

## DOES RAPID CYCLE DELIBERATE PRACTICE IMPROVE RETENTION OF PEDIATRIC RESUSCITATION SKILLS?

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**Background:** Rapid cycle deliberate practice (RCDP) has been shown to be as effective as traditional (TRAD) reflective debriefing in immediate performance improvement when teaching team-based resuscitation skills. No studies compare retention of resuscitation skills between these two modalities. The objective of this study was to compare team leader performance in residents trained with RCDP versus those trained with TRAD debriefing.

**Materials/Methods:** This was a cluster-randomized trial comparing RCDP and TRAD simulation from Jan 2018 – April 2019. Pediatric and EM residents on a PEM rotation participated in simulation-based resuscitation education. Multidisciplinary teams were randomized en bloc at their initial simulation day to undergo either RCDP or TRAD debriefing. Each participant's team leader performance was assessed 1-12 months after initial training via a brief cardiac arrest test case. The primary outcome was time to defibrillation. Secondary outcomes included time to chest compressions and team leader performance using a validated Resident Team Leader Evaluation. Statistical analysis was conducted using ANCOVA and the Kaplan-Meier survival curve.

**Results:** Thirty-two residents (90.6% pediatrics, 9.4% emergency medicine) met inclusion criteria. Baseline characteristics between groups were similar. Participants in the RCDP group had over 5 times the odds of achieving defibrillation vs. those in the TRAD group (OR=5.57, 95% CI 1.13-27.52, p=0.04). When the outcome was not achieving defibrillation, RCDP had a significant beneficial effect over TRAD (log rank p=0.03). Time to compressions was significantly lower in the RCDP group than in the TRAD group with a mean difference of 14.32 (95% CI 1.16-27.47, p=0.03). The RCDP group also had significantly higher scores in team leader performance than the TRAD group, with a mean difference in RTLE scores of -15.12% (95% CI -26.87%- -3.37%, p=0.01).

**Conclusions:** This study shows a significant difference in performance metrics in the team leader who was previously trained with RCDP compared to TRAD debriefing. Residents trained using RCDP were more likely to achieve defibrillation faster, initiate chest compressions earlier, and perform more effectively as team leader than those trained using TRAD debriefing methods. This study suggests that RCDP may improve retention of pediatric resuscitation skills compared to TRAD debriefing. Future studies should focus on best applications for RCDP in varying levels of learners, with attention to knowledge and skill decay.