblique rotation revealed a two-factor, twelve item solution, (KMO = .832, $x2$ = 1440.19, df = 66, p < .001). Confirmatory factor analysis also endorsed a two factor, 12 item solution, ($x2$ = 130.39, df = 51, p < .001, CFI = .95, TLI = .93, RMSEA = .07, SRMR = .06). Results supported two groups of six-item factors that captured transactional stress in the provision of service. The factors, clearly aligned with transactional stress issues internal to the ambulance and transactional stress relationships external to the ambulance. Both subscales demonstrated good internal reliability (= .843/ =.768) and were correlated (p.01) with a convergent validity measure. **Conclusion:** This study successfully validated a two-factor scale which captures stress associated with the day to day provision of EMS and the interaction with allied professions. The development of this measure of transactional stresses further expands the potential that paramedics, Paramedic Services, employers, and prehospital physicians may understand the dynamics that influence provider health and safety. As a result, there may be greater opportunities to intervene holistically to improve paramedic health and well-being.

Keywords: paramedic services, stress, factor analysis

MP09

Incidence of emergency department induced delirium: a Canadian two years prospective study

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Introduction: Prevalence and incidence of delirium in older patients admitted to acute and long-term care facilities ranges between 9.6% and 89% but little is known in the context of emergency department (ED) incident delirium. Literature regarding the incidence of delirium in the ED and its potential impacts on hospital length of stay (LOS), functional status and unplanned ED readmissions is scant, its consequences have yet to be clearly identified in order to orient modern acute medical care. **Methods:** This study is part of the multicenter prospective cohort INDEED study. Three Canadian EDs completed the two years prospective study (March-July 2015 and Feb-May 2016). Patients aged 65 years old, initially free of delirium with an ED stay 8hours were followed up to 24h after ward admission. Patients were assessed 2x/day during their entire ED stay and up to 24 hours on hospital ward by research assistants (RA). The primary outcome of this study was incident delirium in the ED or within 24 h of ward admission. Functional and cognitive status were assessed using validated Older Americans' Resources and Services and the Telephone Interview for Cognitive Status- modified tools. The Confusion Assessment Method (CAM) was used to detect incident delirium. ED and hospital administrative data were collected. Inter-observer agreement was realized among RA. **Results:** Incident delirium was not different between sites, nor between phases, nor between times from one site to another. All phases confounded, there is between 7 to 11% of ED related incident delirious episodes. Differences were seen in ED LOS between sites in non-delirious patients, but also between some sites for delirious participants (p < 0.05). Only one site had a difference in ED LOS between their delirious and non-delirious patients, respectively of 52.1 and 40.1 hours (p < 0.05). There is also a difference between sites in the time between arrival to the ED and the incidence of delirium (p = 0.003). Kappa statistics were computed to measure inter-rater reliability of the CAM. Based on an alpha of 5%, 138 patients would allow 80% power for an estimated overall incidence proportion of 15 % with 5% precision.. Other predictive delirium variables, such as cognitive status, environmental factors, functional status, comorbidities, physiological status, and ED and hospital length of stay were similar between sites and phases. **Conclusion:** The fact that incidence of delirium was the same for all sites, despite the differences of ED LOS and different time periods suggest that many other modifiable and non-modifiable factors along LOS influenced the incidence of ED induced delirium. Emergency physician should concentrate on improving senior-friendly environment for the ED.

Keywords: delirium, length of stay, emergency department

MP10

Implementation of the PulsePoint mobile device application in Kingston, Ontario, Canada: a pilot study on crowdsourcing bystander CPR for victims of out-of-hospital cardiac arrest

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Introduction: Every year 40,000 out-of-hospital cardiac arrests (OHCA) occur in Canada. Only 1 in 10 survive. Early bystander cardiopulmonary resuscitation (CPR) and defibrillation can triple odds of survival. PulsePoint is a mobile device application designed to crowdsource bystander CPR and public access defibrillation for victims of OHCA. Kingston, Ontario was the first Canadian city to launch PulsePoint. The objective of this project was to determine feasibility of PulsePoint implementation in a Canadian setting and to describe system performance. **Methods:** This was a descriptive observational study. We included all 9-1-1 incidents involving PulsePoint system activation in Kingston, Ontario and all confirmed, public location OHCAs assessed by local emergency medical services (EMS) between March 23, 2015 to January 23, 2017. By using time and location data from PulsePoint system alert notifications, we attempted to link each PulsePoint activation to de-identified ambulance call records. **Results:** Between March 23, 2015 to January 23, 2017, there were 258 PulsePoint system activations in Kingston and a total of 32 cases of confirmed OHCAs. Only 58 (22%) of PulsePoint activations could be linked to EMS records with high confidence. Of these linked cases, 10 were confirmed OHCAs,

reflecting 17% (10/58) of all linked PulsePoint activations and 31% (10/32) of all confirmed OHCAs. Of the remaining 48 cases that triggered PulsePoint activation numerous final paramedic problem codes were assigned of which 14% (8/58) were deemed alcohol intoxication, 10% (6/58) were active seizures, 7% (4/58) were behavioural/psychiatric events, among others. 10 incidents (17%) that triggered PulsePoint activation did not have an assigned final paramedic problem code. **Conclusion:** Implementation of PulsePoint is feasible in Canadian communities. Improved capabilities for linking with local EMS data will improve data capture, program monitoring capacity, and opportunity for research. The impact of PulsePoint on clinical outcomes remains uncertain and should be determined in future research.
Keywords: pulsepoint, out-of-hospital cardiac arrest, bystander cardiopulmonary resuscitation

