Session IX: Plenary Papers 37-44
Paper 39: 8:10 AM - 8:30 AM

FASTER REFILL IN AN URBAN EMS SYSTEM SAVES LIVES: A PROSPECTIVE PRELIMINARY EVALUATION OF A PREHOSPITAL ADVANCED RESUSCITATIVE CARE BUNDLE

Introduction: Military experience has shown a benefit to advanced resuscitative care (ARC) in severe hemorrhage. The benefits of ARC for trauma in civilian EMS systems with short transport intervals are still unknown. We hypothesized that ARC implementation in an urban EMS system would reduce hospital mortality.

Methods: This was a prospective analysis of ARC bundle administration between 2021 and 2022 in an EMS system with 70,000 annual responses. The ARC bundle consisted of calcium, tranexamic acid (TXA), and packed RBCs via a rapid infuser. ARC patients were compared to trauma registry controls from 2016 to 2019. Included were patients with penetrating injury and SBP≤90mmHg. Excluded were isolated head trauma or prehospital cardiac arrest. In-hospital mortality was the primary variable of interest.

Results: Included were 195 patients (ARC=51, controls=144): median age of 32 years, with no difference in demographics, EMS vitals, or new injury severity score (NISS) between groups (**A**). At hospital arrival, ARC patients had lower median heart rate and shock index than controls (p=0.01). 24-hour mortality and in-hospital mortality were lower in the ARC group (p≤0.04). Multivariate regression revealed an independent reduction in hospital mortality with ARC (OR 0.24, 95%CI 0.06-0.94) (**B**).

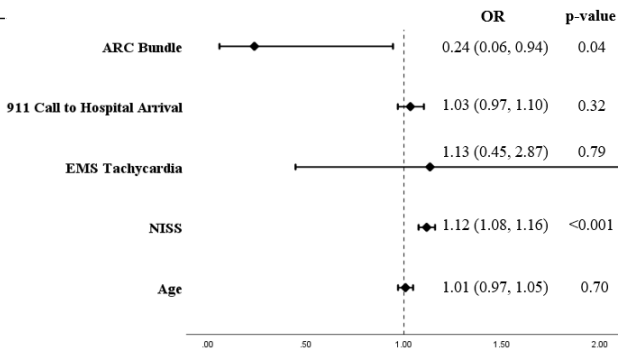
Conclusion: Early ARC in a fast-paced urban EMS system is achievable and may improve physiologic derangements while decreasing patient mortality. ARC closer to the point of injury warrants consideration.

A. Univariate comparison of ARC vs controls.

Variable	Controls (n=144)	ARC Bundle (n=51)	p-value*
EMS Characteristics	median (IQR)	median (IQR)	
SBP, mmHg	80 (62-88)	71 (60-83)	0.22
HR, bpm	101 (72-126)	103 (72-136)	0.35
Shock Index	1.20 (0.87-1.60)	1.22 (0.77-1.77)	0.92
Endotracheal Intubation	11 (8%)	0 (0%)	0.04
911 Call to Hospital Arrival	20 (15-24)	24 (20-31)	<0.01
Hospital Characteristics			
ED SBP, mmHg	107 (80-124)	114 (88-140)	0.42
ED HR, bpm	97 (75-121)	79 (62-101)	0.01
ED Shock Index	0.88 (0.70-1.26)	0.79 (0.50-1.03)	0.01
NISS	17 (4-27)	18 (12-34)	0.07
24 Hour Mortality	27 (19%)	3 (6%)	0.03
In-hospital Mortality	33 (23%)	5 (10%)	0.04

*Mann Whitney U for medians; Chi-square for frequencies
Systolic Blood Pressure (SBP), Heart Rate (HR), Emergency Department (ED)

B. Adjusted odds ratios for hospital mortality.



Odds ratio (OR), 95% confidence intervals (CI) derived from multivariable logistic regression