The Prevantics® Difference

Prevantics®

3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

Device

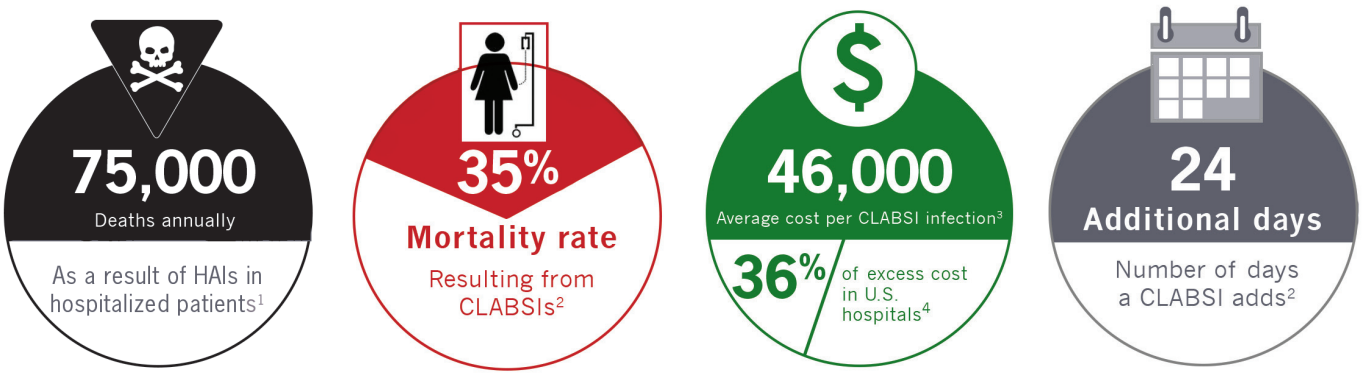
SWAB

PDI®

BE THE DIFFERENCE™

PATIENT CARE ENVIRONMENT OF CARE **INTERVENTIONAL CARE**

Impact of CLABSIs



References: 1. Centers for Disease Control and Prevention. Healthcare-associated infections (HAIs): Data and statistics. http://www.cdc.gov/HAI/surveillance/index.html. Updated January 12, 2015. Accessed December 15, 2017. **2.** National Healthcare Safety Network, Centers for Disease Control and Prevention, 2012. **3.** Haddadin Y, Regunath H. Central Line Associated Blood Stream Infections (CLABSI). Updated March 28, 2017. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; June 2017. Available from: https://www.ncbi.nlm.nih.gov/books/NBK430891/. **4.** Becker's Hospital Review. 10 things for CFOs to know about CLABSIs. https://www.beckershospitalreview.com/finance/10-things-for-cfos-to-know-about-clabsis.html. Published July 16, 2015. Accessed December 15, 2017.

Why CHG?

Properties and Antimicrobial Activity of Antiseptic Agents[1,2]

				Antimicrobial Activity		
Antiseptic	**Mode of Action**	**Spectrum of Activity**	**Safety and Toxicity**	**Kill Time**	**Continued Antimicrobial Activity**	**Inactivation by Blood or Body Fluids**
Prevantics® 3.15% CHG/ 70% IPA	Denatures proteins and disrupts cell membranes	GM+,GM–* bacteria, fungi, viruses	Minimal risk of skin irritation or sensitization. Minimal absorption.	Rapid	Excellent	No
Chlorhexidine 2-4% Aqueous	Disrupts cell membranes	GM+,GM–* bacteria, fungi, viruses	Minimal risk of skin irritation or sensitization. Minimal absorption.	Intermediate	Excellent	No
Iodine and Iodophors 10% PVP-I	Oxidizes cell membranes and cytoplasm	GM+,GM–* bacteria, fungi, viruses	Moderate skin irritation or sensitization. Absorption with possible toxicity.	Intermediate	Minimal	Moderate to Inactive
70% Alcohol	Denatures Proteins	GM+,GM–* bacteria, fungi, viruses	Minimal risk of skin irritation or sensitization. Minimal absorption.	Rapid	None	No Data

