



Optimal Team Size and Roles for the Most Effective Resuscitation

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BACKGROUND

- During neonatal resuscitation, a team of healthcare providers must perform technical and cognitive tasks while working under intense time pressure
- Deviations from the NRP algorithm are common
- Decision support tools and coaching can improve team performance

PURPOSE

- To study the addition of a designated recorder/time coach versus an additional hands-on team member in complex neonatal resuscitations
- To provide the NRP steering committee with an evidence-based guide on optimal team size and composition during neonatal resuscitation

METHODS

- Expert resuscitation teams performed simulated neonatal resuscitations
- Each session was randomized into one of four groups (fig. 1)
- NeoCHART+™ is the recording app that was used in this study (fig. 2&3)
- Two-factor ANOVA was used to examine the effect of an additional team member, a recorder, and the interaction between these two factors

Team Randomization/ Group Comparisons		
	No Flexible Role	Yes Flexible Role
No Recorder	Group 1 (4)	Group 3 (5)
Yes Recorder	Group 2 (4+R)	Group 4 (5+R)

Fig. 1: Participants were randomized into teams of 4 or 5 and into having a recorder (R) present or not

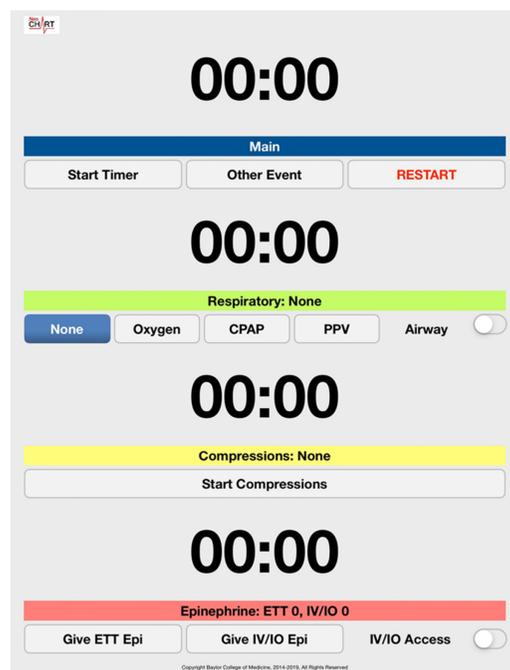


Fig. 3: A second tablet was visible to the hands-on team and displayed important times

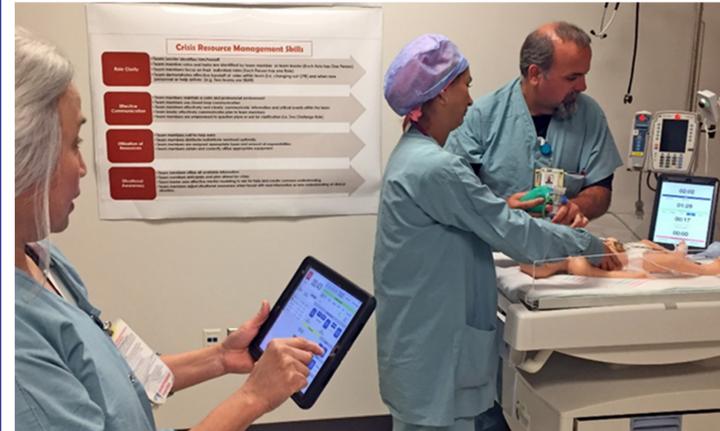


Fig. 2: The recorder documented interventions on one tablet and prompted the team when certain actions were needed

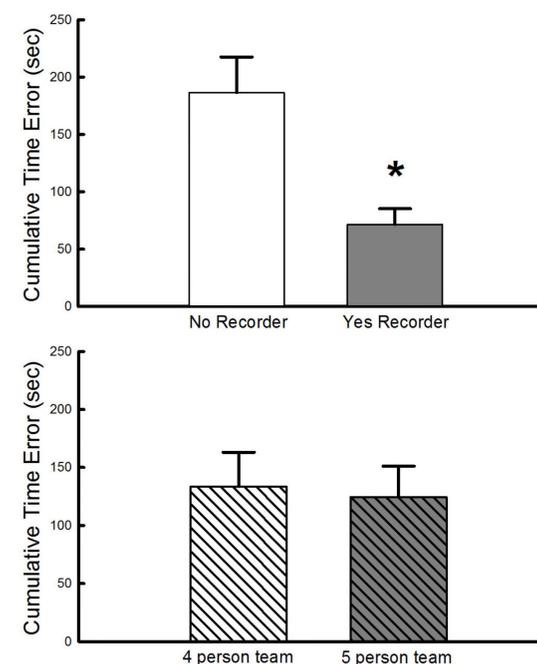


Fig. 4: Teams with a recorder have a lower time error compared to teams without a recorder. There is no difference between 4 and 5 person teams

RESULTS

- Interim results (n=32 teams) show:
 - Teams with a recorder have a significantly lower cumulative time error (71.6 ± 54.6 vs 186.5 ± 124.0 sec, mean \pm SD, $p=0.002$, fig. 4) and a faster time to first dose of IV epinephrine (7.7 ± 2.4 vs 9.3 ± 1.9 min, mean \pm SD, $p=0.042$) compared to teams without a recorder
 - There is no significant difference in cumulative time error (124.5 ± 106.8 vs 133.6 ± 118.2 sec, mean \pm SD, $p=0.794$, fig. 4) or time to first dose of IV epinephrine (7.8 ± 1.4 vs 9.2 ± 2.8 min, mean \pm SD, $p=0.074$) between teams with and without an additional team member

CONCLUSION

- Interim results suggest that the addition of a recorder will decrease cumulative time error and time to first dose of epinephrine while an additional hands-on team member will not

REFERENCES

1. Wyckoff, M., Aziz, K., Escobedo, M., Kapadia, V., Kattwinkel, J., Perlman, J., ... Zaichkin, J. (2015). Neonatal resuscitation: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care.(Report). *Circulation*, 132(18).
2. Roitsch, C. M., Patricia, K. E., Hagan, J. L., Arnold, J. L., & Sundgren, N. C. (2020). Tablet-Based Decision Support Tool Improves Performance of Neonatal Resuscitation: A Randomized Trial in Simulation. *Simulation in Healthcare*.