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

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

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<table>
<thead>
<tr>
<th>Problem</th>
<th>SMART Aim</th>
<th>Results</th>
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<tbody>
<tr>
<td>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 &lt;1.5kg who can be very sensitive to changes in ETT position.</td>
<td>Decrease unplanned extubations in a Level IV NICU to &lt;1 per 100 ventilator days by the end of 2020.</td>
<td>• 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.</td>
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<td>We identified situations where knowledge of ETT history could guide future management:</td>
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<td>• Intervention encouraged increased ETT adjustments in some situations and discouraged adjustments in others.</td>
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<td>• Repositioning tube inappropriately based on CXR (pictured below: tube retracted multiple times resulting in UPE)</td>
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<td>• Team members reported high value with accessible bedside information. In April 2021, intervention was expanded to neonates of all birthweights.</td>
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<td>• Prophylactic advancement following growth/weight gain</td>
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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%

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.