

MP53**A feasibility analysis for successful completion of IVC ultrasound in hypotensive emergency department patients**

R. Dunfield, BSc, MD, P. Ross, MD, C. Keyes, BSc, J. Fraser, BN, D. Lewis, MBChB, P. Boreckie, MD, C. Pham, MD, S. Ali Alrobaian, MD, F. Scheuermeyer, MD, MSc, H. Lamprecht, MBChB, PhD, M. Stander, MBChB, MMed, R. Henneberry, MD, A. Sibley, MD, P. Atkinson, MBChB, Dalhousie University, Saint John, NB

Introduction: Determining fluid status prior to resuscitation provides a more accurate guide for appropriate fluid administration in the setting of undifferentiated hypotension. Emergency Department (ED) point of care ultrasound (PoCUS) has been proposed as a potential non-invasive, rapid, repeatable investigation to ascertain inferior vena cava (IVC) characteristics. Our goal was to determine the feasibility of using PoCUS to measure IVC size and collapsibility. **Methods:** This was a planned secondary analysis of data from a prospective multicentre international study investigating PoCUS in ED patients with undifferentiated hypotension. We prospectively collected data on IVC size and collapsibility using a standard data collection form in 6 centres. The primary outcome was the proportion of patients with a clinically useful (determinate) scan defined as a clearly visible intrahepatic IVC, measurable for size and collapse. Descriptive statistics are provided. **Results:** A total of 138 scans were attempted on 138 patients; 45.7% were women and the median age was 58 years old. Overall, one hundred twenty-nine scans (93.5%; 95% CI 87.9 to 96.7%) were determinate. 131 (94.9%; 89.7 to 97.7%) were determinate for IVC size, and 131 (94.9%; 89.7 to 97.7%) were determinate for collapsibility. **Conclusion:** In this analysis of 138 ED patients with undifferentiated hypotension, the vast majority of PoCUS scans to investigate IVC characteristics were determinate. Future work should include analysis of the value of IVC size and collapsibility in determining fluid status in this group.

Keywords: hypotension, inferior vena cava, point of care ultrasound

MP54**Management algorithm for the treatment of intoxications with calcium channel blockers: a simulation trial (MATRICS)**

V. Gauvin, MD, É. Raymond-Dufresne, MD, M. St-Onge, MD, PhD, Laval University, Quebec, QC

Introduction: Cardiotoxicants poisonings are rare but have the potential to be highly lethal. Given the precarious nature of these poisonings, the Quebec Poison Control Center (CAPQ) has established a management protocol for optimal treatment. This study seeks to evaluate whether CAPQ's Calcium Channel Blocker (CCB) poisoning management protocol improves treatment delivery by physicians using simulation. The primary outcome is whether the management protocol decreases time to delivery of calcium and insulin. The secondary outcome is whether use of the management protocol increases appropriate dosing. **Methods:** For this randomized AB / BA crossover trial, Emergency Medicine and Internal Medicine residents were randomly assigned to one of two groups; one group received the management protocol during the simulation and the other did not. The crossover occurred 3-months later whereby the groups were reversed. Inverse probability weighting was used to compensate for losses at follow-up. Differences in baseline characteristics, as well as carry-over effect, were evaluated. The outcomes were analyzed with a two-level hierarchical model. **Results:** Twenty-three residents were included in the study. No significant differences in baseline characteristics were

noted between the AB / BA groups, and no carry-over effect was identified on statistical analysis for all variables. As for the primary outcomes, time to administration of IV calcium decreased by 87 seconds (CI -266 to 92), time to insulin bolus decreased by 52 seconds (-217 to 114), and time to insulin infusion decreased by 115 seconds (-213 to -18) when the protocol was used. As for the secondary outcomes, there were no statistically significant differences for the percentage of adequate doses of IV calcium (RR: 1.27; 95% CI: 0.80–2.02), insulin bolus (RR: 1.30; 95% CI: 0.80–2.12) and insulin infusion (RR: 1.37; 95% CI: 0.99–1.91). **Conclusion:** This randomized crossover study, which uses simulation to evaluate the performance of CAPQ's CCB poisoning management protocol, does not statistically demonstrate decreased time to administration or increased accuracy of dosing, due to the large confidence intervals. Unfortunately, we were not able to obtain the planned sample size due to limited participation. However, our results trend towards more optimal dosing and rapid dosing of treatments, and from a qualitative standpoint, the protocol appeared to increase the structure of patient care.

Keywords: calcium channel blocker, management protocol, simulation

MP55**Reducing barriers to successful cardiac resuscitation: intervention in elementary schools**

P. Blanchard, BSc, MBA, MD, MSc, PhD, V. Gauvin, MD, L. Marie-Pier, MD, F. Péloquin, MD, I. Bertrand, MD, E. Mercier, MD, MSc, Université Laval, Québec, QC

Introduction: The incidence of out-of-hospital cardiac arrest (OHCA) in school is approximately 2.1 for 100,000 per year. Although rare, it is a devastating event for the local community. Schools with public access to automated external defibrillators (AED) and an emergency response plan have demonstrated increased survival rates of up to 70% for students who suffer cardiac arrest. Previous studies identified numerous barriers to successful cardiac resuscitation in public school systems. The main objectives of this study were to identify those barriers in the Quebec region elementary school system and to assess the impacts of an AED focused training session. **Methods:** A previously validated survey focused on the potential barriers to successful defibrillation in OHCA and on demographic variables was sent to 139 elementary schools. Later, 92 employees within three elementary schools who responded to the survey were evaluated before and after receiving training on the use of AED in a mock cardiac arrest scenario. The primary outcome was the time to first shock and the secondary outcomes included correct AED pad placement and safety of the procedure. **Results:** Survey response rate was 53%, which is comparable to previous studies assaying barriers to cardiac resuscitation in public school systems. 95% of school respondents reported the presence of an AED on the school premises but 46% stated that no formal AED training course was provided to employees. Out of the four schools who reported a previous OHCA, only one had access to an AED at the time of the event. Following focused AED training, 92% of school workers successfully completed a defibrillation sequence in a mock scenario, from 53% before ($p < 0.001$, McNemar test). The time to first shock went from 66 seconds (95% CI 63-70) to 47 seconds (95% CI 45-49; -29%, $p < 0.001$). Proper pad placement was the most problematic step for participants and personnel who reported previous training had better performance (OR 3.15, 95% CI 1.33-7.42, $p = 0.009$). **Conclusion:** Most elementary schools in the Quebec region have