

positive likelihood ratio (LR) was 10.6 (95% CI:7.8-14.5) and negative LR was 0.03 (95% CI:0.0-0.2). Moderate inter-rater agreement was seen between initial ECG interpretations ( $\kappa = 0.42$ , 95% CI:0.29-0.54) by the fellow and prehospital physician, while agreement was higher (good) between the two prehospital physicians ( $\kappa = 0.76$ , 95% CI:0.55-0.96). **Conclusion:** These results indicate that ACPs are adept at identifying PSVT, but are prone to false positives. Given the relatively good sensitivity and specificity seen in this investigation, future studies should investigate ACP recognition of specific rare arrhythmias (antidromic accelerated atrial fibrillation) that may require different management including avoidance of adenosine.

**Keywords:** paroxysmal supraventricular tachycardia, emergency medical services

### MP03

#### The epidemiology of mortality in patients transported by emergency medical services (EMS)

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**Introduction:** Outside of key conditions such as cardiac arrest and trauma, little is known about the epidemiology of mortality of all transported EMS patients. The objective of this study is to describe characteristics of EMS patients who after transport die in a health care facility. **Methods:** EMS transport events over one year (April, 2015-16) from a BLS/ALS system serving an urban/rural population of approximately 2 million were linked with in-hospital datasets to determine proportion of all-cause in-hospital mortality by Medical Priority Dispatch System (MPDS) determinant (911 call triage system), age in years ( $\geq 18$  yrs. - adult,  $\leq 17$  yrs. - pediatric), sex, day of week, season, time (in six hour periods), and emergency department Canadian Triage and Acuity Scale (CTAS). The MPDS card, patient chief complaint, and ED diagnosis category (International Classification of Disease v.10 - Canadian) with the highest proportion of mortality are also reported. Analyses included two-sided t-test or chi-square with  $\alpha < 0.05$ . **Results:** A total of 239,534 EMS events resulted in 159,507 patient transports; 141,114 were included for analysis after duplicate removal (89.1% linkage), with 127,867 reporting final healthcare system outcome. There were 4,269 who died (3.3%; 95% CI 3.2%, 3.4%). The proportion of mortality by MPDS determinant was, from most to least critical 911 call, Echo (7.3%), Delta (37.2%), Charlie (31.3%), Bravo (5.8%), Alpha (18.3%), and Omega (0.3%). For adults the mean age of survivors was less than non-survivors (57.7 vs. 75.8;  $p < 0.001$ ), but pediatric survivors were older than non-survivors (8.7 vs. 2.8;  $p < 0.001$ ). There were more males than females (53.0% vs. 47.0%;  $p < 0.001$ ). There was no statistically significant difference in the day of week ( $p = 0.592$ ), but there was by season with the highest mortality in winter (27.1%;  $p = 0.045$ ). The highest mortality occurred with patients presenting to EMS between 0600-1200 hours (34.6%), and the lowest between 0000-0600 hours (11.8%;  $p < 0.001$ ). Mortality by CTAS was category 1 (27.1%), 2 (36.7%), 3 (29.9%), 4 (4.3%), and 5 (0.5%). The highest mortality was seen in MPDS card 26-Sick Person (specific diagnosis) (19.1%), chief complaint shortness of breath (19.3%), and ED diagnoses pertaining to the circulatory system (31.1%). **Conclusion:** Significant all-cause in-hospital mortality differences were found between event, patient, and clinical characteristics. These data provide foundational and hypothesis generating knowledge regarding mortality in transported EMS patients that can be used to guide research and training. Future research should

further explore the characteristics of those that access health care through the EMS system.

