

# Creation of a Reintubation Risk Assessment Tool and Huddle in the Neonatal Intensive Care Unit



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## BACKGROUND:

- Receiving continuous positive airway pressure (CPAP) or nasal intermittent positive pressure ventilation (NIPPV), rather than invasive mechanical ventilation, reduces the risk of chronic lung disease of prematurity.
- Our NICU team varied in the timing and choice of troubleshooting measures for newly extubated neonates.
- A reintubation risk score and huddle were created to standardize both identification of patients at risk for reintubation and use of measures to prevent extubation failure.
- We aimed to increase successful extubation of patients less than 34 weeks' gestation from 60% to 70% within two months.

## SMARTER OBJECTIVE:

- 1.S- Specific:** 10% increase in successful extubation rates in neonatal patients less than 34 weeks gestation
- 2.M - Measurable:** Real-time tracking of reintubation within 48 hours and compliance with reintubation risk scoring and huddle documentation
- 3.A - Achievable:** 10% decrease in reintubation rates.
- 4.R - Relevant:** Keeping neonates on non-invasive respiratory support instead of mechanical ventilation can reduce chronic lung disease of prematurity and hospital length of stay.
- 5.T - Time-bound:** A ten percent increase in extubation success should be seen within two months of implementation (goal of January 18<sup>th</sup>)
- 6. E - Evaluated:** Monthly multidisciplinary discussions to understand successes and opportunities for improvement. Weekly updates with RT care team on progress.
- R - Revised:** Try to sustain initial ~25% improvement in successful extubation rates over a 6-month period.

## IMPROVEMENT ACTION PLAN WITH ACTIONS TAKEN

- Respiratory Therapy (RT) practice team identified physical exam findings, respiratory support settings, and patient historical factors that foreshadow reintubations based on experience and literature review.
- High, moderate, and low scores were defined within a historical population, and the tool was internally validated in current NICU patients.
- Patients with high scores would receive more frequent RT assessments (every 2 hours) to optimize fit of CPAP/NIPPV.
- A huddle structure was created with NICU physicians to prompt earlier discussion of key drivers for extubation failure and identify potential interventions.
- RT workload was a balancing measure.

## RESULTS:

- Baseline data was collected for two months.
- From September 17<sup>th</sup> 2024 to November 17<sup>th</sup> 2024, there were five total extubations in the target population. Three were successful (60%).
- The reintubation risk score and huddle went live on November 18<sup>th</sup>.
- There have been eight extubations since the implementation; seven have been successful, one has been unsuccessful.
- The tool differentiated between high and low risk extremely low birth weight infants.
- It did not address immediate extubation failure.

## SCALE UP PLAN:

- We plan to continue to use and refine the tool and huddle structure to further reduce reintubations in patients less than 34 weeks postmenstrual age.
- We also plan to adapt the tool and huddle for neonatal patients of more mature gestational ages.

## SUSTAINABILITY PLAN:

- Built into Epic workflows to allow compliance monitoring
  - Risk score built into RT flowsheet in Epic
  - Documentation of huddle & any specific interventions by RT in Epic note
- Structured questions for huddle included in NICU physician and APP Teams resources
- Early success shared with NICU stakeholders.

## LESSONS LEARNED:

- Successful extubation rates improved ~25% following implementation of a reintubation risk score and huddle.
- Framing their experience in a systematic way that allows training of newer staff and more consistent communication with physicians around freshly extubated neonates was empowering for our NICU RT team members.

