NAEMSP ABSTRACTS

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A Comparison of On-Scene Times for Out-Of-Hospital Pediatric Versus Adult Cardiac Arrest Patients in a Statewide EMS Information System

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Background: Compare on-scene times of transported out-of-hospital non-traumatic cardiac arrest (CA) pediatric versus adult patients using a statewide EMS information system (EMSIS).

Methods: A statewide EMSIS was used to conduct this retrospective, observational study. The study period was from 1/1/2010 to 12/31/2013. Data were filtered from EMSIS based on criteria previously found to maximally identify CA cases (e.g., impression of CA, CPR procedure, etc.). Pediatric cases were considered those <13 years old. Only patients transported to hospitals were selected. Scene time was calculated by subtracting the scene departure from the scene arrival time. Further comparisons were made of public locations, initial shockable rhythm, and return of spontaneous circulation (ROSC) reported upon ED arrival. Cases were excluded for trauma, CA at healthcare facilities, or those missing initial EKG, scene time, or ROSC data. Standard statistical analysis was performed

Results: There were a total of 5,060,339 records in the EMSIS, with 33,080 meeting initial criteria for CA. After exclusions, there were 10,240 cases remaining for final analysis, 266 (2.6%) pediatric and 9,974 (97.4%) adult. The median age for pediatric and adult patients was 80 months (IQR:2.0, 36.0) and 64.0 years (IQR:52.0, 77.0), respectively. There were 12.8% of pediatric versus 22.0% of adult arrests reported in public venues ($p = 0.0005$). Eight (3.0%) pediatric arrests were reported with an initial shockable rhythm versus 2,020 (20.3%) of adults ($p<0.0001$). The median time on scene for pediatric and adults were 12.0 minutes (IQR:5.3, 21.8) and 23.0 minutes (IQR:16.0, 33.7), respectively ($p<0.0001$). The number of pediatric and adult arrests reported to have ROSC upon ED arrival were 30 (11.3%) and 2,473 (24.8%), respectively ($p<0.0001$).

Conclusion: This study demonstrates significantly shorter on-scene times of pediatric versus adult cardiac arrest patients. Adults were much more likely to have an arrest in a public location, have an initial shockable rhythm, and have ROSC upon ED arrival. Further studies are needed to asses any causal relationship between scene time duration and outcomes. Important limitations in this study include exclusive reliance on unverified data from a statewide EMSIS, large numbers of excluded cases including non transported patients, and lack of hospital outcome data.

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