

Defibrillation Skills of Pediatric Acute Care Providers: Are They Faster with Paddles or Pads?

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Introduction/Hypothesis

For every minute delay in defibrillation, survival from ventricular fibrillation cardiac arrest (VFCA) decrease 7% to 10%. There is lack of sufficient data on time taken by pediatric providers to apply shock using defibrillator paddles versus pads. We hypothesized that the time-to-shock by pediatric providers in VFCA is significantly longer with use of paddles as compared to pads.

Methods

We conducted a prospective observational study of video evaluation of hands-on defibrillation skills of pediatric providers in a simulated VFCA in our children's hospital. Each provider was asked to use pads to provide 2 J/kg shock to an infant manikin in VFCA. Following this, the same provider was asked to use paddles to provide 2 J/kg shock for the same scenario. The time-to-shock was defined a priori as time between switching on the defibrillator to the actual delivery of the shock. Videos were evaluated by 2 independent reviewers and disagreements resolved by a moderator. The data was analyzed using student t-test with significant p-value <0.05.

Results

Total of 51 (44 nurses, 7 non-nurse) pediatric providers were evaluated for time-to-shock using LifePak 20e ("study defibrillator"). Of these, 49% (25/51) had <5 yr of experience and 59% (30/51) were PICU providers. All the providers were PALS trained and the last PALS certification was median 288 days prior to VFCA scenario. The number of providers who had used either the study defibrillator or different defibrillator or both in real and/or mock resuscitation was 44 (86%), 7 (13%) and 15 (29%), respectively. The median time to apply paddles was 48.5 sec and to apply pads was 42.5 sec. The median time-to-shock with paddles was 97 sec (IQR: 60-122.5 sec), whereas the median time-to-shock with pads was 77.5 seconds (IQR: 59-105 sec) There was no significant difference for time-to-shock between use of paddles versus pads ($p>0.05$).

Conclusions

The time-to-shock (from defibrillator switch-on to shock delivery) by pediatric providers in VFCA using defibrillator paddles is not significantly different from that using defibrillator pads.