

Vanessa Godbout RRT & Brenda Law MD, Royal Alexandra Hospital, Edmonton, Alberta

Aim

To reduce Unplanned Extubations in a Level 3 NICU.

Background Importance

Unplanned extubations (UEs) are preventable adverse events that may lead to short term consequences (e.g. cardiopulmonary collapse) and long-term sequelae (e.g. acquired airway injury, brain injury) for patients admitted to the Neonatal Intensive Care Unit (NICU). UE prevention care bundles have been demonstrated to reduce UE rates in NICUs; however, implementation is unit dependent.

Plan Development

A neonatologist / respiratory therapist pair was assembled in March 2022 to tackle rising UE rates. Contributing unit stressors included implementation of a new electronic health record, COVID-19 policies, and nursing shortages. Baseline UE rates were >3x the centerline for SPS network NICUs and likely were grossly underreported. Needed improved and accurate reporting of UE data.

Change plan

Improving data collection:

- Daily audit to ensure reporting of all UEs
- Structured post-event team debriefs
- Rapid UE case reviews and apparent cause analysis with reporting of findings unit-wide

Improving awareness across disciplines:

- Education campaign to raise awareness of UE prevention
- Prominent posting of last UE date
- Daily reporting on team huddle

Process changes:

- Optimize endotracheal tube (ETT) securement methods
- Enforce T2-T3 ETT tip position
- Standardize x-ray frequencies and reporting
- Trial of daily rounds ETT safety checklist for each intubated patient.

Example UE Prevention Bundle Elements



Securement optimization with Neobar and new taping method to increase tape surface area on ETT

