Advocating for the Airway: Reducing Unplanned Extubations
Rebecca Ciaburri, RN, Performance Manager and Sarah Kandil, MD, Assistant Professor Pediatric Critical Care

**Project Description**

Using care standardization to help achieve harm reduction is a timely strategy in our current healthcare landscape. Our interdisciplinary team of nursing, physicians, and respiratory therapy detected a problem with increasing events related to unplanned extubations. Using bundles from a national collaborative, we were able to standardize how we care for intubated patients to reduce harm.

After identifying an increase in unplanned extubations, we started to explore potential root causes. Items such as changes in tape manufacturing were the initial focus. However, we uncovered a multifaceted problem. After joining a national pioneer cohort with other children's hospitals, we quickly discovered where our work needed to refocus.

We implemented standardized securement methods, timing of re-securement and identified high-risk situations where 2 caregivers needed to be present; with an identified airway role. We established reporting criteria to track all events, and utilized an interdisciplinary apparent cause analysis form for staff to complete after an event occurred. In addition, we utilized small tests of change and routinely observed for best practices.

**Innovation**

This initiative was innovative in the sense that we were able to standardize, cost reduce and incorporate engagement from multiple disciplines with no financial investment. We used tools and principles from other hospital acquired condition committees and behaviors from high-reliable organizations and were able to transpose them seamlessly into our Plan Do Study Act cycles.

**Results and Outcomes**

Our baseline unplanned extubation rates were measured over a six month period in 2015. We saw a combined children's hospital rate of 0.53/100 ventilator days that decreased to 0.27 post implementation to date. In our neonatal intensive care units, where we first identified the problem, we had a baseline rate of 0.49/100 ventilator days that has since decreased to 0.28 post implementation. In our pediatric intensive care unit, we have not yet had sustained improvements. However, our overall average ventilator days per patient in the pediatric ICU has decreased by approximately 40% due to heightened awareness of extubation readiness and a more standardized approach in the care we provide.

**Lessons Learned**

Unplanned extubations can be tied to increased risk of morbidity and mortality. By reducing these events, not only is harm prevented, but length of stay and ventilator days can be decreased. We have learned that by applying safety and quality improvement methodology to initiatives like this, we can increase our chances of success by way of using common cause analysis, apparent cause analysis or root cause analysis to better understand the problem and right fit the solution. It is also imperative to have engagement of senior leaders and leadership from all disciplines.

**Future Directions**

We have rolled out this work across our children’s hospital in all areas. Our future direction will consist of optimizing our bundle elements, creating standard extubation readiness criteria that will be discussed on each shift, designing radiologic protocols, building order sets for critical airways, identifying more ways to have high risk patients flagged easily in our electronic health record. We will continue to further standardize our care and interventions while preventing unplanned extubations.