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Reducing Unplanned Extubations in the NICU Using a Risk Assessment Scoring Tool

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PURPOSE

This offering highlights efforts to utilize innovative measures to standardize interventions with the goal of decreasing the UE rate in an academic Magnet® facility's NICU.

BACKGROUND

- Unplanned extubations (UE) represent the fourth most common adverse event in neonatal intensive care units (NICUs) in the United States (Merkel, 2014)
- Associated UE risks:
 - Rapid cardiorespiratory deterioration
 - Airway trauma
 - Intraventricular hemorrhage (IVH)
 - Ventilator-associated pneumonia (VAP)
 - Increase in ventilator days/chronic lung disease
 - Potential infant death

TRIGGER

The average UE rate in a tertiary 40-bed level IV NICU exceeded a national pediatric safety collaborative benchmark rate of <2 UE per 100 ventilator days (Fiscal year 2018: July 1, 2017 to June 30, 2018)

EVIDENCE

Infants

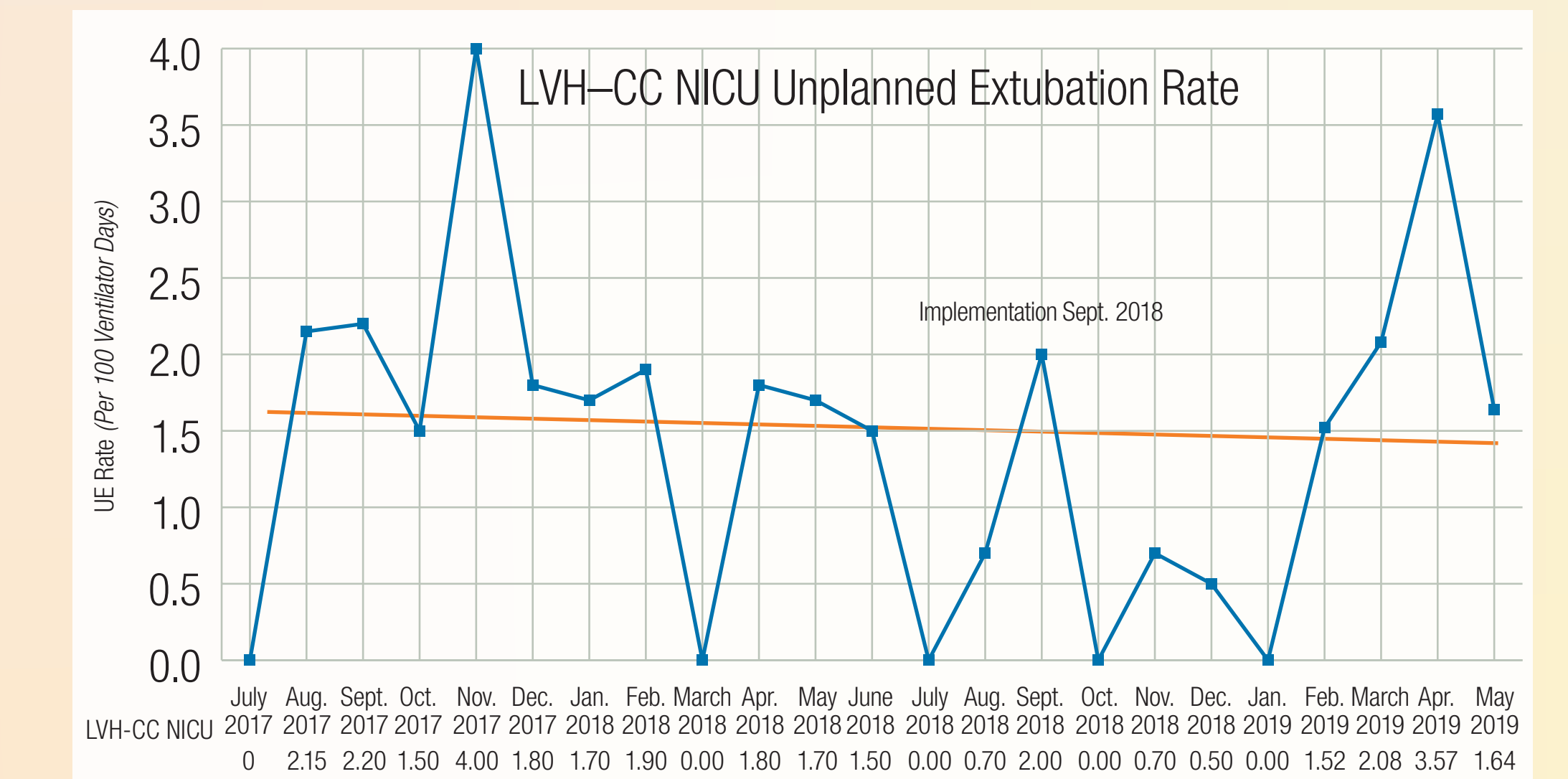
- >34 weeks gestational age (GA) have a higher incidence of UE (89%) (DaSilva et al., 2013)
- Weighing < 1,500 grams have a greater rate of UE (42%) compared to infants weighing >1,500 grams (23%) (DaSilva et al., 2013)
- With an alert card placed crib-side (indicating their risk level for an UE) had a decreased incidence of unexpected endotracheal tube (ETT) dislodgement (Merkel, 2014)

