IMPLEMENTING A MULTIDISCIPLINARY QUALITY IMPROVEMENT INITIATIVE TO REDUCE INAPPROPRIATE TREATMENT OF VENTILATOR ASSOCIATED TRACHEITIS IN THE NICU


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The authors have no potential conflicts of interest to disclose

Background

• Respiratory tract infections are the most common hospital acquired infection in the intensive care unit (ICU). Ventilator associated tracheitis (VAT) is a respiratory condition that lies on the continuum between respiratory tract colonization and ventilator associated pneumonia. 1,2

• Currently, there are not published universal guidelines to aid in the diagnosis and treatment of Ventilator Associated Tracheitis (VAT) in the neonatal intensive care unit (NICU) 3.

• Inconsistent diagnosis and management of VAT in neonates can result in non-indicated, prolonged (>7 days) and broad spectrum antibiotic use, increasing risk for acquisition of multi-drug resistant organisms 4.

• Incorporating changes in secretions and Gram stain results into decision-making may reduce inappropriate treatment

Methodology

VAT diagnosis and treatment algorithm created for intubated patients in the NICU (Fig 2)

Education provided for medical staff (MD, RN, NP, PA, RT)

Review of electronic medical records of intubated patients with tracheal cultures

Pre-Intervention (Mar 17-Feb 18) 33 Charts (Randomly selected)

Post-Intervention (Aug 18-Feb 19) 22 Charts (All available)

Balancing Measures

Outcome measures

Prolonged (>7 days) exposure to antibiotics

<25 PMN on ET Tube Gram Stain

Results

80%
72%
64%
56%
48%
40%
32%
24%
16%
8%
0%

Figure 3. Pre & Post Intervention Data

<table>
<thead>
<tr>
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<th>Pre-Intervention</th>
<th>Post-Intervention</th>
<th>Difference (%)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients Treated with &lt;25 PMN</td>
<td>26</td>
<td>7</td>
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<td>Patients treated with &gt;7 days Antibiotics</td>
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<td>2</td>
<td>32.42</td>
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<th>Pre-Intervention (N=33)</th>
<th>Post-Intervention (N=22)</th>
<th>Difference (%)</th>
<th>P Value</th>
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<tr>
<td>VAE/NICU Vent Days</td>
<td>21</td>
<td>8</td>
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Conclusions & Future Directions

• Implementing a multidisciplinary QI initiative to optimize diagnosis and treatment of VAT in the NICU decreased the percent of patients treated inappropriately for VAT

• Continued monitoring and further tests of change will determine if improvement is sustainable

• Inclusion of patients with tracheostomies would expand benefits of intervention to this vulnerable subset of patients

References


Figure 1. Process map detailing current standard work prior to initiation of new VAT algorithm

Figure 2. VAT Diagnosis & Treatment Algorithm