*GM+ is gram-positive bacteria, GM– is gram-negative bacteria

References: 1. Denton GW. Chlorhexidine. In: Block SS, ed. *Disinfection, Sterilization, and Preservation*; 5th ed. Philadelphia: Lippincott Williams & Wilkins; 2001:321-336. **2.** Larson E. Guideline for use of topical antimicrobial agents. *Am J Infect Control*. 1988;16(6):253-266.

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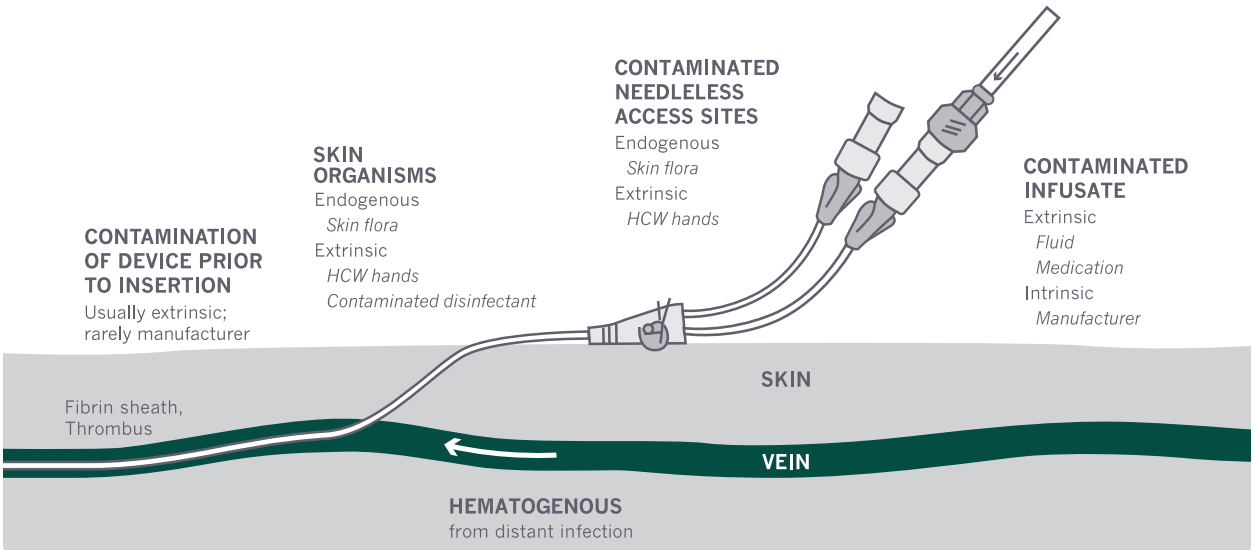
5 sources of catheter-related blood stream infections (CRBSIs)



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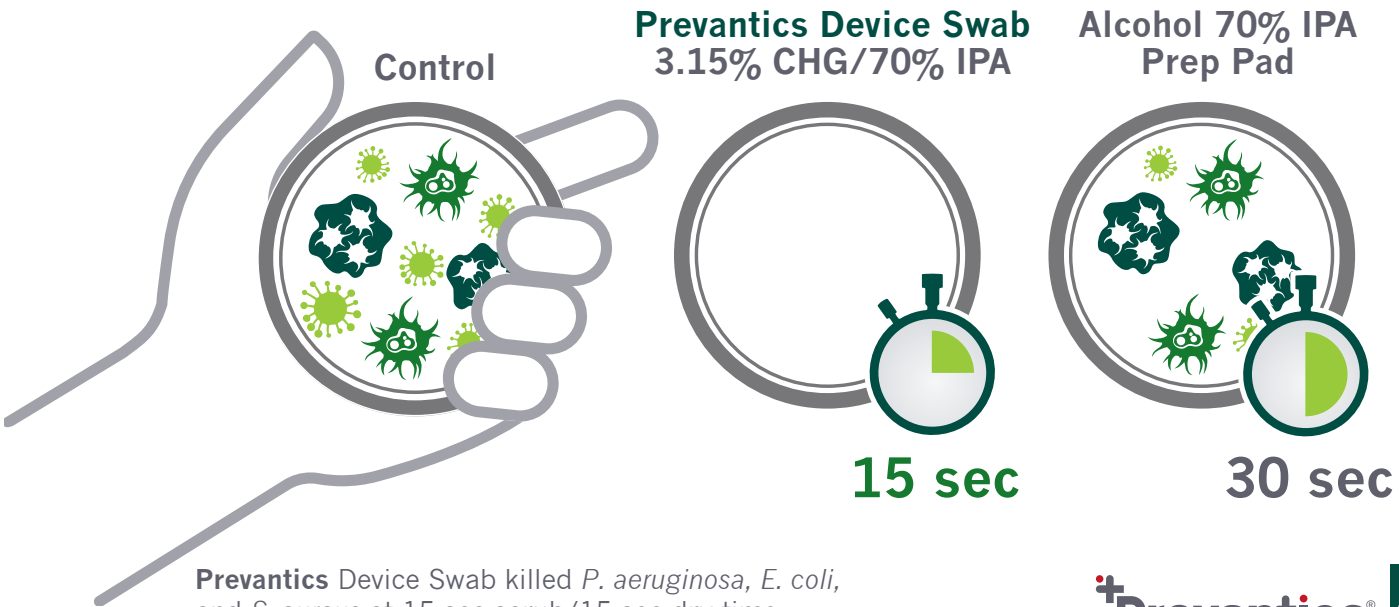
Lab Study
Children's Healthcare of Atlanta, North Druid Hills, GA

Comparative Effectiveness of Chlorhexidine Preparation vs IPA on Needleless Connectors.

Prevantics® Device Swab

Killed all tested pathogens in **HALF** the time of alcohol alone



Prevantics Device Swab killed *P. aeruginosa*, *E. coli*, and *S. aureus* at 15 sec scrub/15 sec dry time.

Prevantics®
3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

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Supporting Details

While alcohol showed growth at all time intervals, **Prevantics®** Device Swab killed all tested pathogens—*P. aeruginosa*, *E. coli*, and *S. aureus*—in half the time.

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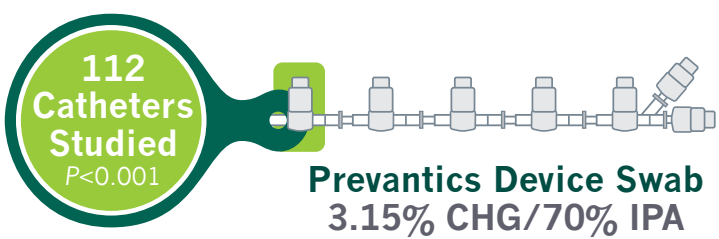
ICU Clinical Study
Rush University Medical Center, Chicago, IL

A Randomized Crossover Clinical Trial to Compare 3.15% CHG/70% Isopropyl Alcohol vs 70% Isopropyl Alcohol alone and 5 sec. vs 15 sec. Scrub for Routine Disinfection of Needleless Connectors on CVCs in Adult Medical Intensive Care Unit.

Prevantics® Device Swab

Resulted in significantly fewer needleless connector contaminations than alcohol alone



Prevantics Device Swab
3.15% CHG/70% IPA

5 sec Scrub
5 sec Dry

Alcohol 70% IPA

Needleless connectors studied over 14 months.

Prevantics®
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Supporting Details

A prospective, randomized, blinded crossover clinical study was performed in a medical intensive care unit to assess CHG/alcohol swab for disinfection of needleless connectors on central venous catheters versus use of alcohol alone for disinfection of the connectors. Two scrub times were used for each disinfectant (5 sec. and 15 sec.). The use of the CHG/alcohol swab showed greater decontamination of the connectors at a 5 sec. scrub which showed statistical significance. There was no statistical significance at the longer 15 sec. scrub time.

Mean scrub time achieved:

When told 5 sec. scrub/5 sec. dry
Achieved: 7 sec. scrub/7 sec dry

When told 15 sec. scrub/15 sec. dry
Achieved: 9 sec. scrub/9 sec. dry

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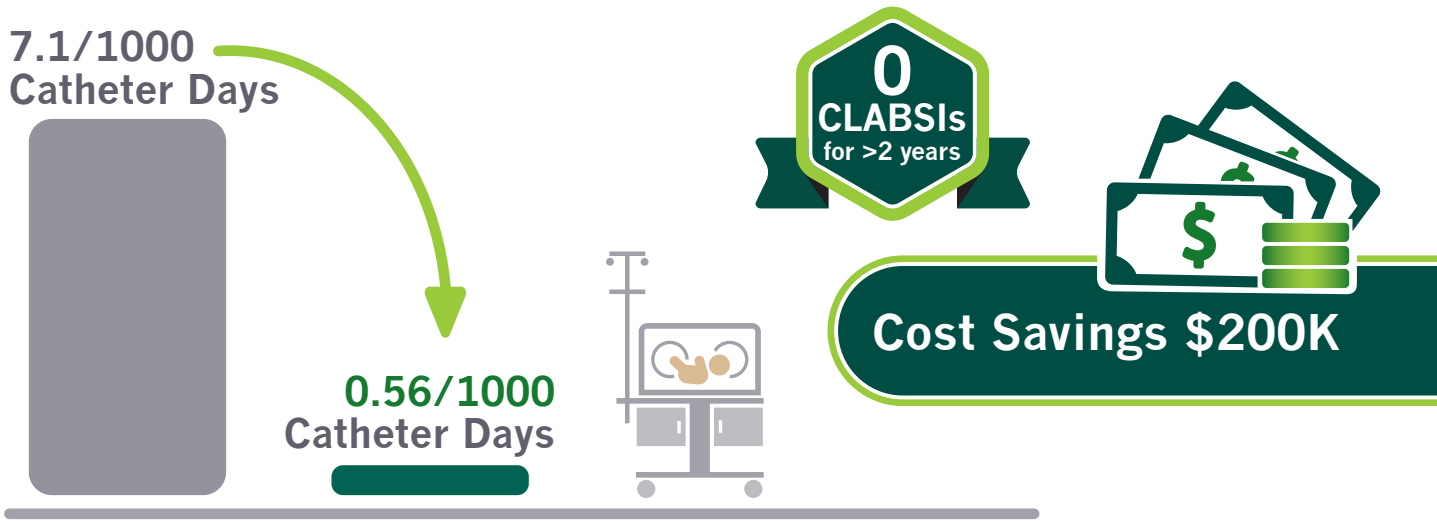
NICU Studies
Doctors Medical Center, Modesto, CA

Reduction in CLABSI in NICU Following Introduction of CHG for Disinfection of Needleless Connectors; Our NICU Journey to Zero CLABSI: Special Patients Require Special Interventions.

Prevantics® Device Swab

Attained a 92% infection rate reduction and sustained zero CLABSIs



Use of **Prevantics** Device Swab also achieved 90% staff compliance.

Prevantics®
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Device
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Supporting Details

In one of the most fragile clinical settings, using **Prevantics®** Device Swab to scrub needleless connectors helped drive one NICU's BSI and CLABSI rates to the lowest in its recorded history, cutting it from 7.1/1000 catheter days to just 0.56/1000 catheter days.

