

(ROSC) over the duration of resuscitation. **Methods:** We performed a retrospective cohort study of non-traumatic OHCA (<18 years) treated by EMS from the Toronto Regional RescuNET Epistry-Cardiac Arrest database from 2006 to 2015. We used competing risk analysis to calculate the probability of ROSC over the duration of resuscitation. We then used multivariable logistic regression to examine the role of Utstein factors and duration of resuscitation in predicting survival to hospital discharge. Candidate variables were limited to Utstein factors and duration of resuscitation due to the number of events. We used area under the receiver operating characteristic (ROC) curve (AUC) to determine the predictive ability of our logistic regression model. **Results:** A total of 658 patients met inclusion criteria. Survival to discharge was 10.2% with 70.1% of those children having a good neurologic outcome. The overall median time to ROSC was 23.9 min. (IQR 15.0,36.7). However, the median time to ROSC for survivors was significantly shorter than the time to ROSC for patients who died in hospital (15.9 (IQR 10.6 to 22.8) vs. 33.2 (IQR 22.0 to 48.6); P value <0.001). There was a decrease in the odds of survival of 14% per minute during the first 25 minutes of cardiac arrest. Older age (OR 0.9, 95% CI 0.86,0.99), and longer duration of resuscitation (OR 0.9, 95% CI 0.88,0.93) were associated with worse outcome while initial shockable rhythm (OR 5.8, 95% CI 2.0,16.5), and witnessed arrests (OR 2.4, 95% CI 1.10,5.30) were associated with improved patient outcome. The AUC for the Utstein factors was fair (0.77). Including duration of resuscitation improved the discrimination of the model to 0.85. **Conclusion:** Inclusion of duration of resuscitation improved the performance of our model compared to Utstein factors alone. However, our results suggest there are a number of other important factors for predicting patient outcome from pediatric OHCA.

**Keywords:** pediatric, cardiac arrest, resuscitation

#### MP04

##### **Interim analysis of the impact of the Emergency Department Transformation System on ambulance offload delay**

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**Introduction:** Emergency Department Systems Transformation (EDST) is a bundle of Toyota Production System based interventions implemented in two London, Canada tertiary care Emergency Departments (ED) between April 2014 and July 2016 to improve patient care by increasing value and reducing waste. Some of the 17 primary interventions included computerized physician order entry optimization, staff schedule realignment, physician scorecards, and a novel initial assessment process. Offload delays are associated with longer hospital length of stay and delayed admission, and may increase morbidity and mortality. Delays also result in fewer circulating ambulances in the community. CIHI sets a benchmark of 30 minutes as an acceptable offload target. It is possible that EDST may have impacted offload times. **Methods:** Middlesex-London EMS provided offload times. Data was collected from London Health Sciences Centre including daily ED visit volumes, ED occupancy, offload nursing hours, and site variation. A binomial logistic regression analysis was performed to determine the impact of interventions and confounding variables on the proportion of patients meeting CIHI benchmark. A chi-square analysis was done comparing proportion of patients meeting the benchmark in the first 3 months versus the last 3 months to identify overall impact of EDST to date. **Results:** Increased offload nursing hours had a positive impact ( $p < 0.001$ ) on the proportion of offload times meeting the CIHI benchmark while increased ED visit volume and hospital inpatient volume had a significant negative impact ( $p < 0.001$ ). At both ED sites,

the proportion of patients meeting the offload target ranged from 58-83% over the timeframe. There was a significant increase in the proportion of patients meeting the benchmark from the first quarter to the last quarter (69.6% vs 75.0%; 95% CI 3.45% to 7.38%,  $p = 0.000$ ). Specific interventions had varying degrees of impact on offload times.

**Conclusion:** The proportion of patients meeting the benchmark offload time varied over the study timeframe but significantly increased with EDST implementation. Offload times are one of many outcomes we aim to improve with EDST and it remains an ongoing process as new interventions continue to be implemented. Once transformation is complete, future studies will focus on the impact of EDST on all ED flow metrics, and patient and provider satisfaction.

