

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?

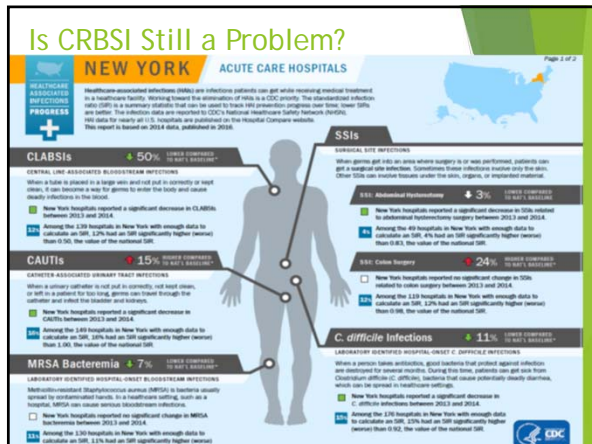


POLL QUESTION

Is CRBSI Still a Problem?

- ▶ Although a 46% decrease in CLABSIs has occurred in hospitals across the U.S. from 2008-2013, an estimated 30,100 central line-associated bloodstream infections (CLABSIs) 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





- ### 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?

Microorganism	Number of Isolates	Percent of Infections
Enterococci	100	22.1
(VRE)	(56)	(12.4)
Yeast	84	18.5
Coagulase negative Staphylococci	76	16.8
<i>Staphylococcus aureus</i>	56	12.4
(MRSA)	(26)	(5.7)
(MSSA)	(28)	(6.2)
<i>Klebsiella</i> spp.	39	8.6
(CRE-Klebsiella)	(6)	(1.3)
(CephR-Klebsiella)	(11)	(2.4)
<i>Acinetobacter</i> spp.	26	5.7
(MDR-Acinetobacter)	(16)	(3.5)
<i>Escherichia coli</i>	22	4.9
<i>Pseudomonas</i> spp.	22	4.9
<i>Enterobacter</i> spp.	19	4.2
<i>Serratia</i> spp.	12	2.6
Streptococci	10	2.2
<i>Proteus</i> spp.	7	1.5
Other	23	5.1



POLL QUESTION

- ### 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
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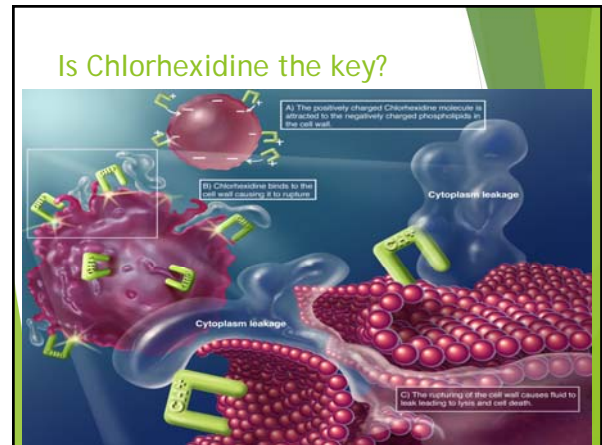


New Approaches

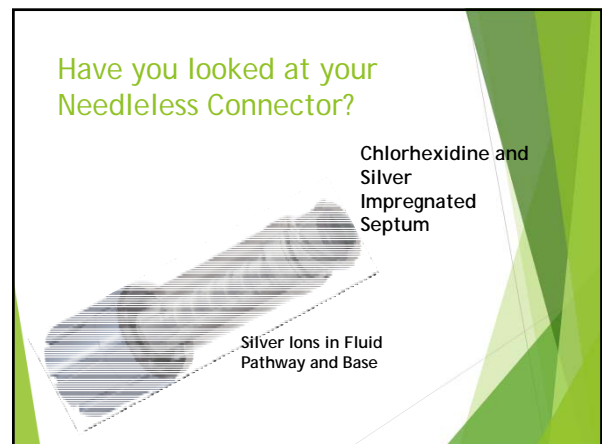
- ▶ Alcohol Caps
 - ▶ Expensive
 - ▶ Proven to be effective with certain connectors
 - ▶ Every line, all accesses
 - ▶ Does not eliminate swabbing
 - ▶ Compliance

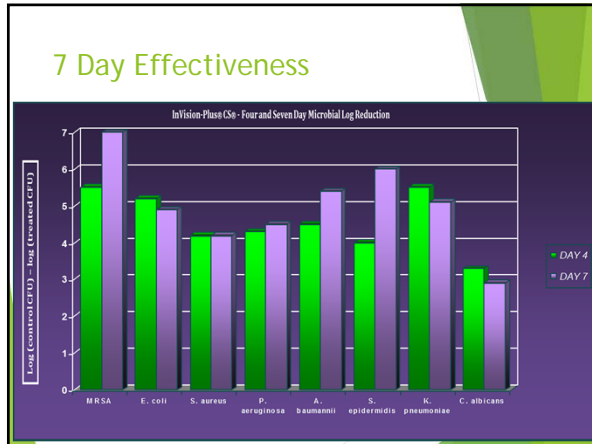
Disinfection Costs

Product Name	Method	Approx. Price
Generic Alcohol Pad	70% IPA wipe	~>\$0.01
PDI Preventics	3.15% CHG/70% IPA wipe	~ \$0.10
3M Curoc	70% IPA Cap	~ \$0.20
Hospira EffectIV	70% IPA Scrub	~ \$0.25
ICU Medical Swab Cap	70% IPA Cap	~ \$0.20
Bard Site Scrub	70% IPA Scrub	~ \$0.25
Merit Medical Dual Cap	70% IPA Cap	~ \$0.50



- ### Chlorhexidine Uses
- ▶ 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





Cost Analysis

Connector and Alcohol Cap

- ▶ 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.

