New Weapons in the Fight against CRBSI

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Disclosures

- I am an employee of RyMed Technologies, LLC
- I own stock in Teleflex, Inc.

There will be no discussion of off label use in this presentation.

Objectives

- Understand the current rates of CRBSI in the US Acute care hospitals
- Discuss current common strategies for reducing CRBSI
- Understand new technologies and methods to reduce risk of CRBSI

Is CRBSI Still a Problem?

- Has there been a drop or an increase in CRBSI Nationally?
- The CDC estimates that 4 percent of all hospital admissions result in a healthcare associated infection. How many infections is that?
- What is the cost to the hospital?

POLL QUESTION

Is CRBSI Still a Problem?

- Although a 46% decrease in CLABSI has occurred in hospitals across the U.S. from 2008-2013, an estimated 30,100 central line-associated bloodstream infections (CLABSI) still occur in intensive care units and wards of U.S. acute care facilities each year.
- The CDC estimates that 4 percent of all hospital admissions result in a healthcare associated infection (HAI), culminating in approximately 721,800 infections and 99,000 deaths each year as well as $28-$33 billion in excess costs
Is CRBSI Still a Problem?

New York By the Numbers

- 2014 Reported CLABSIs in ICUs
  - 157 Hospitals reported a total of 546 infections and 599,104 line days
  - 0.9/1,000 line days
- 2014 Voluntary Reporting of all units
  - 196 Hospitals reported a total of 348 infections and 350,393 line days
  - 0.99/1,000 line days
- Rate of Improvement has slowed over last 2 years

What’s Bugging Us?

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Number of Isolates</th>
<th>Percent of Infections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterococci (VRE)</td>
<td>100</td>
<td>22.1</td>
</tr>
<tr>
<td>Yeasts</td>
<td>84</td>
<td>18.5</td>
</tr>
<tr>
<td>Coagulase negative Staphylococci</td>
<td>76</td>
<td>16.8</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>56</td>
<td>12.4</td>
</tr>
<tr>
<td>(MRSA)</td>
<td>25</td>
<td>5.7</td>
</tr>
<tr>
<td>(MSSA)</td>
<td>28</td>
<td>6.2</td>
</tr>
<tr>
<td>Klebsiella spp.</td>
<td>39</td>
<td>8.6</td>
</tr>
<tr>
<td>(CRE-Klebsiella)</td>
<td>6</td>
<td>1.3</td>
</tr>
<tr>
<td>(Cephr-Klebsiella)</td>
<td>11</td>
<td>2.4</td>
</tr>
<tr>
<td>Acinetobacter spp.</td>
<td>26</td>
<td>5.7</td>
</tr>
<tr>
<td>(MDR-Acinetobacter)</td>
<td>10</td>
<td>2.4</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>22</td>
<td>4.9</td>
</tr>
<tr>
<td>Pseudomonas spp.</td>
<td>22</td>
<td>4.9</td>
</tr>
<tr>
<td>Enterobacter spp.</td>
<td>19</td>
<td>4.2</td>
</tr>
<tr>
<td>Serratia spp.</td>
<td>12</td>
<td>2.6</td>
</tr>
<tr>
<td>Streptococci</td>
<td>10</td>
<td>2.2</td>
</tr>
<tr>
<td>Proteus spp.</td>
<td>7</td>
<td>1.5</td>
</tr>
<tr>
<td>Other</td>
<td>23</td>
<td>5.1</td>
</tr>
</tbody>
</table>

What are we are doing now?

New Approaches

- Resurgence of Midline Catheters
- New Insertion Techniques
- Power Injectable
- Alternatives to PICCs and CVC
- Increased use of PIVs
- Clinically Indicated Change
- Impregnated PICCs and Midlines

POLL QUESTION
New Approaches

- Alcohol Caps
  - Expensive
  - Proven to be effective with certain connectors
  - Every line, all accesses
  - Does not eliminate swabbing
  - Compliance

Disinfection Costs

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Method</th>
<th>Approx. Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic Alcohol Pad</td>
<td>70% IPA wipe</td>
<td>~$0.01</td>
</tr>
<tr>
<td>PDI Prevantics</td>
<td>3.15% CHG/70% IPA  wipe</td>
<td>$0.10</td>
</tr>
<tr>
<td>3M Curos</td>
<td>70% IPA Cap</td>
<td>$0.20</td>
</tr>
<tr>
<td>Hospira EffectIV</td>
<td>70% IPA Scrub</td>
<td>$0.25</td>
</tr>
<tr>
<td>ICU Medical Swab Cap</td>
<td>70% IPA Cap</td>
<td>$0.20</td>
</tr>
<tr>
<td>Bard Site Scrub</td>
<td>70% IPA Scrub</td>
<td>$0.25</td>
</tr>
<tr>
<td>Merit Medical Dual Cap</td>
<td>70% IPA Cap</td>
<td>$0.50</td>
</tr>
</tbody>
</table>

Is Chlorhexidine the key?

- Skin
  - Binds to protein in human tissue
  - Released over time with limited bodily absorption (can last 48h)
  - Daily Bathing in ICU reduces infection risk
  - Not affected by presence of fluids

- Medical Devices
  - Impregnated into dental implants, vascular catheters, dressings
  - Needleless connectors
  - Kills organisms, prevents biofilm formation and colonization

Have you looked at your Needleless Connector?

Chlorhexidine and Silver Impregnated Septum

Silver Ions in Fluid Pathway and Base
7 Day Effectiveness

- Connector $0.80
- Alcohol Cap $0.25
- 96 hr. connector change
  - Daily Spend $2.00
  - Annual Spend $117,000.00

Chlorhexidine & Silver NC
- Connector $2.00
- Alcohol wipe $0.01
- 7 Day connector change
  - Daily Spend $0.65
  - Annual Cost $21,776.33
  - 43% COST SAVINGS

*Average 2 Lumens/pt., *Avg. 8 accesses/day

Does it Work?

- “After switching to a neutral displacement needleless connector in March of 2016, our facility noticed an increase in the number of CLABSI. Review and investigation of these infections resulted in the conversion to the [Chlorhexidine and Silver neutral]needleless connectors. Once the conversion was complete, our facility went 7 months without a CLABSI.”

-- Shelly Dooley, BSN, RN, CIC
Infection Preventionist
Southeast Hospital, Cape Girardeau, MO

Does it Work?

- 30 Bed LTAC
- Avg. 533 Catheter Days/Month
- CLABSI rates dropped 40% after eliminating the use of alcohol caps, using the chlorhexidine and silver neutral NC and focus on nursing education (swabbing- w IPA pad).
- Cost savings of 25% by eliminating alcohol cap use and focusing on nursing education (swabbing- w IPA pad).
- A decrease of 47% in lost revenue (CRBSI costs and materials savings) resulted from discontinuing the use of the alcohol caps.

What does Dr. Jarvis Say?

- Smooth Septum Surface
- Tight Seal between Septum and Housing
- Straight Fluid Pathway
- Little to No Deadspace
- Does Not Require a Clamping Sequence
- Transparent
- Luer Access with little or No blood reflux
- Can be flushed with NS only

Is Zero Possible?

Call To Action

- Set Your Goal
- Take Inventory
  - Processes
  - Products
  - People
- Gap Analysis
- Create a Team
- Lead Your Team to Victory over CRBSI

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