Digital UE data collection form

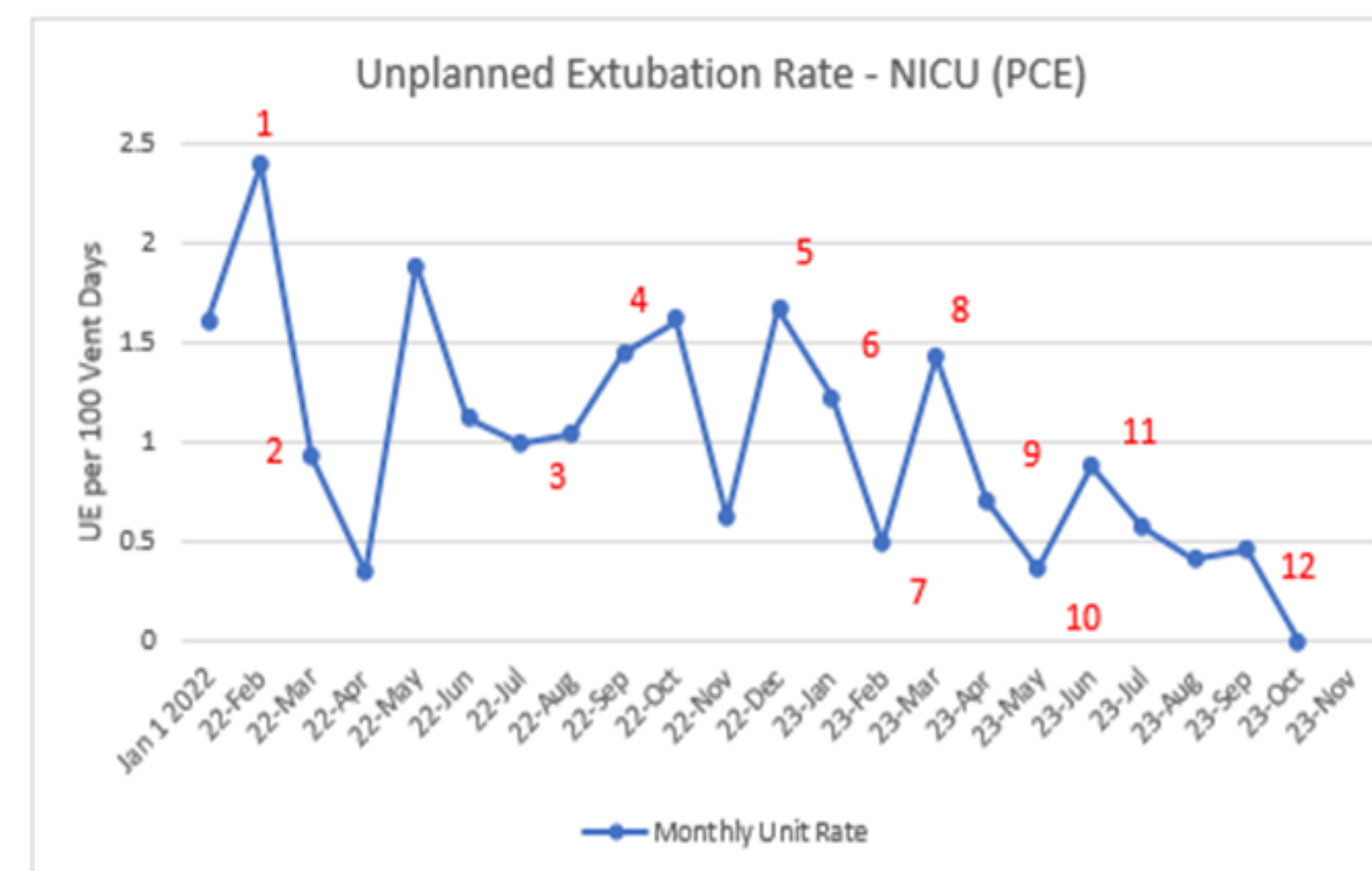
NICU X-ray Review

Reviewed by: Amanda Christine Paton, NP
X-ray ordered: Chest xray - 1 view
Date / Time of X-ray: 21/08/23 1550

| | |
|------------------------------|--|
| Indication(s): | <input checked="" type="checkbox"/> Assess Lung fields <input type="checkbox"/> Assess Abdomen <input checked="" type="checkbox"/> Post Line Insertion <input type="checkbox"/> Reassess Line Position <input type="checkbox"/> Other (specify): |
| ETT position: | <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Good position: Between T2-T3, mid-trachea <input type="checkbox"/> High: Above T2 <input type="checkbox"/> Low: Below T3 <input type="checkbox"/> Other (specify): |
| Central Line Positions: | <input type="checkbox"/> Not applicable <input type="checkbox"/> UVC: <input type="checkbox"/> UAC: <input checked="" type="checkbox"/> PICC: Right upper limb PICC going up into neck vessel <input type="checkbox"/> Other (specify): |
| Other lines and tubes: | <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> OG/NG: in stomach bubble <input type="checkbox"/> OJ/NI: <input type="checkbox"/> Other: |
| Impression / Interpretation: | Right lung has increased patchy opacities compared to previous x-ray, left lung remains patchy but improved from previous x-ray. |
| Actions Post X-ray: | <input type="checkbox"/> None <input type="checkbox"/> Other (specify): |

EHR x-ray review "sticker" puts accountability on team members to review xray immediately post and ensure ETT is at T2-T3

Results



| | |
|----|--|
| 1 | RT Morning Huddle UE Education and Pod Talks, UE tracker at central desk, UE Education disseminated to Stollery RT department |
| 2 | Gift card celebration for 14 days UE free |
| 3 | Connect Care Launched at PCE (EHR) |
| 4 | Brought in and trialed new types of tape |
| 5 | UE Education PowerPoint sent to unit, Weekly Intel on UE's, Rounds Checklist Trialed, Email emphasizing calling neo/on call neo if UE happens, not allowing NAIT RT Students to hold ETT or take out for k care. |
| 6 | Aim for T2/3 on CXR and Weekly CXR on intubated patients |
| 7 | Implementation of X-ray sticker (aka NICU x-ray Review) |
| 8 | Digitized ACA Audit form on RedCap, first case review and email to RT group only |
| 9 | New taping method trial begun, first Case Review email to entire unit, Neobar placement education rolled out |
| 10 | Mention of timely extubations, able to get monthly Run charts of UE data from SPS (now accurate reporting), Implementation of reshooting x-rays if not happy with ETT position |
| 11 | First posting of SPS UE Run char at Central Desk, official adoption of new taping method |
| 12 | Introduction of 4 Hands on Deck (4 handed care methodology; 1 person dedicated to ETT during all procedures) |

Next Steps

Ongoing maintenance of existing prevention practices.