

addition of robot-based distraction to standard care. Humanoid robot-based distraction therapy reduces distress and to a lesser extent, pain, in children undergoing IVI in the ED. Further trials are required to confirm utility in other age groups and settings.

**Keywords:** distraction, intravenous, pain

#### LO64

**The HEART score in predicting major adverse cardiac events in patients presenting to the emergency department with possible acute coronary syndrome: a systematic review and meta-analysis**  
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**Introduction:** Acute coronary syndrome (ACS) is a common, sometimes difficult to diagnose spectrum of diseases. Given the diagnostic challenge, it is sensible for emergency physicians to have an approach to prognosticate patients with possible ACS. The objective of this review was to investigate the ability of the HEART score to predict major adverse cardiac events (MACE) in patients presenting to the ED with possible ACS. **Methods:** Eleven databases and other sources identified 468 potentially relevant studies. Sixty-seven studies underwent full text review with 25 studies meeting eligibility criteria. Main outcome measures were pooled prevalence, risk ratio (RR), and absolute risk reduction (ARR) for MACE within six weeks of ED evaluation, comparing HEART score 0–3 versus 4–10. Model discrimination (sensitivity, specificity, concordance statistic) and calibration (observed to expected events ratio) were also evaluated. **Results:** Data from 25 studies including 41,397 patients were combined in the meta-analysis. In total, 4815 patients (11.6%) developed MACE. Among 18,866 patients with HEART score 0–3, 396 (2.1%) developed MACE (RR 0.08; ARR 0.20). Outcome measures were consistent across planned subgroup and sensitivity analyses. Among studies with secondary outcome data for patients with HEART score 0–3, 5 of 6461 (0.1%) died and 75 of 7556 (1.0%) had a myocardial infarction. **Conclusion:** The HEART score provides a reliable quantitative risk assessment of MACE in ED patients with possible ACS. Emergency clinicians should consider using the HEART score to facilitate risk communication and shared decision making with patients and other care providers.

**Keywords:** acute coronary syndrome, chest pain, prognosis

#### LO65

**Frailty and associated outcomes among emergency department patients requiring endotracheal intubation**

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**Introduction:** Risk-stratification of patients requiring endotracheal intubation and mechanical ventilation in the Emergency Department (ED) is necessary for informed discussions with patients regarding goals-of-care. Frailty is a clinical state characterized by reduced physiologic reserve, and resulting from accumulation of physiological stresses and comorbid disease. Frailty is increasingly being identified as an important independent predictor of outcome among critically ill patients. Our objective was to identify the impact of clinical frailty (defined by the Clinical Frailty Scale [CFS]) on in-hospital mortality and resource utilization of ED patients requiring endotracheal intubation and mechanical ventilation. **Methods:** We analyzed a

prospectively collected registry (2011–2016) of patients requiring endotracheal intubation in the ED at two academic hospitals and six community hospitals. We included all patients  $\geq 18$  years of age, who survived to the point of ICU admission. All patient information, outcomes, and resource utilization were stored in the registry. CFS scores were obtained through chart abstraction by two blinded reviewers. The primary outcome, in-hospital mortality, was analyzed using a multivariable logistic regression model, controlling for confounding variables (including patient sex, comorbidities, and illness severity). We defined “frailty” as a CFS  $\geq 5$ . **Results:** 4,622 patients were included. Mean age was 61.2 years (SD: 17.5), and 2,614 (56.6%) were male. Frailty was associated with increased risk of in-hospital mortality, as compared to those who were not frail (adjusted odds ratio [OR] 2.21 [1.98–2.51]). Frailty was also associated with higher likelihood of discharge to long-term care (adjusted OR 1.78 [1.56–2.01]) among patients initially from a home setting. Frail patients were more likely to fail extubation during their hospitalization (adjusted OR 1.81 [1.67–1.95]) and were more likely to require tracheostomy (adjusted OR 1.41 [1.34–1.49]). **Conclusion:** Presence of frailty among ED patients requiring endotracheal intubation and mechanical ventilation was associated with increased in-hospital mortality, discharge to long-term care, extubation failure, and tracheostomy. ED physicians should consider the impact of frailty on patient outcomes, and discuss associated prognosis with patients prior to intubation.

**Keywords:** critical care, intubation, mechanical ventilation

#### LO66

**Solid organ donation from the emergency department: A death review**

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**Introduction:** A significant gap exists between the number of people waiting for an organ and donors. There are currently 1,628 people awaiting organ donation in Ontario alone. In 2018 to date, 310 donors have donated 858 organs. The purpose of this study was to determine whether there were missed donors in the Emergency Department (ED) and by what percent those missed donors would increase organ donation overall. **Methods:** This was a health records and organ donation database review of all patients who died in the ED at a large academic tertiary care center with 2 campuses and 160,000 visits per year. Patients were included from November 1, 2014 – October 31, 2017. We collected data on demographics, cause of death, and suitability for organ donation. Data was cross-referenced between hospital records and the provincial organ procurement organization called Trillium Gift of Life Network (TGLN) to determine whether patients were appropriately referred for consideration of donation in a timely manner. Potential missed donors were manually screened for suitability according to TGLN criteria. We calculated simple descriptive statistics for demographic data and the primary outcome. The primary outcome was percentage of potential organ donors missed in the Emergency Department (ED). **Results:** There were 606 deaths in the ED from November 1, 2014 – October 31, 2017. Patients were an average of 71 years old, 353 (58%) were male, and 75 (12%) died of a traumatic cause. TGLN was not contacted in 12 (2%) of cases. During this period there were two donors from the ED and 92 from the ICU. There were ten missed potential donors. They were an average of 67 years,

7 (70%) were male, and 2 (20%) died of a traumatic cause. In all ten cases, patients had withdrawal of life sustaining measures for medical futility prior to TGLN being contacted for consideration of donation. There could have been an addition seven liver, six pancreatic islet, four small bowel, and seven kidney donors. The ten missed ED donors could have increased total donors by 11%. **Conclusion:** The ED is a significant source of missed organ donors. In all cases of missed organ donation, patients had withdrawal of life sustaining measures prior to TGLN being called. In the future, it is essential that all patients have an organ procurement organization such as TGLN called prior to withdrawal of life sustaining measures to ensure that no opportunity for consideration of organ donation is missed.

