AAEM/JEM Resident and Student Research Competition Winners

☐ UTILIZATION OF TRANEXAMIC ACID IN CIVILIAN ADULT TRAUMA RESUSCITATION IN THE HOSPITAL SETTING

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Conflicts of Interest: By the AAEM abstract submission requirements, all authors are required to disclose all affiliations, funding sources and financial or management relationships that could be perceived as potential sources of bias. No author has professional or financial relationships with any companies that are relevant to this study. There are no conflicts of interest or sources of funding to declare.

Objectives: Trauma can pose a severe threat to life and accounts for more than 5.8 million deaths worldwide. Trauma can rapidly lead to coagulopathies causing hemorrhagic shock and death. This study aims to evaluate the safety and efficacy of tranexamic acid (TXA) use in the hospital setting for cases of traumatic hemorrhagic shock.

Methods: Patients from 2 different trauma centers who sustained blunt or penetrating trauma with signs of hemorrhagic shock from March 2015 through June 2018 were considered for TXA treatment. A retrospective control group was formed from patients seen in the past five years who were not administered TXA and matched based on age, gender, ISS, and mechanism of injury. The primary outcome of this study was mortality measured at 24 hours, 48 hours, and 28 days. Secondary outcomes included total blood products, hospital length of stay (LOS), ICU LOS, and adverse events.

Results: Both the hospital TXA and control cohorts consisted of 280 patients. The hospital TXA group had statistically significant lower mortality at 28 days (1.1% vs 5%, p=0.0067); used fewer units of blood products (median of 4 vs 7 units p=0.0005); and had a shorter hospital LOS (median of 7 vs 12 days, p<0.0001). There was no significant difference in adverse effects for TXA versus control. Subgroup analyses were conducted on patients who had and ISS ≥16, and those transfused ≥10 units of blood. The ISS ≥16 subgroup showed a statistically significant lower mortality at 28 days for TXA compared to control. While not significant, those transfused ≥10 units of blood showed a trend towards decreased mortality for TXA versus control.

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Conclusions: This study identified a statistically significant reduction in mortality at 28 days after TXA administration in trauma patients, and a trend towards decreased mortality at 24 hours, and 48 hours. Our study shows that TXA may be used safely and efficaciously for trauma-induced hemorrhagic shock in the hospital trauma system.

☐ PRE-HOSPITAL INTUBATION OF CARDIAC ARREST PREDICTS DECREASED SURVIVAL IF ED ARRIVAL IS DELAYED

Funding: None.

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Objective: Optimal pre-hospital management of cardiac arrest is not known, with recent literature questioning the utility of pre-hospital intubation and epinephrine. Our objective was to characterize, in a retrospective cohort of cardiac arrest patients, the factors associated with survival to hospital discharge, and the potential mechanisms by which they may affect survival.

Methods: We performed a retrospective analysis of 1,644 EMS calls for cardiac arrest in San Mateo County, CA, 2015-18. For each call, we observed patient age, sex, race, ethnicity, and comorbidities, whether arrest was witnessed or unwitnessed, first monitored rhythm, prehospital airway management (e.g., ETT, LMA, or BVM), medications administered, AED use, IV/IO access, and times from 911 call to EMS arrival, defibrillation, and patient arrival to the ED. We estimated a series of logistic regression models of survival to hospital discharge. We stratified patients by prehospital airway strategy, and estimated the effects of delays in transport on survival to hospital discharge.

Results: Patients had a median age of 69. 33.2% were women. 15.0% had witnessed arrest and initial shockable rhythms, and received defibrillation by EMS. 53.9% were intubated by EMS, 8.9% received supraglottic airways, and 37.2% received no advanced prehospital airway. 81.5% received prehospital epinephrine. 8.9% of all arrests survived to hospital discharge. Of witnessed arrests with initial shockable rhythms, 30.5% survived. In a series of logistic regression models of survival to hospital discharge, controlling for patient demographics, comorbidities, initial rhythm, AED and mechanical CPR device use, prehospital airway management, medications, and IV/IO access, significant positive predictors of survival included witnessed arrest (OR 3.01, 95% CI 1.86-4.99), and initial shockable rhythm (OR 9.43, 95% CI 4.66-19.24). Negative predictors of survival included prehospital endotracheal intubation (OR 0.31, 95% CI 0.19-0.50) and prehospital epinephrine (OR 0.26, 95% CI 0.15-0.43). Among patients surviving to ED arrival,

those receiving prehospital intubation had a median time from 911 call to ED arrival 6.5 minutes longer than patients not receiving an advanced airway. In additional models, accounting for time to ED arrival substantially attenuates the negative effect of prehospital intubation on survival. Epinephrine administration is associated with comparable delays to ED arrival, but these delays do not explain the survival decrement associated with prehospital epinephrine.

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Conclusion: Delays in transport to the ED may explain the survival decrement associated with pre-hospital intubation for cardiac arrest.

☐ UTILIZING ELECTRONIC HEALTH RECORD ALERTS TO LINK HIV/HCV PATIENTS INTO CARE

Objectives: FOCUS is a routine HIV/HCV screening and linkage to care program that is implemented in health centers in areas of high, unmet need. The Jackson Health System (JHS) FOCUS program started at the Jackson Memorial Hospital (JMH) Emergency Department (ED) in June 2017. JMH has screened over 34,000 patients with a seropositivity rate of 2.6% for HIV and 5.7% for HCV, out of which 74% and 26%, respectively, have been linked into care. The population served by JHS encompasses a high number of individuals that are difficult to locate due to factors such as homelessness and substance abuse. We identified a large number of patients (59%) who were difficult to contact if they were discharged from the ED before a confirmatory test had resulted. Barriers to contacting patients included lack of contact information or erroneous information given during registration, which led to a decrease in linkage to care success.

Methods: Embracing automation to facilitate care for a difficult to access population, we developed an ad hoc form in the Electronic Health Record (EHR) for the Linkage to Care Specialists (LTCs) to complete when they are unable to notify or link positive patients. Certain responses on the form trigger re-engagement alert messages in the EHR. The LTCs enter notes such as unable to contact HIV and/or HCV positive patient or patient is out of care, which then triggers an alert when the patient registers during a subsequent visit to any facility within JHS.This electronic alert is sent to the LTCs who are dispatched to facilitate diagnosis disclosure and linkage to care in real-time.

Results: From March 2018 to September 2018, 264 (101 HIV, 163 HCV) patients, who had been lost to follow-up, were identified upon their return to JHS. We verified HIV care for 8 patients (8%) who were incarcerated, linked 34 (34%) to care, and scheduled 9 patients (9%) for future appointments. For HCV, we verified care for 36 patients (22%) who were incarcerated, linked 25 (15%) to care, and scheduled 16 patients (10%) for future appointments.

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Conclusions: An automated EHR flagging system is an important tool that has proven to be an effective method to re-engage individuals living with HIV and/or HCV who are lost to follow up and present to healthcare facilities within a hospital system. It is a strategy that is easily reproducible in other facilities using comparable EHRs and should be utilized to link HIV and HCV positive patients into care.