

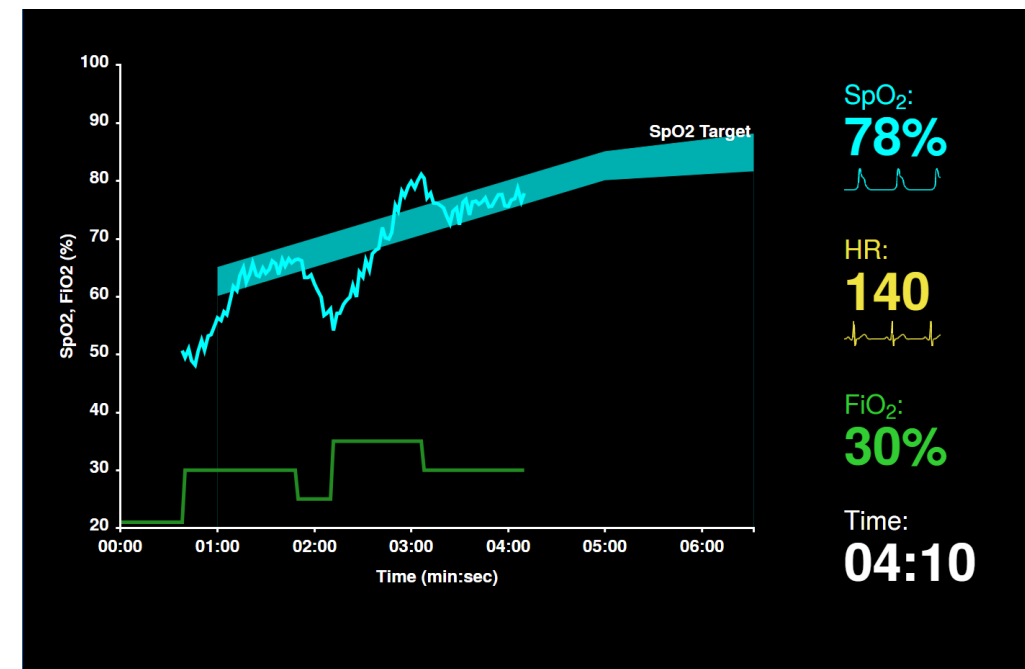
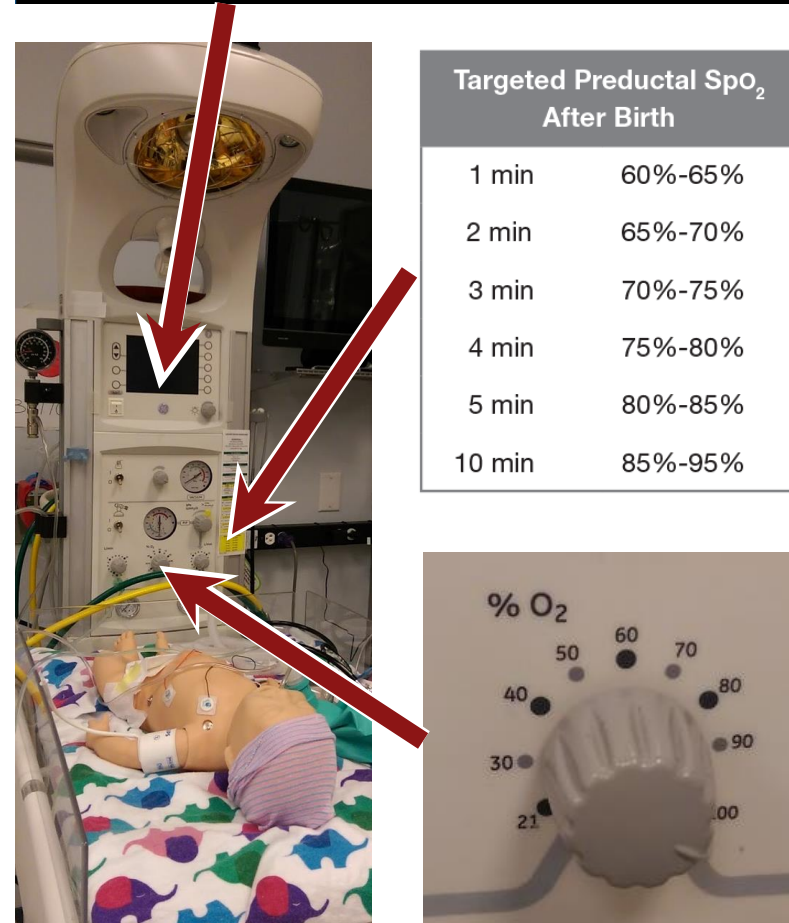
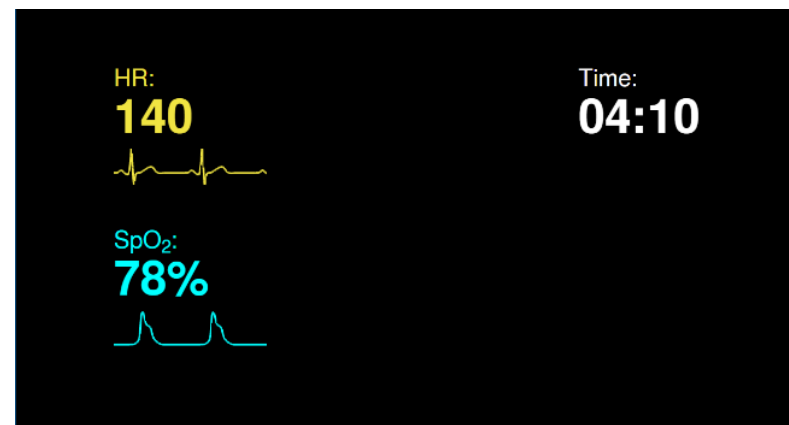
Optimizing oxygen saturation monitoring to aid decision-making during simulated neonatal resuscitation

