Characteristics and Impact of Bystander Cardiopulmonary Resuscitation Following Pediatric Out of Hospital Cardiac Arrest in the United States: A Study From the Cardiac Arrest Registry to Enhance Survival (CARES)

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Introduction: Bystander cardiopulmonary resuscitation (BCPR) is associated with improved outcome in adult out-of-hospital cardiac arrest (OHCA). There are few data on the prevalence and impact of BCPR on children.

Hypothesis: We aimed to characterize BCPR in pediatric OHCA and test the hypothesis that BCPR would occur infrequently and would be associated with neurologically favorable survival at hospital discharge from a large cardiac arrest registry in the United States.

Methods: We conducted an analysis of the Cardiac Arrest Registry to Enhance Survival database. Inclusion criteria were age ≤ 18 years of age and non-traumatic OHCA from January 1, 2013 through December 31, 2014. Neurologically favorable survival was defined as a Cerebral Performance Category Scale of 1 or 2.

Results: A total of 2,176 cardiac arrests were evaluated. Most patients were infants (62%) or adolescents (19%). Most arrests occurred at home (86%), were unwitnessed (75%), and had a non-shockable rhythm (93%). BCPR was provided in 49%, most commonly by a family member (71%). BCPR was more common for white (60%) compared to black (42%) and Hispanic children (44%) (p<0.001). Overall, BCPR was associated with a higher rate of neurologically favorable survival (11% vs. 7%, odds ratio [OR] 1.6 95% confidence interval [CI] 1.2-2.3). In subgroup analyses, BCPR was associated with a higher rate of neurologically favorable survival for out of home arrests (34% vs. 15%, OR 2.9, 95% CI 1.6-5.3), and arrests presenting in a shockable rhythm (48% vs. 32%, OR 2.0 95% CI 1.0-4.0). For infants BCPR was not associated with survival (6.4% vs. 6.0%, OR 1.1 95% CI 0.7-1.7) or neurologically favorable survival (5.2% vs. 5.0%, OR 1.1 95% CI 0.6-1.8).

Conclusion: BCPR was provided in just under 50% of pediatric OHCAs and was more common for white compared to black and Hispanic children. BCPR was associated with improved survival that was most notable in out of home arrests, with over twice as many patients having neurologically favorable survival. Though infants comprised the largest age group, no effect of BCPR outcome was observed. This impact of BCPR suggests the need for a public health strategy to improve the provision of BCPR, and the need for an alternative strategy for some groups including infants.
Disclosure: