New Weapons in the Fight against CRBSI

Chris Cavanaugh, BSN, CRNI, VA-BC
Clinical Education Manager

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

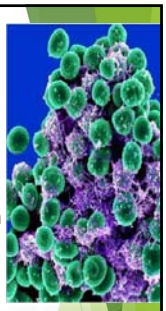
- Understand the current rates of CRBSI in the US Acute care hospitals
- Discuss current common strategies for reducing CRBSI
- Understand new technologies and methods to reduce risk of CRBSI

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?

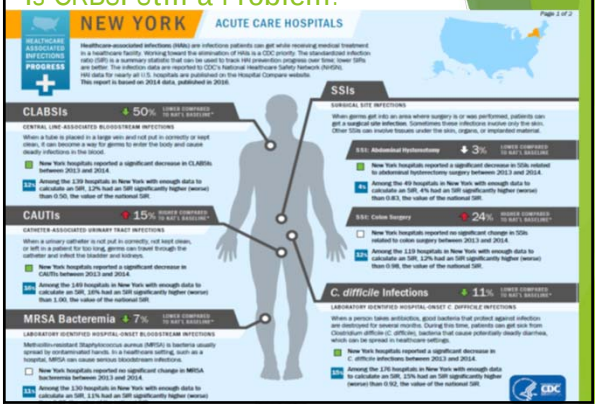
POLL QUESTION

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 (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?



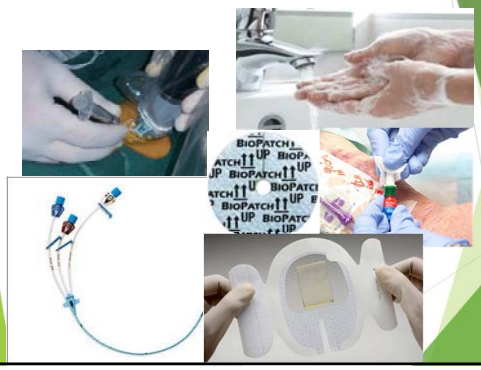
New York By the Numbers

- 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?

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
Staphylococcus aureus	56	12.4
(MRSA)	(26)	(5.7)
(MSSA)	(28)	(6.2)
Klebsiella spp.	39	8.6
(CRE-*Klebsiella*)	(6)	(1.3)
(CephR-*Klebsiella*)	(11)	(2.4)
Acinetobacter spp.	26	5.7
(MDR-*Acinetobacter*)	(16)	(3.5)
Escherichia coli	22	4.9
Pseudomonas spp.	22	4.9
Enterobacter spp.	19	4.2
Serratia spp.	12	2.6
Streptococci	10	2.2
Proteus spp.	7	1.5
Other	23	5.1

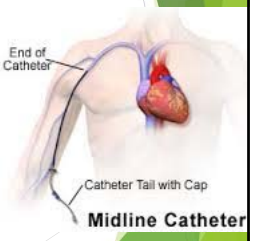
What are we are doing now?



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



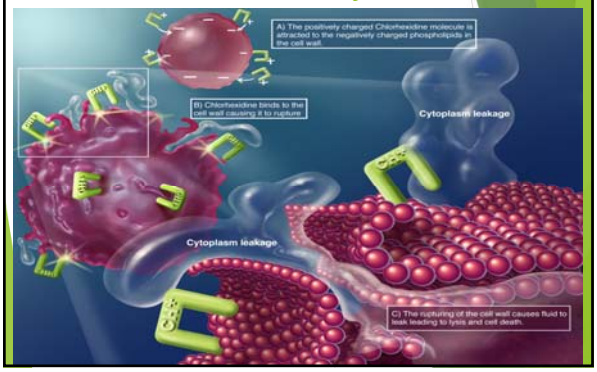
New Approaches

- 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 Prevantics	3.15% CHG/70% IPA wipe	~ $0.10
3M Curos	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

Is Chlorhexidine the key?

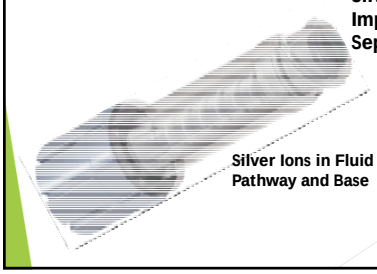


Chlorhexidine Uses

- 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

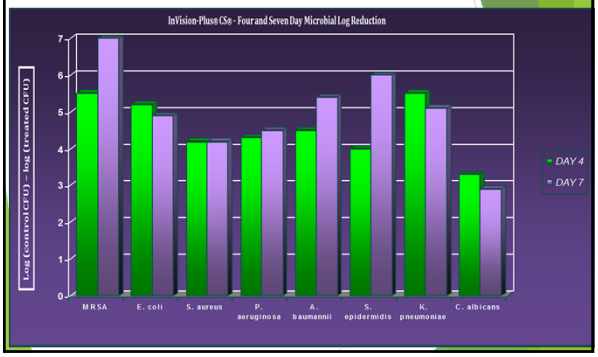
Have you looked at your Needleless Connector?

Chlorhexidine and Silver Impregnated Septum



Silver Ions in Fluid Pathway and Base

7 Day Effectiveness



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

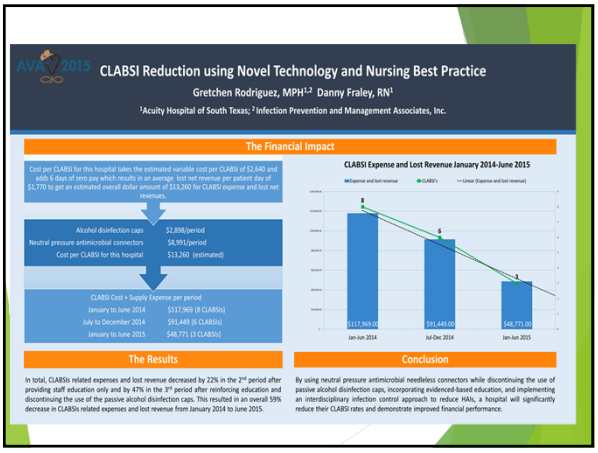
Does it Work?

- "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.

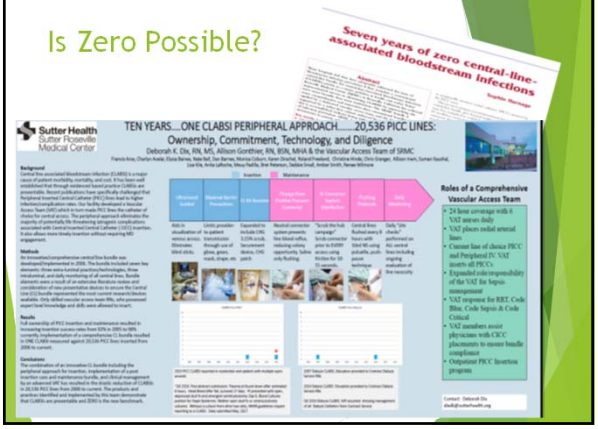


What does Dr. Jarvis Say?

- 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?



Call To Action

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

RyMed TECHNOLOGIES, LLC

Chris Cavanaugh BSN, CRNI, VA-BC, CIC
Clinical Education Manager, RyMed Technologies
ccavanaugh@rymedtech.com