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Methods: A suburban two-tiered EMS system in which ALS units evaluate approximately 600 patients under age 13 per year. Patients: Children less than 13 years old over a 5-year period for whom ALS was dispatched for “Allergy/Anaphylaxis.” Protocol: Demographics, history of present illness, vital signs, and pre-former vital signs prior to EMS arrival and by EMS personnel were extracted using chart review. The percentage of patients with 95% confidence intervals (“CI”) who were given epinephrine prior to EMS arrival, by EMS, and overall were calculated. Anaphylaxis was defined as acute cutaneous and/or mucosal involvement after antigen exposure including the following: respiratory compromise, cardiovascular compromise, or persistent GI symptoms. Appropriate treatment was defined as epinephrine being administered within 30s of the first clinical syndrome meeting the definition of anaphylaxis, or being withheld when the clinical syndrome did not meet the definition. The percentage of patients who were treated appropriately was then calculated with CI. Results: Out of 2,750 ALS calls for patients under 13 years old, 287 (10.4%) were for “Allergy/Anaphylaxis.” The average age of patients was 5.1 (±2.3) years. Of these, 59% (CI: 54–65) of these patients received epinephrine - 49% (CI: 44–55) prior to EMS arrival, and 10% (CI: 6–13) by ALS personnel. The percent of patients who received appropriate treatment was 62% (CI: 56–66). Of the inappropriate treatments, epinephrine was given inappropriately 30% (CI: 24–35%) of the time. Two patients, .0<.01, died from anaphylaxis (CI: 5–12%) of the time. Conclusions: Despite increasing incidence and public awareness of life-threatening allergic reactions, both laypeople and prehospital providers struggle to diagnose and treat anaphylaxis in pediatric patients. More education is needed to recognize this disease process and treat it appropriately.

91. Pediatric Out-of-Hospital Cardiac Arrest Outcomes before and after Implementation of a Standardized Resuscitation Tool

Scott Alter, Lisa Clayton, Richard Paley, Richard Shih, Florida Atlantic University Category of Submission: Pediatric

Background: Pediatric out-of-hospital cardiac arrest (POHCA) occurs infrequently, yet requires the same urgency as for adults. Therefore, it is imperative that prehospital providers are prepared to rapidly treat POHCA. To meet this need, pediatric-specific tools have been developed. This study compares POHCA outcomes before and after implementation of an age-based resuscitation tool. Methods: Design: Retrospective chart review. Setting: County-based ALS service with 87,000 calls per year, covering a population of 635,000 over 2,000 square miles. Subjects: Patients <18 years old who sustained POHCA with resuscitation attempt without return of spontaneous circulation (ROSC) before EMS arrival between January 1, 2012 and December 31, 2016. On January 1, 2014, a commercial tool for POHCA, consisting of age-based medication dosing protocols, was implemented. Rates of ROSC, survival to hospital admission, and survival to hospital discharge were calculated and compared between the pre-implementation and post-implementation groups. Results: A total of 132 POHCA patients were identified, of whom 24 were excluded for having ROSC before EMS arrival. The remaining 108 patients had average age of 1.61 years, with similar baseline characteristics between groups. In the two years preceding the tool implementation (control group), there were 37 cardiac arrests. Of these, 2 had ROSC after EMS arrival and none survived to hospital admission. In the three years after implementation (experimental group), there were 71 cardiac arrests. Of these, 13 had ROSC after EMS arrival. All patients with ROSC survived to hospital admission and 3 survived to hospital discharge. Between the control and experimental groups, there was a 13% difference in ROSC after EMS arrival (5% vs. 18%; 95% CI: −0.01–0.24), 18% difference in hospital admission (0% vs. 18%; 95% CI: 0.06–0.29), and 4% difference in overall survival to discharge (0% vs. 4%; 95% CI: −0.06–0.12). Conclusions: After implementation of an age-based resuscitation tool, there was statistically significant increase in POHCA survival to hospital admission. ROSC rate obtained after EMS arrival and survival to hospital discharge also increased, though not statistically significant. Based on these results, EMS agencies may consider implementing an age-based resuscitation tool as part of a strategy to improve POHCA treatment outcomes.