With continued use of CHG/alcohol for skin antisepsis and disinfection of needleless connectors as standard protocol, this NICU sustained zero CLABSIs for more than 24 consecutive months. Monthly monitoring of practice showed 90% compliance rate. In addition, there were 0 cases of skin breakdown or erythema (redness) associated with the use of CHG/alcohol.

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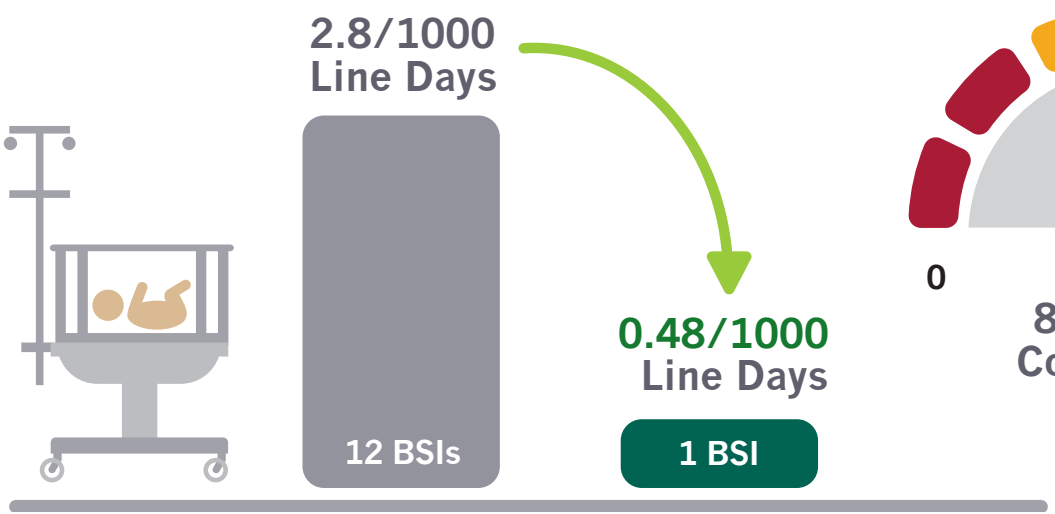
PICU Study
St. Louis Children's Hospital, St. Louis, MO

Changing Port/Hub Disinfection Product Decreases CRBSIs in Pediatric ICU.

Prevantics® Device Swab

Reduced CRBSI rate by 83% while increasing staff compliance



Led to a new standard practice and house-wide implementation of **Prevantics** Device Swab.

Prevantics®
3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

Device
SWAB

Supporting Details

When **Prevantics®** Device Swab use was implemented in a PICU, CRBSI rates fell from average 2.8 infections per 1000 line days in the prior 12 months to 0.48 infections per 1000 line days – just 2 infections in the 18-month period following the change.

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Cardiac PICU Study
Children's Healthcare of Atlanta, Peachtree City, GA

Targeting Zero: A Systematic Approach to Elimination of CRBSIs in a Pediatric Healthcare System.

Prevantics® Device Swab

Helped avoid >298 CRBSIs and 58 patient deaths*

44%

System-wide CRBSI Reduction

Approximate Cost Avoidance Over 4 Years...

$13.5 million†

First used in Cardiac PICU, scrubbing ports/hubs with **Prevantics** Device Swab was then adopted system-wide.

* Based on facility calculated mortality rate of 25%
† Based on CRBSI cost of $46,133

Prevantics® Device SWAB
3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

Supporting Details

In a 6-month study, this facility used **Prevantics®** Device Swab to clean intravascular ports and hubs prior to accessing the device in Cardiac PICU. This led to a system-wide implementation and a decrease in system-wide CRBSI rates by over 44%, with a cost avoidance of approximately $13.5 million in about 4 years.

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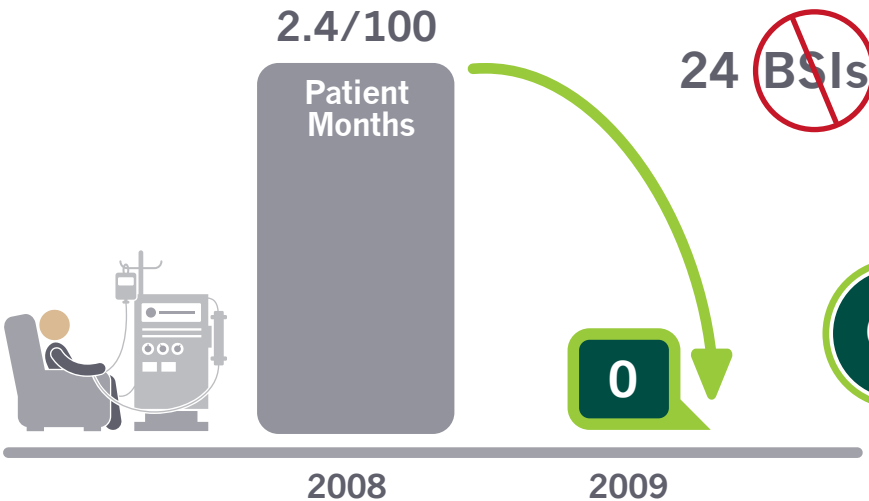
Hemodialysis Study
Altru Health System,
Grand Forks, ND

Getting to Zero: Outpatient Hemodialysis Catheter Associated Bloodstream Infections.

Prevantics® Device Swab

A key component in the CLABSI prevention bundle



Helped sustain a zero CLABSI rate for over a year and save costs estimated at nearly half a million dollars as part of a bundle of best practices.

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3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

Device
SWAB

Supporting Details

As part of a bundle of best practices, use of **Prevantics®** Device Swab to disinfect catheter hubs prior to each access led to CLABSI rates dropping from 2.4/100 patient months to zero – a number that was sustained for over a year. 24 BSIs were prevented during that period, with an estimated cost savings of nearly half a million dollars.

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Bone Marrow Transplant Study
St. Francis Health, Indianapolis, IN

Breaking the Bloodstream Infection Connection: CVC Hub Disinfection Utilizing a Swab Containing 3.15 % CHG/70% IPA.

Prevantics® Device Swab

Eliminated coagulase-negative staphylococci bacteremia and reduced BSI rate to zero

...for several months

Prevantics®
3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

Device
SWAB

Supporting Details

A transplant/hematology unit struggling to sustain reductions in BSI rates began scrubbing hubs with **Prevantics®** Device Swab. Since then no BSIs have occurred and the unit has seen no bacteremias caused by coagulase-negative staphylococci since July 2010.

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Adult ICU Study
University of Colorado Health-Memorial Hospital, Colorado Springs, CO

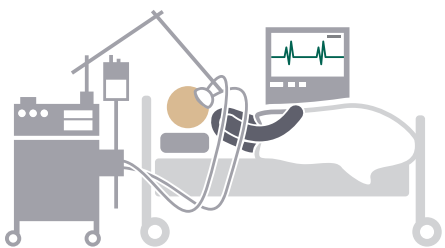
Journey to Zero CLABSIs: An Intensive Care Unit's Story of Sustained Success and Quality Improvement, *JAVA* June 2016.

Prevantics® Device Swab

Delivered long-term BSI protection in an infection prevention bundle

Months

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15



0 CLABSIs for 15 months

Implementing **Prevantics** Device Swab increased compliance, leading to new standard of practice.

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Device SWAB

Supporting Details

In Feb. 2015, an ICU implemented **Prevantics®** Device Swab to "scrub the hub" for 5 seconds with a 5-second dry time to facilitate hub disinfection as part of their bundle. They saw a sustained zero CLABSI rate for 15 months along with an increase in staff compliance. Prior to implementing bundle, the ICU's infection rate was 1.2/1000 central line days in 2014.

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