

## Modified Management Strategies to Improve Survival Chances Following Pediatric Out-of-Hospital Cardiac Arrest

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### Introduction:

In pediatric out-of-hospital cardiac arrest (POHCA) cases, EMS crews commonly limit on-scene care and try to provide treatment while transporting.

### Hypothesis:

Prioritizing on-site care and using techniques to expedite on-site intubation (INTUB) and drug delivery will improve survival rates.

### Methods:

Using a comprehensive *Utstein*-style registry, data were collected prospectively for all consecutive POHCA cases between 01/01/2012 and 04/30/2017. In 2014, new training began to prioritize on-scene resuscitation including expedited INTUB (with controlled ventilatory rates) and drug delivery (Phase I). In 2016, techniques to dose and prepare drugs prior to arrival were introduced (Phase II). Neuro-intact hospital discharge rates in 2012-13 were then compared to Phase I and Phase II outcomes. Throughout the study period, protocols followed *American Heart Association* guidelines.

### Results:

During the 5.25 years of study, EMS crews managed 143 consecutive POHCA cases and the majority presented in asystole throughout the study. In resuscitated patients, the time to epinephrine administration fell from 16.5 min in 2012-2013 to 7.25 min (Phase I) and 4.1 min (Phase II) and the children received INTUB and intraosseous insertion more often on-site in Phase I and II with no other significant differences in terms of age, sex or sequence of drug infusions. The rates of survival to hospital discharge with intact neurological status did improve immediately (Fig.) with 13 of 56 (23.2%) surviving in Phase I and 17 of 49 (35%) in Phase II versus 0 of 38 during 2012-2013 ( $p < 0.0001$ ; 2-tailed Fisher's exact test).

### Conclusions:

Although a historically-controlled study, the rise in the number of survivors was profound, immediate and sustained following the new focus on expedited on-site care. The specialized training involving pre-arrival psychological and clinical tools with a supportive focus on more efficient on-scene care, likely played the most significant roles.

## Pediatric Cardiac Arrest Survivors

Pre-Intervention (2012-13) vs. Phase I (2014-15) & Phase II (2016-17)

