



Reducing Unplanned Extubations in the NICU

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Background

- Endotracheal (ET) tube provides a stable airway for critically ill neonates on mechanical ventilation.
- Unplanned extubation (UE) is the unintended removal or dislodgement of the ET tube.
- UEs are a common occurrence in critical care patients of all ages, with incidences reported from **0.14 to 6.6 per 100 ventilator days**.
- Neonatal intensive care units (ICU) have a higher rate than those in pediatric or adult critical care units, likely due to anatomical differences in very small infants.
- Recent studies have set a target of **≤1.0 UEs per 100 ventilator days** as a reasonable goal for institutions working to improve their UE rates.
- Our institution's baseline UE rate across the children's hospital was above this benchmark at **2.5 per 100 ventilator days**.

Reducing Unplanned Extubations in a Level IV Neonatal Intensive Care Unit: The Elusive Benchmark

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Reducing Unplanned Extubations Across a Children's Hospital Using Quality Improvement Methods

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A Quality Improvement Approach to Reduce Unplanned Extubation in the NICU While Avoiding Sedation and Restraints

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Background

Aim is to decrease the unplanned extubation rate from **2.11** to **1.5** per 100 endotracheal tube device days within 6 months.



Unplanned extubation
committee
(Providers, Nursing, RT's)

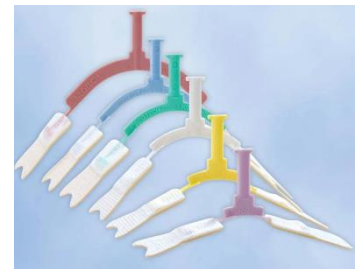
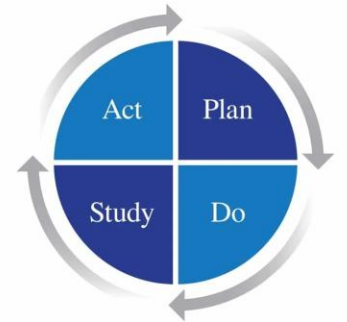
March 2023

Best practice
interventions

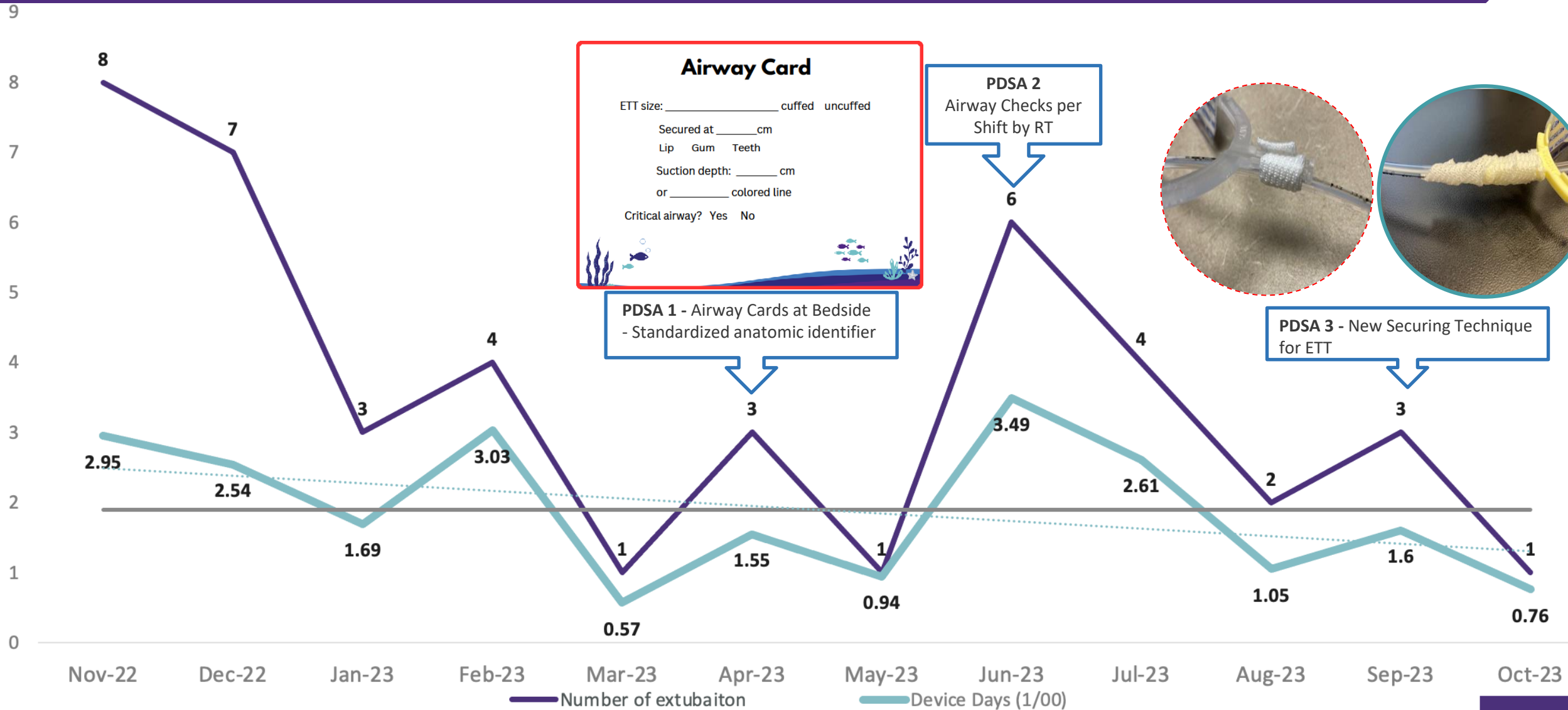


Methods

- Multiple plan-do-study-act cycles were performed to address key drivers.
- Important interventions focused on:
 - Airway cards were placed at the bedside of all patients (Staff education regarding 2 providers during bedside activities)
 - Standardized documentation with anatomic identifier “at the gum” for ETT placement
 - Implementation of an AM/PM shift change airway checks by the respiratory therapist
 - New securing measures of the ETT to the Neobar
- Process measures included immediate root cause analyses for UE events and using the endotracheal tube new securing technique.
- The primary outcome was the UE rate per 100 intubated days.



Results: Unplanned Extubations in the NICU



Airway Card

ETT size: _____ cuffed uncuffed

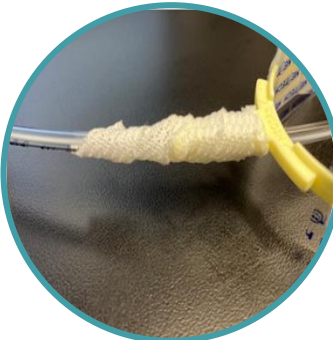
Secured at _____ cm

Lip Gum Teeth

Suction depth: _____ cm

or _____ colored line

Critical airway? Yes No



Conclusion

- **Safety Intelligence: PSN Reports**
- **Multidisciplinary Team Review of All Events:** monthly meetings to review the details of each UE and opportunities to improve practice.
- UE events have decreased from **29 to 19** in the last six months.
- Infants born less than <28 weeks gestational age on high-frequency ventilation had a higher incidence of UE. Specific interventions are needed to mitigate this risk.
- Future Directions: Merge with Timely Extubation Guidelines QI

