

Bundle Implementation to Reduce Unplanned Extubations in the Neonatal Intensive Care Unit

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Problem Statement

- Unplanned extubations (UEs) are ranked as the 4th most common adverse event across NICUs with a range of complications that can lead to death.
- Compared to the benchmark of < 1 UE per 100 patient ventilator days, a random chart audit conducted in a 46-bed, level III NICU from January to March of 2023 yielded an average UE rate of 9.9 per 100 ventilator days.
- Secondary to inconsistent tracking, the UE rate is potentially higher.

Purpose /Goals

- The purpose of this quality improvement initiative was to implement a preventative extubation bundle and to evaluate its impact on lowering UEs in the NICU
- Process Goals**
 - 100% completion of Airway Alert Crib Card & Risk Assessment Screen (RAS) per shift
 - 100% completion of the UE Form & debriefing for each UE
- Outcome Goals**
 - 100% reduction of unplanned extubations in the NICU
 - UE rate below benchmark of <1 UE per 100 patient ventilator days
 - 100% UE reporting & Improved UE tracking

Methods

- Setting**
 - 46 bed, level III NICU in a community hospital with a busy labor and delivery service
- Population** : 22+ weeks gestation
- Intervention**
 - Creation of a multidisciplinary, evidence-based, preventative UE bundle
 - Risk Assessment Screen
 - Bedside Airway Alert Crib Card
 - UE Reporting Form
 - Post UE Multidisciplinary Debriefing
- Strategies**
 - Visual aids posted throughout NICU
 - Provision of compiled literature & site data
 - Periodic progress updates
 - Staff Recognition/Shout Outs
- Measures**
 - Weekly audits by project lead to track implementation progress
 - Completion of Bedside Airway Alert Crib Card & Risk Assessment Screen on all intubated patients
 - Completion of UE Reporting Form per UE
 - Completion of post UE Debriefing per UE



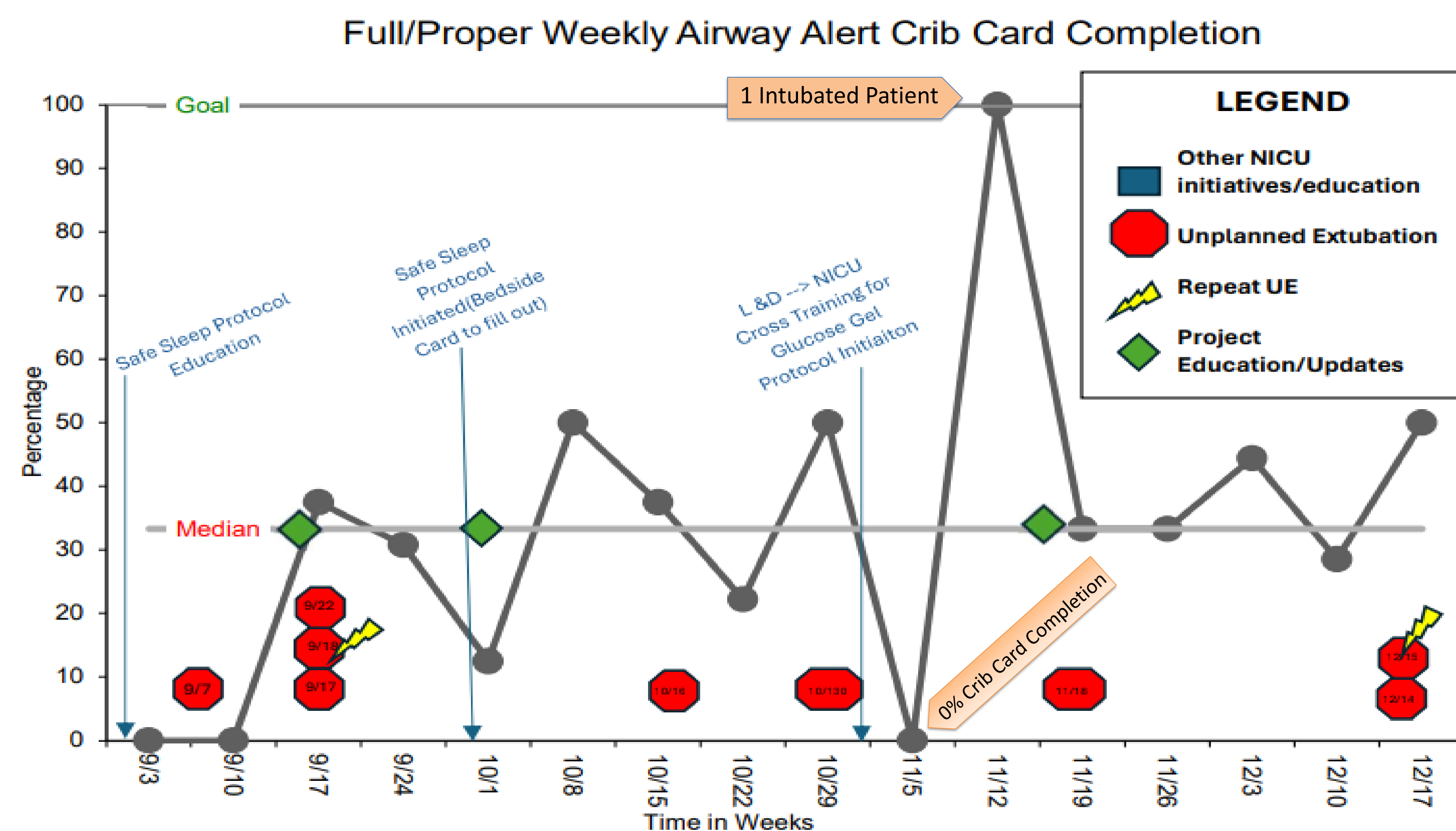
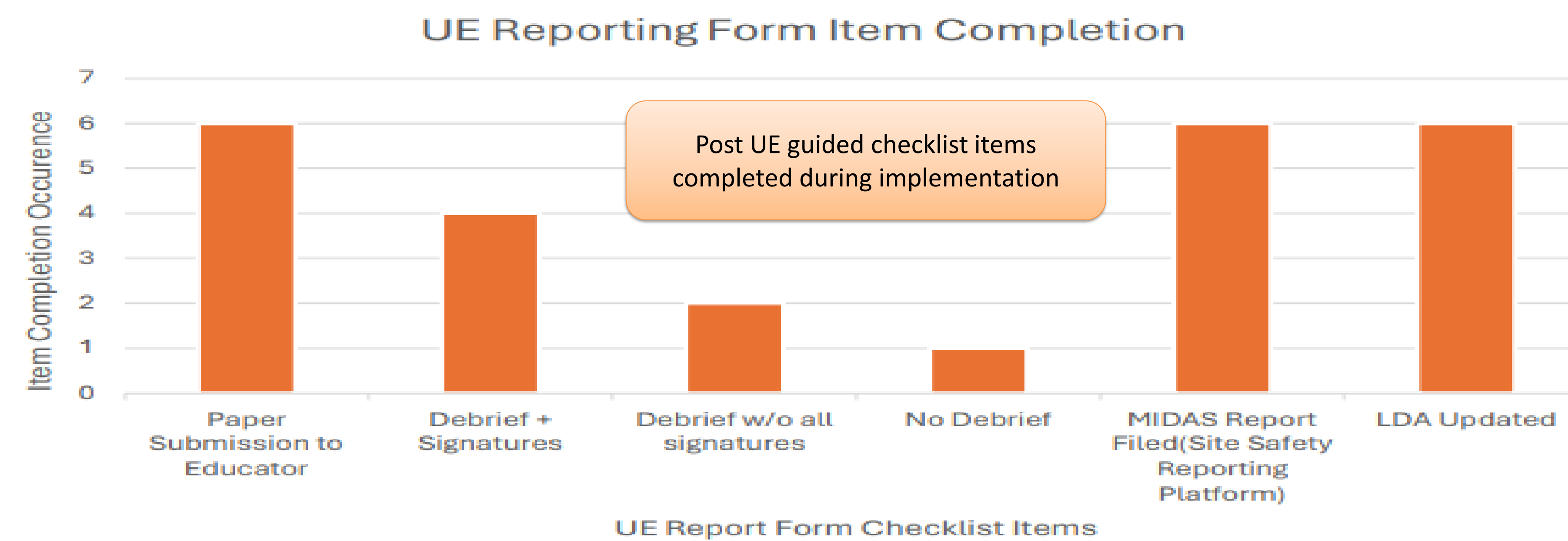
Results

