

the time of resuscitation to be 100 kg or greater was deemed representative of “morbid obesity” for this analysis. All resuscitations were reviewed from electronic medical records (EMRs) completed by treating paramedics, alongside telemetry and defibrillation events recorded, transmitted, and analyzed in proprietary software (CODE-STAT, Physio-Control Corporation, Redmond, WA). ROSC was determined from both paramedic and hospital clinician EMRs reviewed by a paramedic researcher. **Results:** During the 5 month study period, paramedics involved treated 133 adults in sudden cardiac arrest involving perceived ventricular fibrillation that was treated with at least one defibrillation. 49/90 (54.4%) with weight <100 kg as estimated by paramedics at the time of resuscitative care achieved at least transient ROSC. Only 17/43 (39.5%) with estimated weight  $\geq$ 100 kg achieved any ROSC, despite paramedics authorized to perform defibrillations at higher joule energy settings for such weight. The OR for ROSC if <100 kg estimated weight is 1.83 (95% CI 0.87-3.83), though given limited sample size  $p = 0.11$ . **Conclusion:** While survival from out-of-hospital sudden cardiac arrest in adults is multi-factorial, the presence of morbid obesity, defined as estimated weight  $\geq$ 100 kg, trends towards less ROSC. Continued community health efforts to decrease the prevalence of morbid obesity in the adult population may confer improved ability to survive out-of-hospital sudden cardiac arrest.

**Keywords:** cardiac arrest, morbid obesity, return of spontaneous circulation

#### P059

##### **Paramedic compliance with a novel defibrillation strategy in a large, urban EMS system in the United States**

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**Introduction:** Emergency Medical Services (EMS) care confers distinct impact upon survivability from sudden cardiac arrest. Many studies have been conducted regarding EMS interventions for cardiac arrest, though fewer studies have been published detailing specific analysis of paramedic compliance with standing orders, particularly those involving a novel energy strategy in defibrillation. **Methods:** Adults in sudden cardiac arrest with resuscitation initiated, including at least one defibrillation, between July 1, 2016 and December 1, 2016 were enrolled. Education on a novel defibrillation strategy, involving weight-based joule settings and double sequential external defibrillation (DSED) was delivered in classroom and internet-accessed settings. Paramedics then performed hands-on practice in DSED. All resuscitations were reviewed from electronic medical records (EMRs) completed by treating paramedics, alongside telemetry and defibrillation events recorded, transmitted, and analyzed in proprietary software (CODE-STAT™, Physio-Control Corporation, Redmond, WA). All ECGs and defibrillation events were reviewed by an emergency physician to determine energy settings used by paramedics for determining the accuracy of compliance with protocol-based standing orders. **Results:** During the 5 month study period, the paramedics involved treated 133 adults in sudden cardiac arrest involving perceived ventricular fibrillation that was treated with at least one defibrillation. 76/90 (84.4%) with estimated weight <100 kg were treated with correct joule settings, though only 7/43 (16.3%) with estimated weight  $\geq$ 100 kg received all defibrillations at 360J as protocol-specified. 26/44 (59.1%) in refractory ventricular fibrillation, defined as requiring a fourth defibrillation, received DSED as protocol-specified. **Conclusion:** Paramedics, when specifically trained on a novel defibrillation strategy, involving both weight-based joule settings and use of DSED for refractory ventricular fibrillation, are inconsistently able to quickly and successfully incorporate that strategy in EMS

resuscitation care. Further educational endeavours are warranted to achieve higher defibrillation strategy protocol compliance.