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Background

- NRP protocol specifies SpO₂ monitoring for O₂ supplementation
- Visual SpO₂ targeting systems display SpO₂ curve against targets



Objectives

- Introduce visual SpO₂ targeting system
- Measure effects on decision-making and visual attention for team leaders

Methods

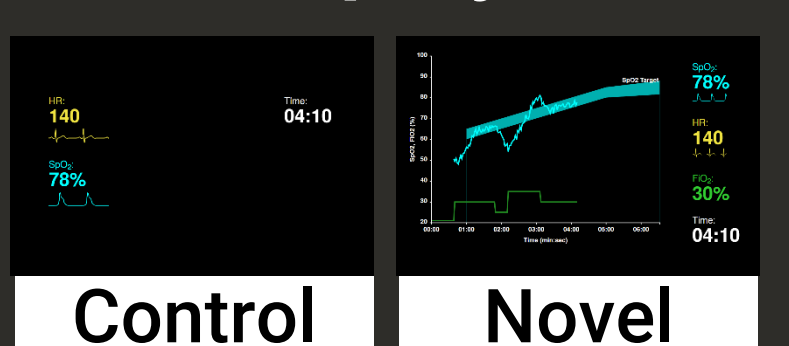
- Simulated 4 min resuscitation scenarios
- Subjects act as team leader

Scenario Types

Easy Hard



Displays



- Crossover study, random scenario orders
- Subjects wear eye gaze tracking glasses

Subjects

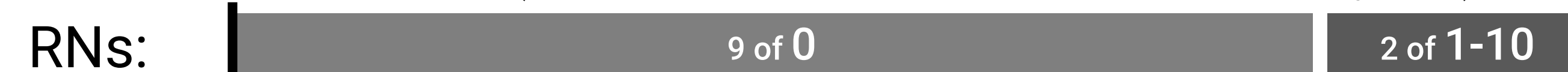
- 22 participants recruited with current NRP certifications
- Training (education):



- Total experience (# cumulative years NICU experience):



- Recent experience (# L&D resuscitations led in past year):



Performance

- Highest possible duration in NRP SpO₂ target range: 180 sec
- Highest measured duration in SpO₂ target range: Easy: 120 sec; Hard: 90 sec (optimal subject performances)
- Mean durations in SpO₂ target ranges by recent experience (0 L&D resuscitations vs. >0 L&D resuscitations led):



- Similar results when disaggregated by scenario type
- Similar results among other measures of experience
- Mean durations in SpO₂ target ranges by scenario type:

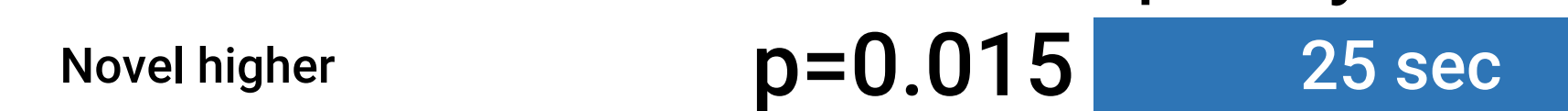


- Mean difference in durations in SpO₂ target ranges between control/novel displays, stratified by scenario type:



Effect of Experience

- Stratify recent experience & scenario type: novel display produces significant improvements only for easy scenario + >0 L&D resuscitations led in past year



- No significant differences otherwise

Visual Attention

- Mean difference in durations of visual attention between control/novel displays:



- Stratify recent experience & scenario type: >0 L&D and hard scenario show additional differences not seen in other groups:



Conclusions

- Training & cognitive workload affect visual attention patterns and use of displays
- Prior training crucial for effective use of novel display, particularly when users have high cognitive workload