MP11

Underreport of incident delirium in elderly patients treated in the emergency department

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Introduction: It is documented that physicians and nurses fail to detect delirium in more than half of cases from various clinical settings, which could have serious consequences for seniors and for our health care system. The present study aimed to describe the rate of documented incident delirium in 5 Canadian Emergency departments (ED) by health professionals (HP). **Methods:** This study is part of the multicenter prospective cohort INDEED study. Patients aged 65 years old, initially free of delirium with an ED stay 8hours were followed up to 24h after ward admission. Delirium status was assessed twice daily using the Confusion Assessment Method (CAM) by trained research assistants (RA). HP reviewed patient charts to assess detection of delirium. HP had no specific routine detection of delirious ED patients. Inter-observer agreement was realized among RA. Comparison of detection between RA and HP was realized with univariate analyses. **Results:** Among the 652 included patients, 66 developed a delirium as evaluated with the CAM by the RA. Among those 66 patients, only 10 deliriums (15.2%) were documented in the patients medical file by the HP. 54 (81.8%) patients with a CAM positive for delirium by the RA were not recorded by the HP, 2 had incomplete charts. The delirium index was significantly higher in the HP reported group compared to the HP not reported, respectively 7.1 and 4.5 (p < 0.05). Other predictive delirium variables, such as cognitive status, functional status, comorbidities, physiological status, and ED and hospital length of stay were similar between groups. **Conclusion:** It seems that health professionals missed 81.8% of the potential delirious ED patients in comparison to routine structured screening of delirium. HP could identify patients with a greater severity of symptoms. Our study points out the need to better identify elders at risk to develop delirium and the need for fast and reliable tools to improve the screening of this disorder.
Keywords: delirium, seniors, screening

MP12

Emergency department boarding: predictors and outcomes

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Introduction: Delays in transfer to an in-patient bed of admitted patients boarded in the ED has been identified as one of the chief drivers of ED overcrowding. Our study aims to replicate findings from a previous study in identifying patient characteristics associated with increased boarding time, and the impact of increased boarding time on in-patient length of stay (IPLOS). **Methods:** We conducted a retrospective single-centre observational study during the period between January 1, 2015 December 31, 2015 at a very high volume community hospital (~75,000 ED visits/year). All patients admitted from the ED to Medicine, Pediatrics, Surgery, and Critical Care were identified. The mean time to in-patient bed (TTB), as well as patient-specific and institutional factors that were associated with prolonged boarding times (12 hours) were identified. Mean IP LOS was calculated for those with prolonged boarding times and compared to those without prolonged boarding times. **Results:** There were 8,096 unique admissions during the study period. Patients admitted to the Medicine service exhibited significantly higher boarding times than those admitted to other services, with a mean boarding time of 17.4 hrs, as compared to 4.2 hrs, 5.7 hrs, and 4.0 hrs for those admitted to Surgery, Critical Care and Pediatrics respectively. Within Medicine patients, there was a statistically significant greater odds of prolonged boarding time for patients who were older, had a greater comorbidity burden, and required more specialized in-patient care (i.e. an isolation bed or telemetry bed). Medicine patients with prolonged boarding times also experienced 0.7 days longer IP LOS, even after correcting for age and comorbidity (mean adjusted IP LOS 10.6 days versus 11.3 days). **Conclusion:** Within our study period, older, sicker patients and those patients requiring more resource-intensive in-patient care have the longest ED boarding times. These prolonged 'boarding' times are associated with significantly increased IP LOS.
Keywords: emergency department overcrowding, patient safety, administrative database

MP13

Accuracy of Korean Triage and Acuity Scale when pain severity is used as a modifier

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Introduction: Accurate triage is important because under-triage may delay critical care for emergent patients and over-triage may inhibit efficient management of emergency department (ED) resources. In Korea, the Korean Triage and Acuity Scale (KTAS) was developed based on the CTAS in 2015. The purpose of this study was to evaluate the accuracy of KTAS in predicting patient's severity when degree of pain was used as a modifier. **Methods:** This was a retrospective observational cohort study, conducted in an ED of urban tertiary university hospital with more than 90,000 visits per year. We studied adult patients who visited the ED from January 2016 to June 2016. Patients were devided into pain group and non-pain group according to whether the degree of pain was used as a modifier in the KTAS evaluation. We used acute area registration, emergency procedure, emergency operation, hospitalization, intensive care unit admission, and hospital mortality as markers to determine urgent patients. To evaluate discriminative ability of KTAS, the odds ratios of each KTAS values compared to KTAS 3 for the urgent patients were calculated. And to compare the predictive power of KTAS for urgent patients between the two groups, the area under the receiver operating characteristic (ROC) curves were compared by DeLongs method. **Results:** There were 9,175 (37.8%) patients in the pain group and 15,078 (62.2%) patients in the non-pain group. When KTAS was assessed as 2, only 20.3% of the