**Keywords:** cardiac arrest, ventricular fibrillation, paramedic

#### P060

##### **Imaging practices of emergency physicians for low risk non-traumatic low back pain**

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**Introduction:** Included in the first list of recommendations from the Choosing Wisely Canada (CW) Emergency Medicine (EM) group was to avoid ordering lumbosacral radiographs for patients with non-traumatic low back pain (LBP) in the absence of red flags. It has been suggested that these lumbosacral radiographs lead to unnecessary ionizing radiation and increase emergency department (ED) wait times without improving patient outcomes. This study evaluates lumbosacral imaging practices of emergency physicians (EPs) in four urban EDs. **Methods:** Data was retrospectively collected from patients, ages 18-60 and CTAS codes 2-5, who presented with non-traumatic LBP from April 1, 2014 to March 31, 2016 to four urban EDs. The time frame included both pre- and post-CW recommendation. Patients considered high risk, specifically with PTT >40 s or INR >1.2 s, neurology/neurosurgery/spine consults, admission to hospital, and history of cancer, were excluded. The primary outcome was to establish lumbosacral radiograph usage rates for non-traumatic LBP. The secondary outcome was to identify factors that influenced lumbosacral spine imaging. Factors analyzed included patient age, patient sex, ED wait times, physician age, physician experience, and physician sex. Statistical significance was determined by chi-squared analysis. **Results:** The data from 3140 low-risk patients showed that 16.5% of the patients received lumbosacral radiographs. Physician variation in X-ray ordering was 0% to 85.7% (IQR 4.6 to 25%). There was a significant difference between the X-rays ordered at each site (site 1 (23.1%) > site 2 (17.2%) > site 3 (14.9%) > site 4 (11.3%),  $p < 0.001$ ). CCFP-EM licensed physicians (17.9%) ordered more X-rays compared to licensed physicians (13.7%,  $p < 0.001$ ). Time of presentation, physician sex, and patient sex did not affect the imaging practices. There was a trend towards decreased ordering of X-rays (17.6% vs. 15.1%,  $p = 0.06$ ) post-CW recommendation. **Conclusion:** Considerable variation exists in the ordering practices of Calgary EPs; however, on average they are choosing wisely in terms of ordering imaging for non-traumatic LBP.

**Keywords:** non-traumatic low back pain, lumbosacral imaging, Choosing Wisely

#### P061

##### **Preventable adverse drug events in Canadian emergency departments**

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**Introduction:** Adverse drug events (ADEs), unintended and harmful events associated with medications, cause or contribute to 2 million emergency department (ED) visits in Canada each year. Our **objective** was to determine the proportion of preventable ADEs by event type, severity, drug and drug class, and describe associated factors. **Methods:** We reviewed the charts of ADE patients enrolled in 1 of 3 prospective studies conducted in 3 tertiary care and 1 urban community ED. In the parent studies, researchers enrolled patients by applying a systematic selection algorithm to minimize selection bias, and physicians and

pharmacists evaluated patients prospectively to evaluate causal associations between the drug regimens and patient presentations. After completion of the prospective study, a research pharmacist and physician independently reviewed the charts of all ADE patients, abstracted data using an electronic form and applied 3 preventability algorithms. The main outcome was a probably or definitely preventable ADE defined as avoidable by adhering to best medical practice, appropriate monitoring, taking a history of prior ADEs, compliance with recommended therapy, and avoidance of errors. Reviewers discussed discordant ratings until reaching consensus. We used kappa scores to evaluate between rater agreement, and investigated risk factors for preventability using logistic regression. Sample size was based on enrolment into the parent studies. **Results:** We reviewed the charts of 670 patients diagnosed with 725 ADEs. We excluded 44 patients with incomplete assessments. The inter-rater agreement in categorizing ADEs as preventable was 0.51 (95%CI 0.42-0.59). We deemed 61% (95%CI 57-65%) of ADEs preventable. Of preventable events, 30% were due to non-adherence, 24% to adverse reactions, and 15% to an excessive dose, and 29% required hospital admission. Among preventable events, 8% were due to warfarin, 5% hydrochlorothiazide, 3% acetylsalicylic acid, and 3% insulin. On multivariate analysis, mental health diagnoses were associated with preventable ADEs (OR 2.1, 95% CI 1.3-3.3,  $p = 0.002$ ). **Conclusion:** In this large multi-centre cohort, preventable events made up the majority of ADEs, and utilized substantial hospital resources. Strategies to reduce ED visits due to ADEs should target improving adherence behavior, and developing interventions for patients with mental health diagnoses and on high-risk medications.