Patient & Audit Data

Total Patients: 320
Intubated Infants: 43 (13%)
UE Report Forms
6 UE Report Forms submitted / 9 Total UEs
Airway Alert Crib Card & RAS Bedside Card
105 Bedside crib card audits conducted
Crib Card present at bedside 85% and 30% completely filled with 75% displaying current ETT data
RAS complete for the current shift 37.4% and 14.3% for the previous shift

9.9 UEs → 2.96 UEs PER 100 INTUBATED PATIENT DAYS

Figures



Discussion

- Project results mirror those seen in the literature (see references below).
- Bundle item components and subcomponents that were more consistently completed were the display of current ETT data, UE report submission via MIDAS and to the educator, and updating of the EMR Lines & Drains Avatar.
- Day shift staff were more adherent to the bedside bundle.
- When reviewing UE report forms, common themes identified were gestational ages < 31 weeks, weights <1kg, no use of sedation, prone position and skin to skin occurrence.
- Periodic project progress updates were conducted which included educational reinforcement of noted areas for improvement seen during bedside and UE report audits.
- Limitations**
 - Multiple QI project implemented simultaneously at the site.
 - Staffing shortages and high patient acuity.
- Goal of 100% reduction of UEs in the NICU was not reached but there was a marked improvement with the implementation of the preventative UE bundle.

Conclusion

- Contribution to the Profession**
Implementation of a UE bundle may have improved overall outcomes which is consistent with the available literature on this topic.
- Spread and Sustainability**
 - Official adoption/integration of the UE bundle into the unit's standardized clinical practice.
 - Continuation of audits.
- Implications for Practice**
While this QI implementation is specifically designed for the project site and as such is not generalizable to other NICU populations, it adds to the promising evidence on the topic and may serve as a framework for neonatal UE prevention initiatives at other institutions that can be further tailored to their specific needs.
- Future Recommendations**
 - Creation of a dedicated UE Task Force to maintain oversight.
 - Focused preventative interventions based on trends in UE Report findings.
 - Maintenance of central UE incidence board to maintain staff awareness.

References

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