

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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**Introduction:** The number of CT scans prescribed in the Emergency department (ED) for suspected renal colic has increased over recent years without an associated improvement in patient-centred outcomes. We assessed whether Point-of-Care Ultrasound (PoCUS) decreases the use of formal radiologic imaging. **Methods:** We completed a retrospective cohort study on consecutive patients 18 years of age and older presenting to the ED with suspected uncomplicated renal colic in a tertiary care centre in Québec in 2016. Exclusion criteria included: previous urologic intervention, solitary kidney, dialysis, fever, pyuria, acute kidney injury, pregnancy, suspicion of a serious alternative diagnosis or persistent symptoms despite analgesia. We compared the proportion (95%CI) of formal radiologic imaging performed (Ultrasound or CT) in patients who had PoCUS in the ED vs. those who did not. Two-tailed Fisher exact test ( $\alpha = 0.05$ ) and odds ratios (95%CI) calculated from multivariate logistic regression models adjusted for age, gender, Charlson Index and previous renal colic were used to compare the two groups. The reliability of data collection was evaluated with a kappa score (95%CI). **Results:** 169 patients with uncomplicated renal colic were included. There was no difference between the groups in terms of age, gender, Charlson Index, or previous renal colic. The PoCUS level of training and the doctor's education level was significantly higher in the PoCUS group. There was a non-significant trend towards less formal imaging in patients of the PoCUS group 65/88 (73.9% [63.4-82.7%]) vs. the non-PoCUS group 69/81 (85.2% [75.6-92.1%]),  $p = 0.087$ . After adjustment for confounders, the patients not evaluated with PoCUS were more likely to have formal imaging with a significant odds ratio of 2.41 [1.05-5.56]. Among patients who underwent a CT, incidentalomas were found in 16.5% and only 2.0% demonstrated significant findings leading to changes in ED management, such as an alternative diagnosis, need for admission, or an urgent urological intervention. Inter-observer agreement was excellent between assessers with a kappa score of 0.88 [0.66-1.00]. **Conclusion:** ED patients with uncomplicated renal colic who are investigated with PoCUS tend to have fewer formal imaging tests. When CT scans were performed, incidentalomas were found in 16.5% and ED management changed only 2.0% of the time. PoCUS appears to be a useful tool for decreasing CT utilisation in this low-risk ED population.

**Keywords:** computed tomography, point-of-care ultrasound (PoCUS), renal colic

#### LO70

##### Functional & cognitive decline in older delirious adults after an emergency department visit

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**Introduction:** While negative consequences of incident delirium on functional and cognitive decline have been widely studied, very limited data is available regarding functional and cognitive outcomes in Emergency Department (ED) patients. The aim of this study was therefore to evaluate the impact of ED stay-associated delirium on older patient's functional and cognitive status at 60 days post-ED visit. **Methods:** This study is a planned sub-analysis of a large multi-centre prospective cohort study (the INDEED study). This project took place between March and July of the years 2015 and 2016 within 5 participating EDs across the province of Quebec. Independent

non-delirious patients aged  $\geq 65$ , with an ED stay at least 8hrs were monitored until 24hrs post-ward admission. A 60-day follow-up phone assessment was also conducted. Participants were screened for delirium using the validated Confusion Assessment Method (CAM) and the severity of its symptoms was measured using the Delirium Index. Functional and cognitive status were assessed at baseline as well as at the 60-day follow-up using the validated OARS and TICS-m. **Results:** A total of 608 patients were recruited, 393 of which completed the 60-day follow-up. Sixty-nine patients obtained a positive CAM during ED-stay or within the first 24 hours following ward admission. At 60-days, those patients experienced a loss of 3.1 (S.D. 4.0) points on the OARS scale compared to non-delirious patients who lost 1.6 (S.D. 3.0) ( $p = 0.03$ ). A significant difference in cognitive function was also noted at 60-days, as delirious patients' TICS-m score decreased by 2.1 (S.D. 6.2) compared to non-delirious patients, who showed a minor improvement of 0.5 (S.D. 5.8) ( $p = 0.01$ ). **Conclusion:** People who developed ED stay-associated delirium have lower baseline functional and cognitive status than non-delirious patients and they will experience a more significant decline at 60 days post-ED visit.

**Keywords:** cognitive decline, delirium, functional decline

#### LO71

##### Evaluating the application of the prehospital Canadian C-Spine Rule by paramedics in sport-related injuries

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**Introduction:** The Canadian C-Spine rule (CCR) was validated for use by paramedics to selectively immobilize stable trauma patients. However, the CCR "Dangerous Mechanism" is highly prevalent in sports. Our objective was to compare the CCR performance in sport-related vs. non-sport-related injuries and describe sport-related mechanisms of injury. **Methods:** We reviewed data from the prospective paramedic CCR validation and implementation studies in 7 Canadian cities, which already included identification of sport-related injuries. A single trained reviewer further categorized mechanisms of injury using a pilot-tested standardized form, with the aid of a sport medicine physician in 15 ambiguous cases. We compared the CCR's recommendation to immobilize sport-injured versus non-sport-injured patients using chi-square and relative risk statistics with 95% confidence intervals. **Results:** There were 201 amateur sport-injuries among the 5,978 patients. Sport-injured patients were younger (mean age 36.2 vs. 42.4) and more predominantly male (60.5% vs 46.8%) than non-sport-injured patients. Paramedics did not miss any c-spine injuries when using the CCR. Although cervical spine injury rates were similar between sport (2/201; 1.0%) and non-sport injured patients (47/5,777; 0.8%), the absolute number of sport-related injuries was very small. Although CCR recommended immobilization equally between the two groups (46.4% vs 42.5%  $p = 0.29$ ; RR 1.17 95%CI 0.87-1.57), the reason for immobilization was more likely to be a dangerous mechanism in sport injuries (68.6% vs 54.5%,  $p = 0.012$ ). Although we observed a wide range of mechanisms, the most common dangerous mechanism responsible for immobilization in sport was axial load. **Conclusion:** The CCR identified all significant c-spine injuries in a cohort of patients assessed and transported by paramedics. Although an equal proportion of sport and non-sports related injuries were immobilized, a dangerous mechanism was most often responsible for immobilization in sport-related