**Keywords:** adverse drug events, patient safety, prevention

#### P062

##### **SOS: Summer of Smoke—a mixed-methods, community-based study investigating the health effects of a prolonged, severe wildfire season on a subarctic population**

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**Introduction:** Between June 15 and Aug 31st 2014, Canada's Northwest Territories (pop 44,000: Stats Can), a subarctic region which is over 2°C warmer than it was in the 1950's, experienced an unprecedented number of forest fires, with 385 fires and approximately 3.4 million hectares of forest affected. This resulted in one of Canada's most severe and prolonged urban smoke exposures for the capital city of Yellowknife and surrounding Aboriginal communities. Our objective was to obtain a big-picture sense of the health impact of the Summer of Smoke on the population of these communities through a mixture of quantitative and qualitative analysis. **Methods:** We analyzed PM<sub>2.5</sub> levels, salbutamol dispensations, clinic and hospital cardiorespiratory variables, and in-depth video interviews with community members from Yellowknife, N'Dilo, Dettah and Kakisa. **Results:** 49% of days June15-Aug31 in 2014 had a PM<sub>2.5</sub> over 30 mcg/m<sup>3</sup>, as compared to 3% in 2012 and 9% in 2013 and 2015. Max daily PM<sub>2.5</sub> in 2014 was 320.4 mcg/m<sup>3</sup>. There was a 22% increase in outpatient salbutamol dispensations in 2014 compared to the average of 2012, 2013 and 2015. More cough, pneumonia and asthma were seen in clinics compared to 2012-2015 ( $P < 0.001$ ). There was a 42% increase in respiratory ER visits in 2014 compared to 2012-13, but no change in cardiac variables. The respiratory effect was most pronounced in children 0-4 (114% increase in ER visits). Qualitative analysis demonstrates themes of fear, isolation, lack of physical activity, alteration of traditional summertime

activities for both aboriginal and non-aboriginal subjects, elements of resilience and expectation for future smoky summers in the context of a changing climate. **Conclusion:** Prolonged wildfire seasons have a profound effect on overall wellbeing. Responses to help minimize mental and physical impacts such as the creation of clean-air community shelters, recreation programming, initiatives to support community cohesion, and "go outside when it is not smoky" messaging require further study.

**Keywords:** wildfires, respiratory, mental health

#### P063

##### **Perceptions and reflections of Ethiopian emergency medicine graduates regarding the Toronto Addis Ababa Academic Collaboration in Emergency Medicine (TAAAC-EM) Curriculum: a qualitative evaluation study**

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**Introduction:** The first-ever EM postgraduate training program in Ethiopia was launched at Addis Ababa University in 2010. EM faculty from the University of Toronto were invited to design and implement an EM rotation-based curriculum with tri-annual teaching trips to support the overall AAU EM program. To date, three cohorts of EM specialists ( $n = 15$ ) have graduated from the three-year program. After six years of implementation, we undertook a qualitative evaluation of the TAAAC-EM curriculum. **Methods:** Data collection took place in 2016 in Ethiopia via in-person graduate interviews ( $n = 12$ ). Participants were interviewed by a trained research assistant who used a semi-structured interview guide. Standard interview, transcription and analysis protocols were utilized. Qualitative software (QSR-NVIVO 9) was used for thematic grouping and analysis. **Results:** Graduates of AAU's EM residency training program reported very positive experiences with the TAAAC-EM curriculum overall. All graduates acknowledged the positive impact of TAAAC-EM's emphasis on bedside teaching, a unique component of the TAAAC-EM model compared to traditional teaching methods at AAU. Graduates felt that TAAAC-EM teachers were effective in creating a novel culture of EM at AAU and in role-modeling ethical, evidence-based EM practice. When asked about specific areas for program improvement, the following themes emerged: 1) a desire to shift delivery of the didactic clinical epidemiology curriculum to the senior residency years (PGY2-3) to coincide with completion of a required residency research project; 2) a desire for increased simulation and procedural teaching sessions and 3) the need for more nuanced context specificity in the curriculum delivery to incorporate local guidelines and practice patterns. A lack of educational supports during non-TAAAC-EM visits was also identified as an area for further work. **Conclusion:** Interviewing graduates of AAU's EM residency training program proved important for determining areas of curriculum improvement for future trainees. It also provided critical input to TAAAC-EM strategic planning discussions as the partnership considers expanding its scope beyond Addis Ababa.

**Keywords:** emergency medicine education, postgraduate medical education, global health partnership

#### P064

##### **Coastal family practice residency: simulation curriculum needs assessment survey**

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**Introduction/Innovation Concept:** Medical simulation is becoming increasingly useful for healthcare education. Simulation-based crisis