Decreasing Unplanned Extubations by Taping Technique & Creating a Culture of Safety

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Decreasing Unplanned Extubations by Taping Technique & Creating a Culture of Safety

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Eugenia K Pallotto MD, MSCE
Disclosures

We describe an ETT taping technique that differs from the manufacturers recommendations

Presented at PAS 2019

No other disclosures
Background: Unplanned Extubations

- Defined as dislodgement or removal of the endotracheal tube at a time that was not specifically intended or ordered by the physician or practitioner
- It is a common problem in Neonatal ICUs
- It places patients at increased risk of adverse events

Reducing Unplanned Extubations in the NICU; Lori Merkel, Kimberly Beers, Mary M. Lewis, Joy Stauffer, Dennis J. Mujsce, Mitchell J. Kresch; Pediatrics 2014
Background: NICU

• Level IV Neonatal ICU, 84 beds
• Over 300 RN’s, 80 RT’s, 60 NNP’s
• 32 Neonatologists, 7 Fellows
• Over 1000 admissions per year
• Average ventilator days per month ~330-350
• Average UPE rate 1.6-2.0 events per 100 ventilator days
SMART Aim

Decrease the UPE rate in our Level IV NICU to less than 1.0 event per 100 ventilator days by December 2018
Root Cause Analysis

Pareto Chart for UPE
2018 (n=44)
Debriefing after Leadership Rounds
Driver Diagram

SMART Aim
Decrease the UPE rate to less than 1.0 event per 100 vent days by December 2018

Key Drivers
- Standardize ETT Securing Method
- Multidisciplinary Care Coordination
- Increase Communication, Awareness, and Spreading Safety Culture
Taping Technique
New Taping Technique

Where taping usually ends

Spiral tape past top of Device stem

Spiral tape back down ETT
Team Education

- An educational module was created
- Consisting of a video followed by a quiz
- It highlighted the new taping technique
- Defined team member roles at bedside
- Reinforced device use recommendations
Educational Module

n = 536 people
# Bedside Checklist

## Unplanned Extubation Prevention

**ETT Discussion**
- Did the team assess extubation readiness?
  - Yes
  - No
  - N/A
- Timely Blood Gas Parameters Discussed?
  - Yes
  - No
- Is there a history of previous unplanned extubation? (If history of UE, patient is high risk)
  - Yes
  - No
  - Date: ____________________
  - Cause: ____________________

**Assessment**
- Is the tape clean, dry, and secure?
  - Yes
  - No
- Does the RN/RT have any concerns about the integrity of the tape?
  - Yes
  - No
- Do you know the measurement of the ETT? (ETT card present and accurate at bedside)
  - Yes
  - No
- Are secretions managed?
  - Yes
  - No

## Sedation / Agitation

- No Sedation
- Agitated
- Comfortable

## High Risk Procedures

- 2 healthcare providers (1 person dedicated to monitor the tube) were used for any high risk procedure including:
  - Securing, repositioning, ETT manipulation
  - Repositioning patient
  - X-rays
  - Bedside invasive procedures (i.e. central line placement, bedside surgery)
  - Kangaroo care transfer
  - In-house transports
  - Date: ____________________
  - Persons Present During Discussion:
    - RN
    - RT
    - Physician
    - NNP
    - Other:

- Each section assessed on your shift:
  - Date: ____________________
  - Shift: 7a
  - Bedspot: __________
**SMART Aim**
Decrease the UPE rate to less than 1.0 event per 100 vent days by December 2018

**Key Drivers**
- Standardize ETT Securing Method
- Multidisciplinary Care Coordination
- Increase Communication, Awareness, and Spreading Safety Culture

**Interventions**
- New Taping Technique
- Creating ETT Taping Video
- ETT Bedside Checklist
- Multidisciplinary ACA after every UPE event
- ETT location documentation
- “No UPE November”
“No UPE November”

• Month long educational program
• Weekly educational emails
• Aimed at reinforcing new practices
• Increased awareness
• Filled in gaps in education
• Reinforced every disciplines role in preventing UPEs
Compliance with Process Measures

Process Measure % Compliance

<table>
<thead>
<tr>
<th>Process Measure</th>
<th>September</th>
<th>October</th>
<th>November</th>
</tr>
</thead>
<tbody>
<tr>
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<td>56</td>
<td>90</td>
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<tr>
<td>Checklist Available (Night Shift)</td>
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<td>60</td>
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<td>Checklist Utilized (Day Shift)</td>
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<td>Checklist Utilized (Night Shift)</td>
<td>43</td>
<td>31</td>
<td>70</td>
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<tr>
<td>X-ray Holding</td>
<td>48</td>
<td>50</td>
<td>78</td>
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<tr>
<td>X-ray Landmark Documented</td>
<td>79</td>
<td>88</td>
<td>92</td>
</tr>
</tbody>
</table>
Decreased UPE Rate

Unplanned Extubation Rate

Rate per 100 Ventilator Days

Unplanned Extubation Rate Chart:
- Decrease in UPE rate from January 2015 to June 2019
- Lower control limit (LCL) and upper control limit (UCL)
- Specific dates and rates highlighted:
  - January 2015: 1.68
  - November 2015: 0.83
  - Other notable rates and dates indicated

Factors listed:
- Huddle board & Neobar Education
- Bedside Audits
- NO UPE November
- Taping Modification

Legend:
- UCL: Upper control limit
- CL: Center line
- NO UPE: No unplanned extubation

Graph shows trend and improvements over time.
Balancing Measures
Driving Culture Change

Two Prong Approach

Technical Skills
• What
• How

Adaptive Skills
• Who
• Why
Change in Culture
Change in Culture
Summary

• Unplanned Extubations should be a never event
• Engaging all members of the health care team to own the solutions is critical to success
• “No UPE November” promoted increased awareness and team ownership of the UPE goal
• Ensuring access to resources, securement process improvement and encouraging a culture of safety we successfully lowered our UPE rate
Future Directions

• Sustain and strive to achieve lower UPE rates
• Ultimate goal of UPE rate less than 0.5 per 100 ventilator days
• Setting up debriefing tool using QR code