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Learning From the Past: A Novel and Sustainable Initiative to Reducing Unplanned Extubations in a Level IV Neonatal Intensive Care Unit

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Learning from the Past: A Novel Approach to Reducing Unplanned Extubations in the Neonatal ICU

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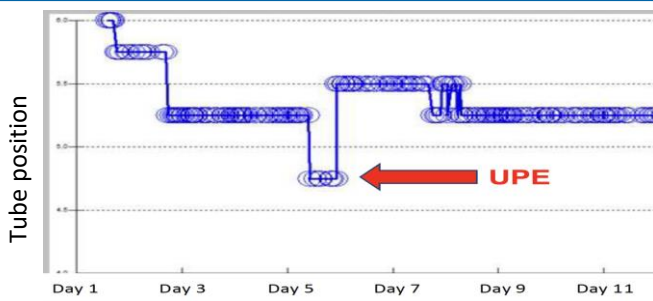
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Problem

Unplanned Extubations (UPE) in the NICU are the 4th most common adverse event and can lead to airway trauma, intraventricular hemorrhage and cardiovascular collapse and occur most frequently in neonates <1.5kg who can be very sensitive to changes in ETT position.

We identified situations where knowledge of ETT history could guide future management:

- Repositioning tube inappropriately based on CXR (pictured below : tube retracted multiple times resulting in UPE)
- Prophylactic advancement following growth/weight gain



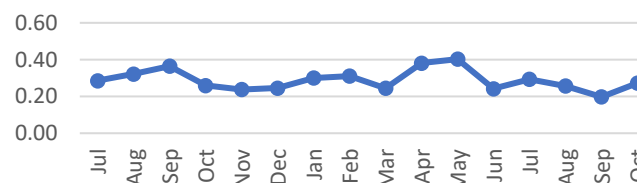
SMART Aim

Decrease unplanned extubations in a Level IV NICU to <1 per 100 ventilator days by the end of 2020.

Interventions

- Neonatal Fellow started distributing printed graphs (process measure) to bedside of intubated neonates <1.5kg
- Educated staff using just-in-time training and written instructions for printing graphs via email
 - Process compliance 0% unless fellow champion available to post graphs
- Developed web-based application to automatically abstract data from EMR; print graphs with only 2 clicks.
- Enlisted unit secretaries to print and distribute graphs: Process compliance consistently 100%

Balancing Measure: Re-tapes per vent day



Results

- In combination with previous PDSA cycles, the rate of UPEs decreased from 1.0 in 2019 to 0.7 in 2020, per 100 vent days. There were 19 fewer UPEs in 2020 including 2 months with zero.
- Intervention encouraged increased ETT adjustments in some situations and discouraged adjustments in others.
- Team members reported high value with accessible bedside information. In April 2021, intervention was expanded to neonates of all birthweights.

Challenges

- Inconsistency in documentation made balancing measures difficult to track.
- Received Informal positive feedback, but it was difficult to identify if an adverse event was avoided.

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