**Keywords:** emergency department systems transformation (EDST), ambulance, offload

#### MP05

##### **Do emergency department staff use a current domestic violence documentation tool or other forms of intimate partner violence documentation in patient records?**

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**Introduction:** Domestic violence (DV) rates in smaller cities been reported to be some of the highest in Canada. It is highly likely that emergency department staff will come across victims of intimate partner violence (IPV) in their daily practice. The purpose of this study is to better understand current practices for detecting IPV as we are currently uncertain whether patients are assessed for IPV and what the current documentation practices are. **Methods:** A standardized retrospective chart review, following principles outlined by Gilbert et al. 1996, was completed by two researchers to capture domestic violence documentation rates in patients presenting to the ED between January and April 2015 with injuries that may have been caused by IPV. To assess self-reported documentation/questioning practices, a cross-sectional online survey was distributed to ED staff via staff email lists three times between July and October 2016, with a response rate of 45.9% ( $n = 55$ ). The primary outcome was DV field usage. Secondary outcomes included documentation in patient charts and current questioning habits. **Results:** Overall, we found documentation in 4.64% of all included patient charts ( $n = 366$ ). No documentation was noted in the DV field. 52.4% patients with deliberate injuries had no documentation of assailant identity. With regards to self reported documentation practices, 16.4% of ED staff never questioned female patients about intimate partner violence, 83.6% asked when thought appropriate, and none asked routinely. None of the staff used a structured screening tool. 60% of ED staff documented their questioning but 92.7% did not use the DV-field for documentation. 58.2% of ED staff could not identify the DV field and 45.5% of respondents did not know how to interpret the DV field if positive. **Conclusion:** Our findings suggest that the current documentation tool (DV-field) is not being utilized. Furthermore, low rates of IPV documentation, and potentially questioning, in high risk patients indicates that there is need to improve current practises.

**Keywords:** intimate partner violence, screening, emergency department

#### MP06

##### **Use of ultrasound and x-ray to predict improvement in hip osteoarthritis symptoms following intra-articular steroid injection**

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**Introduction:** Intra-articular steroid injection (IASI) is commonly used in the emergency department for management of osteoarthritis (OA) symptoms. Hip IASI carries risks, such as avascular necrosis, and there is currently no reliable way to predict long-term response of a patient's OA to IASI. Ultrasound (US) conveniently assesses for active arthropathy by detecting effusion-synovitis, and x-ray (XR) is useful for visualizing bone-related changes. We investigated the extent that a response to hip IASI could be predicted from baseline OA patient clinical and physical features alongside US and XR imaging features. **Methods:** 97 consenting patients with symptomatic hip OA presenting for hip IASI were evaluated at baseline (XR and US) and again 8-weeks after IASI (US only). Self-reported pain (WOMAC), hip range of motion (ROM) were measured at baseline and follow up. On US images we quantified joint effusion and synovial thickening, i.e., "effusion-synovitis", by the bone-capsule distance (BCD) at the apex of the femoral head from outer femoral cortex to outer synovium. On XR, we measured minimum joint space width (cm) and Kellgren-Lawrence (K-L) Grade for osteophytes and sclerotic changes. **Results:** In our 97 patients (43 female) aged 28-87 years (mean 59 +/-13 years, K-L grades averaged 2.5 +/-1.5, and US BCD averaged 5.9 +/-2.0 mm. We performed multiple linear regression using age, sex, BMI, ROM of hip flexion, US BCD, radiographic joint space width and K-L grade against the dependent variable, change in WOMAC pain subscore ( $R = 0.587$ ,  $P = 0.002$ ). We compared the response predicted by this model to the actual change in WOMAC pain. At a threshold value of -20% for minimal clinically important difference, 35/97 patients were responders, and a 2x2 table gave 67% overall model predictive accuracy, 61% sensitivity, and 71% specificity. Likelihood ratio for a positive response (LR+) was 2.13. **Conclusion:** Combining radiographic information on structural damage, US information on active arthropathy, and demographics correctly predicted about two-thirds of the patients that would benefit from IASI after 8 weeks. A patient with hip OA that met our model criteria was more than twice as likely to respond to IASI. With further model refinement, effective, personalized evidence-based management of symptomatic hip OA is possible using XR and hip US, which could both be performed during an ER visit.