**Keywords:** emergency medical services, mortality, epidemiology

### MP04

#### Analysis of a needs-based assessment of paramedic continuing education

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**Introduction:** To determine trends in identified self-perceived knowledge deficits of paramedics, training barriers and desired methods of self-directed education. **Methods:** A written survey was delivered to all paramedics in an Ontario base-hospital. Respondents were asked to identify deficits from a 37-point, anatomic systems-based list. Preferred educational modalities to address knowledge deficits and factors taken into consideration when choosing self-directed education were captured. Top 5 perceived deficit topics, number of perceived deficits, top 5 factors associated with training modality chosen and factors taken into consideration for choosing training modalities, were compared against paramedic age, training (Advanced Care Paramedic; ACP, or Primary Care Paramedic; PCP) and primary location of practice (urban, rural, mixed setting). **Results:** Of 1262 paramedics, 746 (59.11%) completed the survey. PCPs had a higher report of deficit in both neonatal resuscitation and arrhythmia than ACPs (48.3% vs. 58.8%,  $p = 0.015$ ; 40.3% vs. 58.5%,  $p < 0.001$ ). Paramedics who listed rural as their primary practice location were more likely to report a deficit in pediatric respiratory disorder than those with a mixed urban/rural and primary urban practice (65.9% vs. 46.3%,  $p = 0.000$ ; 65.9% vs. 45.9%,  $p = 0.001$ ;) as well as a higher median number of listed deficits (9.00 vs. 6.00 vs. 6.00,  $p < 0.001$ ). ACPs were more likely to consider scheduling, location/ease of attending and cost as barriers than PCPs (85.4% vs. 63.8%,  $p = 0.000$ ; 69.5% vs. 51.4%,  $p = 0.002$ ; 69.5% vs. 39.5%,  $p = 0.000$ ) while reporting an increased desire for webinar material than PCPs (56.1% vs. 40.4%,  $p = 0.007$ ). There were no significant differences found by age. **Conclusion:** Targeted educational needs-based assessments can help ensure appropriate topics are delivered in a fashion that overcomes identified barriers to self-directed learning. From our analysis, increased awareness of ease of attending sessions and preferred modalities, such as webinars may be beneficial; especially for ACPs who require more annual continuing educational hours. Paramedics in rural locations may require increased continuing education, especially for rarely encountered, high risk situations, such as pediatric critical care. These findings can help direct future education in our system and others.

**Keywords:** education, paramedic, prehospital

### MP05

#### Injuries in refugee children presenting to a paediatric emergency department

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**Introduction:** The number of refugees accepted to Canada grew from 24,600 in 2014 to 46,700 in 2016. Many of these refugees have young families and the number of child refugees has increased accordingly. Although child refugee health care has been in the forefront of media and medical attention recently, there is limited data on injury patterns in this population. Canadian Hospitals Injury Reporting and Prevention

Program (CHIRPP) collects data on injuries in children presenting to the emergency department (ED). Our objective is to examine the clinical presentations and outcomes of refugee children with injuries presenting to a tertiary care paediatric ED. **Methods:** Our paediatric hospital has approximately 70,000 ED visits per year of which 13,000 are due to injuries and/or poisonings. The CHIRPP database was accessed to identify children with injuries presenting to our ED from April 2014 to March 2017 with Interim Federal Health Program (IFHP) registration status. All patient charts were reviewed to extract demographic and clinical care information. **Results:** There were 74 children with 81 ED visits during the study period of whom 19% were transferred from other facilities. Most of them (72%) were males with a mean age of 8.7 years (standard deviation 4.29). There were significant medical histories in 32% of children. The presentation to our ED (greater than 24 hours post-injury) was seen in 25% of visits. Twenty five percent of injured children were seen in our ED. The distribution of Canadian Triage Acuity Score (CTAS) scores 1, 2, 3, 4, and 5 were 0%, 16%, 37%, 46% and 1% respectively. However, subspecialty consultations were required in 69%, 60% and 27% of CTAS 2, 3 and 4 children respectively. Overall, 46% of all patients required subspecialty consults. The top three categories of injuries include fractures (23%), soft tissue injuries (20%) and lacerations (17%). More than half (56%) required diagnostic imaging. Most (89%) were treated in ED and discharged (average length-of-stay 3 hours 55 minutes) and 11% required admissions. 47% of children lacked primary care physicians. **Conclusion:** Almost half of refugee children with IFHP status require DI testing, sub-specialty consultations and primary care referrals when presenting to our ED with injuries. Follow up arrangements are needed as many do not have access to primary care providers. This demonstrates a need for securing primary care providers early for this vulnerable population.

