

OPTIMAL TEAM SIZE AND ROLES FOR THE MOST EFFECTIVE RESUSCITATION

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Background: During neonatal resuscitation, a team of healthcare providers (HCPs) must perform technical and cognitive tasks while working under intense time pressure in order to provide efficient and effective care. The complexity of this can lead to deviations from the Neonatal Resuscitation Program (NRP) algorithm, especially when performing advanced interventions such as positive pressure ventilation, intubation, chest compressions, and medication administration. Studies have demonstrated poor quality of NRP and have found up to a 54% noncompliance rate in NRP steps. To mitigate these challenges, we can find ways to reduce the cognitive load on the team as well as determine the optimal number of providers needed during a resuscitation. Decision support tools and coaching have been shown to improve team performance in critical, team-based resuscitation environments. Using expert resuscitation teams performing complex simulated resuscitations, we are studying the addition of a designated hands-off recorder/time coach role that records team actions and gives feedback of team performance and adherence to the NRP algorithm. Simultaneously, we are studying the addition of a flexible team member that can be used in any role the team determines it needs. We can then provide the NRP steering committee with an evidence-based guide on optimal team size and composition during neonatal resuscitation.

Materials/Methods: Study is being performed at Texas Children's Hospital Pavilion for Women. It began in October of 2020 and we are currently finishing our simulations to meet our goal of studying 64 teams. We are using a randomized 2x2 factorial design. Two-factor ANOVA will be used for statistical analysis examining the effect of a recorder/time coach, an additional flexible team member, and interaction between these two factors.

Results: Our primary outcome is cumulative time error, which is the number of seconds that actions deviate from the ideal times in NRP guidelines. Secondary outcomes are team performance as assessed by the neonatal resuscitation performance evaluation, time to first dose of IV epinephrine, and workload as assessed by the NASA Task Load Index. We plan to have results by February 2022 and will be able to present them at the symposium.

Conclusions: We hypothesize that the addition of a designated recorder/time coach giving visual and auditory prompts to the team performing resuscitation will improve NRP adherence, but the addition of a flexible team member will not.

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