92. Comparison of Commercial Tourniquets in a Pediatric Trauma Patient Model

James Vretis, Center for Tactical Medicine Category of Submission: Pediatric

Background: Young children and adolescents are frequently injured in peacetime and wartime. Reviews of trauma registries at U.S. military medical facilities during the Iraq and Afghanistan conflicts show as the age of a child increases the injury severity and mortality increases. Tourniquet use for control of extremity hemorrhage in adult trauma patients is associated with increased survival with only minimal tourniquet associated morbidity. Use of commercial tourniquets designed for adults treated at US military facilities shows survival benefits similar to those seen in the adult population. Hypothesis: We hypothesized that there would be differences in the efficacy and effectiveness of commercial tourniquets designed for adults when applied to pediatric patients of different ages. Methods: The institutional Ethics Review Board approved the study. The study was a prospective and non-blinded test of nine commercial tourniquets on a pediatric arm hemorrhage test model using six sized mannequins to simulate pediatric victims. Wrap And Tuck (SWAT), TacMed K9 (TMK9), and Rapid Application Tourniquet System (RATS) tourniquets apply compressive forces by elastic recall and the other strap. The Combat Application Tourniquet (CAT), Sam XT (SAMXT), Tactical Mechanical Tourniquet (TMT), and the SOF Tactical Tourniquet – Wallet (SOTTW) apply force by ratchet and latched use. Models are based on human circumference. Conclusion: The Mechanical Advantage Tourniquet (MAT) has a turnkey apparatus mounted on a fixed length C-shaped housing that pulls a portion of the redundant turn of the strap as a ratchet to increase circumferential compression by decreasing strap length. The Child Ratcheting Medical Tourniquet (CRMT) uses a ratchet and latched mechanism to circumferential compression. The Mechanical Advantage Tourniquet (MAT) has a turnkey apparatus mounted on a fixed length C-shaped housing that pulls a portion of the redundant turn of the strap as a ratchet to increase circumferential compression. Results: The SWAT, TMK9 and RATS were successful stopping the flow of water on all sized mannequins. The CRMT was the only mechanical advantage tourniquet that was successful in stopping fluid flow on all mannequin sizes. The TMT and SOFTW started failing on mannequins with a 5.08 cm diameter, the CAT, SAMXT, TMT, and SOFTW all failed on the 5.08 cm diameter mannequin. The MAT failed on the 7.62 cm and 8.0 cm mannequins. Conclusions: We have shown that many commercially available tourniquets do not stop fluid flow in our pediatric arm hemorrhage test model.

93. Prehospital Blood Pressure Measurement in Major Traumatic Brain Injury: Concordance between EMS, Provider Documentation and Non-invasive Monitor Data Tracking

Octavio Perez, Octavio Perez, Eric Helfenbein, Bruce Barnhart, Saeed Babaeizadeh, Dawn Jorgenson, Chengcheng Hu, Vatsal Chikani, Joshua Gathe, Samirene Pol-French, I. Grill, Daniel Spalte, University of Arizona Category of Submission: Operations, Quality, Safety Systems, Disaster, Disaster

Background: Recent studies have shown that the lowest prehospital systolic blood pressure (SBP) is strongly associated with mortality across a remarkably wide range (far above 90 mmHg) in traumatic brain injury (TBI). Furthermore, in TBI research, case ascertainment and risk assessment is dependent upon documentation of prehospital BP. Objective: To identify the concordance between the lowest SBP documented by EMS personnel in patient care records (PCR) and the recorded non-invasive monitor data in TBI. Methods: A subset of major TBI cases (moderate/severe; CDC Barell Matrix 1) in the 1979 EMS TBI Study (NHI 1R01NS071049) were...