METHODS/INTERVENTIONS

- December 2017 – Interprofessional collaborative group formed to create an evidence-based UE risk assessment scoring (UE RAS) tool
 - Membership included: respiratory therapy, medicine, unit nursing leadership and clinical nursing
- February 2018 – work group evaluated current care practices for intubated infants
 - Noted neonates at risk for UE were identified with a green card crib-side
 - Barriers:
 - Actual level of risk was not noted
 - No nursing interventions were made based upon this assessment
 - Lack of standardized communication processes between nursing and respiratory therapy relative to identifying UE risk factors and implementing pragmatic tactics to < this risk
- May 2018 – Three color-coded cards placed crib-side to identify an infant's UE risk level (low, moderate, high)
 - Associated interventions correlate with the UE RAS tool's score
- September 2018 – UE RAS tool went live
- Compliance monitored daily
- UE RAS score is shared during provider rounding and nursing bedside shift report

RESULTS

- Pre-intervention, UE rates were noted at 2.02/100 ventilator days
- Post-intervention, the UE rate has decreased to 1/100 ventilator days
- This represents a 50% decrease from baseline



UNPLANNED RISK ASSESSMENT SCORING TOOL

RISK CATEGORY	SCORE
Anatomical Risk (Including but not limited to: Tracheoesophageal fistula (TEF), facial deformities, difficult airway)	6
EGA ≥ 34 weeks	3
Weight ≤ 1500 grams	2
Agitation (1-mild, 2-moderate, 3-severe)	1 / 2 / 3
Excessive oral secretions	1
Multiple procedures and/or transport (Including but not limited to: ECMO cannulation, administering surfactant, CXRs, line placement, chest tube placement)	1
Extubation Pathway/Protocol in place	1
Prone position	1
Frequent re-taping required	1
History of UE	1
TOTAL SCORE	

Score ≤2	Score 3-5	Score ≥6
General risk for UE – green card crib-side Green Zone Care: <ul style="list-style-type: none"> • RN/RN or RN/RRT for turns/repositioning • RN or RT to check ETT position for bedside procedures, including CXR 	Moderate risk for UE – yellow card crib-side Yellow Zone Care: <ul style="list-style-type: none"> • RN/RN or RN/RRT for turns/repositioning • RRT at bedside for ALL procedures, including CXR • Consider side-lying position • Consider sedation 	High risk for UE – red card crib-side; includes all high-frequency ventilator care Red Zone Care: <ul style="list-style-type: none"> • RN/RRT for turns/repositioning • RRT at bedside for ALL procedures, including CXR • Consider side-lying position; mittens • Consider sedation

ETT Size _____	Suction to: _____
Secured at: _____	SpO2 Goal: _____
Re-taped: _____	Care Time: _____
Sedation Ordered: Y / N	Card Updated: _____
Weaning Pathway: Y / N	Extubation Readiness Discussed: Y / N

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