**Keywords:** osteoarthritis, injection, imaging

#### MP07

##### Office-based family physicians' use of point of care ultrasound for early pregnancy complaints

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**Introduction:** In Canada, family physicians (FPs) provide the majority of early pregnancy care. To receive a same day US, most patients will be sent to the emergency department (ED). FPs are starting to use point of care ultrasound (POCUS) for a variety of indications. The FaMOUS course was modeled after the Canadian Emergency Ultrasound Society (CEUS) ED Echo (EDE) curriculum and adapted with permission for FPs. The objective of this study was to assess the indications for POCUS use in early pregnancy and determine the diagnostic accuracy of POCUS performed by FPs following FaMOUS certification to detect intrauterine pregnancy (IUP) and fetal cardiac activity (FCA). **Methods:** This was a prospective, observational study conducted in 3 FP clinics from November 2015 to June 2016. Pregnant women <20 weeks gestational age who underwent a focused, transabdominal POCUS by a FaMOUS-certified FP using a handheld GE VScan were enrolled. FPs documented the presence or absence of IUP and FCA. The reference standard was radiologist-interpreted US performed after the FP POCUS.

FPs were surveyed to assess provider confidence using POCUS and perceived impact on clinical decision-making. **Results:** Of 253 eligible patients, 56 (22.1%) underwent POCUS. Of these, 50 (89.3%) had a radiologist-interpreted US following the office-based FP visit. POCUS was used for the following indications: 11 (19.6%) had vaginal bleeding, 5 (8.9%) had abdominal pain, 7 (12.5%) had both vaginal bleeding and abdominal pain, and the indication for 33 (58.9%) patients was unclear. All patients had a documented IUP, resulting in a sensitivity of 94.0% (95% CI: 83.5%, 98.5%) and 100% positive predictive value. FCA resulted in sensitivity of 82.9% (95% CI: 69.2, 92.4%) and specificity of 100% (95% CI: 29.2%, 100.0%). When surveyed, 100% of FPs were confident performing POCUS and reported POCUS had an overall positive impact on clinical practice. 75% agreed the use of POCUS decreased the need for urgent radiologist-interpreted US. **Conclusion:** Following a certification process modeled after the CEUS EDE curriculum, FPs used POCUS for both CEUS-defined indications and indications that were unclear. FPs trained in early pregnancy POCUS demonstrated excellent diagnostic accuracy identifying IUP and FCA. Future study should assess the clinical impact of office-based POCUS, including whether its use results in decreased ED visits for this patient population.

**Keywords:** point of care ultrasound, first trimester, women's health

#### MP08

##### What's the plan?: Improving ED patient discharge communication through patient-centred discharge handouts

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**Introduction:** Discharge from the Emergency Department (ED) is a high-risk period for communication failures. Clear verbal and written discharge instructions at patient-level health literacy are fundamental to a safe discharge process. As part of a hospital-wide quality initiative to measure and improve discharge processes, and in response to patient feedback, the St. Michael's Hospital ED and patient advisors co-designed and implemented patient-centred discharge handouts. **Methods:** The design and implementation of discharge handouts was based on a collaborative and iterative approach, including stakeholder engagement and patient co-design. Discharge topics were based on the 10 most common historical ED diagnoses. ED patient advisors and the hospital's plain language review team co-designed and edited materials for readability and comprehension. Process mapping of ED workflow identified opportunities for interventions. Multidisciplinary ED stakeholders co-led implementation, including staff education, training and huddles for feedback. Patient telephone surveys to every 25<sup>th</sup> patient presenting to the ED meeting the study inclusion criteria (16 years of age or older, directly discharged from the ED, speaks English, has a valid telephone number, and has capacity to consent) were conducted both pre- (June-Sept 2016) and post- (Oct-Dec 2016) implementation. **Results:** Stakeholder engagement and co-design took place over 10 months. Education was provided across one MD staff meeting, four RN inservices, and at monthly learner orientation. 44846 patients presented to the ED and 25600 met the study inclusion criteria. 935 surveys (response rate = 97%; declined n = 30) were completed to date. Pre-implementation (n = 467), 9.2% (n = 43) of patients received printed discharge materials and 71% (n = 330) understood symptoms to look for after leaving the ED. Post-implementation (n = 468), 44% (n = 207) of patients received printed discharge materials with 97% (n = 200) finding the handouts helpful and 82% (n = 385) understanding symptoms to look for after leaving the ED. **Conclusion:** Through the introduction of patient