**Keywords:** refugee, children, injuries

#### MP06

##### **Predictors of hypothermia upon emergency department arrival in severe trauma patients transported to hospital via emergency medical services**

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**Introduction:** Hypothermia in severe trauma patients can increase mortality by 25%. Active re-warming decreases mortality and is recommended in trauma management guidelines. Despite this, many emergency medical services (EMS) vehicles do not carry equipment for active re-warming. This study sought to determine the local rate of hypothermia in major trauma patients on trauma centre arrival (TCA), and to establish which patients are at highest risk by identifying factors present in the pre-hospital setting associated with hypothermia in a humid continental climate. **Methods:** This single-centre retrospective chart review included adults (age 18) in the local trauma registry (trauma team activation or injury severity score >12) from January 2009-June 2016. Patients were excluded if: temperature on TCA unknown or 38°C, not transported by EMS, or if there was >24 hrs from injury to TCA. The primary outcome was the rate of hypothermia (<35°C) in major trauma patients transported by EMS on arrival at the local trauma centre. Secondary outcomes included hospital length of stay and survival to discharge. Logistic regression was used to identify predictors of hypothermia on TCA; it included the following factors: age, sex, weight, number of comorbidities, injury severity, injury mechanism, EMS modality, direct transport from scene or referred from peripheral hospital, time on scene, transport time, local temperature, and

pre-hospital heart rate, systolic blood pressure (SBP), intubation, and volume of crystalloid. **Results:** A total of 3070 adult traumas were included, 159 of which were hypothermic on TCA a rate of 5%. Multivariate analysis identified seven risk factors for hypothermia: intubation pre-hospital (OR 8.10,  $p < 0.001$ ), blunt trauma (OR 3.37,  $p = 0.044$  vs. penetrating, and OR 7.35,  $p = 0.023$  vs. other), direct transport (OR 1.94,  $p = 0.005$ ), number of comorbidities (OR 1.14,  $p = 0.036$ ), injury severity (OR 1.03,  $p < 0.001$ ), 1°C local temperature drop (OR 1.03,  $p < 0.001$ ), and 1mmHg SBP drop (OR 1.01,  $p < 0.001$ ). Ninety-four percent of normothermic patients and 69.2% of hypothermic patients survived to discharge. Average length of stay was 7.98 and 15.23 days respectively. **Conclusion:** Avoidance of hypothermia is imperative to the management of major trauma patients. Those at highest risk in a humid continental climate are severely injured blunt trauma patients with multiple co-morbidities, a low pre-hospital SBP and EMS intubation. Future studies should focus on the benefits of pre-hospital rewarming in these high-risk patients.

**Keywords:** trauma, hypothermia, emergency medical services

#### MP07

##### **Rate of return: prevalence and correlates of revictimization among sexual and domestic assault cases presenting to the emergency department**

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**Introduction:** Many survivors of sexual and domestic assault return to violent environments following post-assault care. The objective of this study was to estimate the annual prevalence of revictimization and examine factors associated with return emergency department (ED) visits following their initial encounter for sexual or domestic assault.

**Methods:** The Sexual Assault and Partner Abuse Care Program (SAPACP) at The Ottawa Hospital is the only program in Ottawa offering emergency and forensic care for survivors of sexual assault and domestic violence. Information on demographics, assailant characteristics and clinical presentation were extracted from the SAPACP case registry (January 1 2015- January 31 2016). We conducted descriptive analyses to describe the study sample, and bivariable and multivariable logistic regression modelling to assess factors most strongly associated with revictimization using odds ratios (OR), adjusted OR (AOR) and 95% confidence intervals (CI). **Results:** Among 377 unique patients seen at the SAPACP, there were 409 encounters for sexual and domestic violence. There were 24 revictimization cases (6.4%) with the number of repeat visits ranging from 2-6. There were 343 (91.0%) female patients and 182 (48.3) under the age of 25. There were 243 (64.5%) sexual assaults, 125 (33.2%) physical assaults, and 42 (11.1%) verbal assaults. Compared to patients who presented once, revictimized patients were more likely to have experienced violence from a current or former intimate partner (AOR:3.02, 95% CI:1.24-7.34), have a substance use disorder (AOR:5.57, 95% CI:2.11-14.68), and were more likely to be taking anti-depressants (AOR:3.34, 95% CI:1.39-8.01). **Conclusion:** This study has identified a high prevalence of revictimization, with some clients being revictimized as many as 6 subsequent times. Key factors to help identify patients at risk of revictimization are assaults by intimate partners, having substance use problems, and being on antidepressants. Reducing revictimization and preventing further violence is a critical component of care to ensure survivors are safe following their ED encounter.

**Keywords:** sexual assault, domestic violence, intimate partner violence