CLABSI Reduction using Novel Technology and Nursing Best Practice

Gretchen Rodriguez, MPH^{1,2} Danny Fraley, RN¹
¹Acuity Hospital of South Texas; ²Infection Prevention and Management Associates, Inc.

The Financial Impact

Cost per CLABSI for this hospital (aka the estimated variable cost) per CLABSI of \$2,646 and adds 6 days of zero pay which results in an average lost net revenue per patient day of \$1,770 (w/ get an estimated overall dollar amount of \$13,200 for CLABSI expense and lost net revenue).

Alcohol disinfection caps	\$2,898/period
Neutral pressure antimicrobial connectors	\$8,991/period
Cost per CLABSI for this hospital	\$13,200 (estimated)

CLABSI Cost + Nursing Expense per period

January to June 2014	\$113,969 (8 CLABSI)
July to December 2014	\$91,449 (6 CLABSI)
January to June 2015	\$48,771 (4 CLABSI)

CLABSI Expense and Lost Revenue January 2014-June 2015

Period	CLABSI Expense (and lost revenue)	CLABSI
Jan-Jun 2014	\$113,969.00	8
Jul-Dec 2014	\$91,449.00	6
Jan-Jun 2015	\$48,771.00	4

The Results

In total, CLABSI related expense and lost revenue decreased by 22% in the 2nd period after providing staff education only and by 47% in the 3rd period after reinforcing education and discontinuing the use of the passive alcohol disinfection caps. This resulted in an overall 59% decrease in CLABSI related expense and lost revenue from January 2014 to June 2015.

Conclusion

By using neutral pressure antimicrobial needleless connector while discontinuing the use of passive alcohol disinfection caps, incorporating evidenced based education, and implementing an interdisciplinary infection control approach to reduce HAIs, a hospital will significantly reduce their CLABSI rates and demonstrate improved financial performance.

What does Dr. Jarvis Say?

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

Jarvis, W. (2010). Choosing the Best Design for Intravenous Needleless Connectors to Prevent Bloodstream Infections. Infection Control Today.

Is Zero Possible?

Seven years of zero central-line-associated bloodstream infections

TEN YEARS...ONE CLABSI PERIPHERAL APPROACH...20,536 PICC LINES: Ownership, Commitment, Technology, and Diligence

Deborah K. Ode, RN, MS, Allison Gonthier, RN, BSN, MSN & the Vascular Access Team of SMMC

Background
 Central Line-Associated Bloodstream Infections (CLABSI) is a major cause of patient morbidity and mortality. It is the most common nosocomial infection that can be prevented. Through evidence-based practice (EBP) and process-oriented, team collaboration, we have achieved a 7-year streak of zero CLABSI associated with peripheral vascular access (PVA) at our institution. This achievement is a result of our commitment to patient safety, our dedication to continuous improvement, and our focus on the patient. We have achieved this through a comprehensive approach that includes:

- **Ownership:** A dedicated Vascular Access Team (VAT) was established in 2009. The team's focus was on preventing CLABSI associated with PVA. The team's success was a result of our commitment to patient safety, our dedication to continuous improvement, and our focus on the patient.
- **Commitment:** The hospital's leadership and staff were committed to the goal of zero CLABSI. This commitment was reinforced through ongoing education and training.
- **Technology:** The use of evidence-based practice (EBP) and process-oriented, team collaboration was key to our success. We implemented a comprehensive approach that included:
- **Diligence:** The team's success was a result of our commitment to patient safety, our dedication to continuous improvement, and our focus on the patient.

Results
 A streak of 7 years of zero CLABSI associated with PVA was achieved. This achievement is a result of our commitment to patient safety, our dedication to continuous improvement, and our focus on the patient.

Conclusion
 The achievement of zero CLABSI associated with PVA is a testament to the power of EBP and process-oriented, team collaboration. It is a result of our commitment to patient safety, our dedication to continuous improvement, and our focus on the patient.

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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A word cloud featuring the phrase "thank you" in the center, surrounded by various translations of "thank you" in different languages including: danke, 謝謝, ngiyabonga, tesekkür ederim, tapath leat, cnacvbo, danke, dank je, moichhackeram, libetankt, ivela, mairuru, obrigado, dziekuje, sukriya, kop khun krap, go raibh maith agat, anigato, lakki, dakujem, merci, and others.

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