**Keywords:** donation, organ

### LO67

#### Association between hypotension and mortality in critically ill patients with severe traumatic brain injury: experience at a single Canadian trauma center

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**Introduction:** Hypotension is known to be associated with increased mortality in severe traumatic brain injury (TBI) patients. Systolic blood pressure (SBP) of <90 mmHg is the threshold for hypotension in consensus TBI treatment guidelines; however, evidence suggests hypotension should be defined at higher levels for these patients. Our objective was to determine the influence of hypotension on mortality in TBI patients requiring ICU admission using different thresholds of SBP on arrival at the emergency department (ED). **Methods:** Retrospective cohort study of patients with severe TBI (Abbreviated Injury Scale Head score  $\geq 3$ ) admitted to ICU at the QEII Health Sciences Centre (Halifax, Canada) between 2002 and 2013. Patients were grouped by SBP on ED arrival (<90 mmHg, <100 mmHg, <110 mmHg). We performed multiple logistic regression analysis with mortality as the dependent variable. Models were adjusted for confounders including age, gender, Injury Severity Score (ISS), injury mechanism, and trauma team activation (TTA). **Results:** A total of 1233 patients sustained a severe TBI and were admitted to the ICU during the study period. The mean age was  $43.4 \pm 23.9$  years and most patients were male (919/1233; 74.5%). The most common mechanism of injury was motor vehicle collision (491/1233; 41.2%) followed by falls (427/1233; 35.8%). Mean length of stay in the ICU was  $6.1 \pm 6.4$  days, and the overall mortality rate was 22.7%. SBP on arrival was available for 1182 patients. The <90 mmHg group had 4.6% (54/1182) of these patients; mean ISS was  $20.6 \pm 7.8$  and mortality was 40.7% (22/54). The <100 mmHg had 9.3% (110/1182) of patients; mean ISS was  $19.3 \pm 7.9$  and mortality was 34.5% (38/110). The <110 mmHg group had 16.8% (198/1182) of patients; mean ISS was  $17.9 \pm 8.0$  and mortality was 28.8% (57/198). After adjusting for confounders, the association between hypotension and mortality was 2.22 (95% CI 1.19-4.16) using a <90 mmHg cutoff, 1.79 (95% CI 1.12-2.86) using a <100 mmHg cutoff, and 1.50 (95% CI 1.02-2.21) using a <110 mmHg cutoff. **Conclusion:** While we found that TBI patients with a SBP <90 mmHg were over 2 times more likely to die, patients with an SBP <110 mmHg on ED arrival were still 1.5 times more likely to die from their injuries compared to patients without hypotension. These results suggest that establishing a higher threshold for clinically meaningful hypotension in TBI patients is warranted.

**Keywords:** hypotension, mortality, traumatic brain injury

### LO68

#### Does point-of-care ultrasonography change actual care delivered by shock subcategory in emergency department patients with undifferentiated hypotension? An international randomized controlled trial from the SHoC-ED investigators

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**Introduction:** Although use of point of care ultrasound (PoCUS) protocols for patients with undifferentiated hypotension in the Emergency Department (ED) is widespread, our previously reported SHoC-ED study showed no clear survival or length of stay benefit for patients assessed with PoCUS. In this analysis, we examine if the use of PoCUS changed fluid administration and rates of other emergency interventions between patients with different shock types. The primary comparison was between cardiogenic and non-cardiogenic shock types. **Methods:** A post-hoc analysis was completed on the database from an RCT of 273 patients who presented to the ED with undifferentiated hypotension (SBP <100 or shock index > 1) and who had been randomized to receive standard care with or without PoCUS in 6 centres in Canada and South Africa. PoCUS-trained physicians performed scans after initial assessment. Shock categories and diagnoses recorded at 60 minutes after ED presentation, were used to allocate patients into subcategories of shock for analysis of treatment. We analyzed actual care delivered including initial IV fluid bolus volumes (mL), rates of inotrope use and major procedures. Standard statistical tests were employed. Sample size was powered at 0.80 ( $\alpha:0.05$ ) for a moderate difference. **Results:** Although there were expected differences in the mean fluid bolus volume between patients with non-cardiogenic and cardiogenic shock, there was no difference in fluid bolus volume between the control and PoCUS groups (non-cardiogenic control 1878 mL (95% CI 1550 – 2206 mL) vs. non-cardiogenic PoCUS 1687 mL (1458 – 1916 mL); and cardiogenic control 768 mL (194 – 1341 mL) vs. cardiogenic PoCUS 981 mL (341 – 1620 mL). Likewise there were no differences in rates of inotrope administration, or major procedures for any of the subcategories of shock between the control group and PoCUS group patients. The most common subcategory of shock was distributive. **Conclusion:** Despite differences in care delivered by subcategory of shock, we did not find any significant difference in actual care delivered between patients who were examined using PoCUS and those who were not. This may help to explain the previously reported lack of outcome difference between groups.

**Keywords:** hypotension, point of care ultrasound, shock

### LO69

#### A retrospective cohort study on the impact of point-of-care ultrasound on radiologic imaging in patients presenting to the emergency department with suspected uncomplicated renal colic

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