Implementing Strategies to Reduce Central Line-Associated Blood Stream Infections on an Inpatient Pediatric Unit

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Implementing Strategies to Reduce Central Line-Associated Blood Stream Infections  
Last Updated: 9/19/2018  
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Team Members: Barbara Bush Nurses, Nicole Manchester, Melanie Lord and Jessica Howe

Problem/Impact Statement:

Every Central Line-associated Bloodstream Infections (CLABSI) lead to poor outcomes and increased mortality for thousands of patients each year. It is estimated CLABSI's cost the U.S. healthcare system billions each year. With diligent oversight and the use of current evidenced based practices, CLABSIs are preventable. The Barbara Bush Children's Hospital's (BBCH) inpatient unit at Maine Medical Center (MMC) frequently admits and cares for pediatric oncology and pulmonology cystic fibrosis patients, who all have central lines. These high risk patients often refuse infection prevention interventions and would benefit tremendously from improvement in CLABSI prevention practices. https://www.cdc.gov/hai/bsi/bsi.html

Scope:

In Scope: MMC's Barbara Bush inpatient unit patients who have a central line
Out of Scope: All other MMC patients with or without central lines

Goals/Objectives:

• 100% of the time patients with a central line will bathe daily- either with Chlorhexidine (CHG) or soap and water
• 100% of the time, all patients with a central line will be educated about the importance of daily bathing and daily oral care to prevent infection
• Reduce the number of central line infections

Baseline Metrics/Current State:

<table>
<thead>
<tr>
<th>Plan</th>
<th>Study</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily bathing by Central Line Patients</td>
<td>Central Line-Associated BSI, BBCH, Pediatrics</td>
<td>Daily bathing by central line patients</td>
</tr>
<tr>
<td><img src="image1" alt="Daily bathing by Central Line Patients" /></td>
<td><img src="image2" alt="Central Line-Associated BSI, BBCH, Pediatrics" /></td>
<td><img src="image3" alt="Daily bathing by central line patients" /></td>
</tr>
</tbody>
</table>

Research shows that bacteria burden on the skin greatly increases a patient's risk for CLABSI. Bacteria burden is easily decreased by daily bathing.

Root Cause Analysis:

![Root Cause: patient/family refusing](image5)

Root Cause: patient/family refusing

Root Cause Analysis:

![Root Cause Analysis](image6)

Root Cause Analysis:

Cost per CLABSI = $85,624

Soft cost of CLABSI to MMC in 2017= $229,070

Soft cost of CLABSI to MMC in 2017= $229,070

Soft savings= $91,628

Countermeasures:

<table>
<thead>
<tr>
<th>Action</th>
<th>Owner</th>
<th>Due Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instituted KPI to have patients bathe daily</td>
<td>Sheryann St. Pierre</td>
<td>10/19/17</td>
<td>Completed</td>
</tr>
<tr>
<td>Oncologists, residents, and nursing asked to discuss daily bathing during bedside rounds each day</td>
<td>Sheryann St. Pierre</td>
<td>10/20/17</td>
<td>Completed</td>
</tr>
<tr>
<td>Email sent out to staff asking the CHG wipes be placed in each room for all patients admitted/receiving central line</td>
<td>Sheryann St. Pierre</td>
<td>11/2/17</td>
<td>Completed</td>
</tr>
<tr>
<td>CHG wipes approved for use-product ordered via VAC nurse</td>
<td>Sheryann St. Pierre</td>
<td>11/20/17</td>
<td>Completed</td>
</tr>
<tr>
<td>CHG wipes put into stock, RN's education started</td>
<td>Sheryann St. Pierre</td>
<td>1/8/18</td>
<td>Completed</td>
</tr>
<tr>
<td>SBAR with scripting for importance of bathing to be used during rounds disseminated to Interprofessional teams on BBCH</td>
<td>Sheryann St. Pierre</td>
<td>1/16/18</td>
<td>Completed</td>
</tr>
<tr>
<td>Central line rounds initiated by leadership to check on the patients with central lines and make sure they are bathing and using CHG wipes</td>
<td>Sheryann St. Pierre</td>
<td>4/13/18</td>
<td>Completed</td>
</tr>
<tr>
<td>Instituted KPI to educate patients on the importance of daily bathing and daily oral care to prevent infection</td>
<td>Sheryann St. Pierre</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Steps:

Continue and improve upon central line leadership rounds
Change to only using CHG wipes after a daily soap and water bath, as many kids are not using the foam soap correctly
Model for other departments/hospitals to follow

Outcomes:

3 CLABSI at MMC in FY 2018 (2 mucosal, 1 non-mucosal)
Soft savings= $91,628