

MP08**A novel measure to capture transactional stress in paramedic services**

M. Davis, MD, MSc, E. A. Donnelly, PhD, MPH, P. Bradford, MD, C. Hedges, D. Socha, BSc, MA, P. Morassutti, BSc, Division of Emergency Medicine, Western University, London, ON

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, ($KMO = .832$, $\chi^2 = 1440.19$, $df = 66$, $p < .001$). Confirmatory factor analysis also endorsed a two factor, 12 item solution, ($\chi^2 = 130.39$, $df = 51$, $p < .001$, $CFI = .95$, $TLI = .93$, $RMSEA = .07$, $SRMR = .06$). 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**

M. Emond, MD, MSc, A. Nadeau, MSc, V. Boucher, P. Voyer, PhD, M. Pelletier, MD, E. Gouin, MD, R. Daoust, MD, MSc, S. Berthelot, MD, MSc, M. Lamontagne, PhD, M. Morin, MD, MSc, S. Lemire, MD, T. Minh Vu, MD, M. Rheault, L. Juneau, N. Le Sage, MD, PhD, J. Lee, MD, MSc, Université Laval, Department of Emergency Medicine, Laval, QC

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 8 hours 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**

S. Ensan, MSc, L. O'Donnell, MSc, S. C. Brooks, MD, MHSc, Queen's University, Kingston, ON

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 crowdsourcing 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 OHCA 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 OHCA. Only 58 (22%) of PulsePoint activations could be linked to EMS records with high confidence. Of these linked cases, 10 were confirmed OHCA,