The Prevantics® Difference

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

PATIENT CARE  ENVIRONMENT OF CARE  INTERVENTIONAL CARE
Impact of CLABSI:

- **75,000** Deaths annually as a result of HAIs in hospitalized patients¹
- **35%** Mortality rate resulting from CLABSI²
- **46,000** Average cost per CLABSI infection³
- **36%** of excess cost in U.S. hospitals⁴
- **24** Additional days a CLABSI adds²

**References:**

# Why CHG?

Properties and Antimicrobial Activity of Antiseptic Agents

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

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

**References:**
5 sources of catheter-related bloodstream infections (CRBSIs)

CONTAMINATED NEEDLELESS ACCESS SITES
Endogenous
Skin flora
Extrinsic
HCW hands

CONTAMINATED INFUSATE
Extrinsic
Fluid
Medication
Intrinsic
Manufacturer

SKIN ORGANISMS
Endogenous
Skin flora
Extrinsic
HCW hands
Contaminated disinfectant

CONTAMINATION OF DEVICE PRIOR TO INSERTION
Usually extrinsic; rarely manufacturer

Fibrin sheath, Thrombus

HEMATOGENOUS
from distant infection

5 sources of catheter-related bloodstream infections (CRBSIs)
3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

Control

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

Preventics Device Swab
3.15% CHG/70% IPA

Alcohol 70% IPA Prep Pad

15 sec

30 sec

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

Children’s Healthcare of Atlanta, North Druid Hills, GA

Comparative Effectiveness of Chlorhexidine Preparation vs IPA on Needleless Connectors.
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.
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

112 Catheters Studied
\[ P < 0.001 \]

Prevantics Device Swab
3.15% CHG/70% IPA

12% contaminated

5 sec Scrub
5 sec Dry

101 Catheters Studied
\[ P < 0.001 \]

Alcohol 70% IPA

39% contaminated

Needleless connectors studied over 14 months.
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
3.15% Chlorhexidine Gluconate (CHG) and 70% Isopropyl Alcohol (IPA)

Prevantics® Device Swab

Attained a 92% infection rate reduction and sustained zero CLABSIs

7.1/1000 Catheter Days

0.56/1000 Catheter Days

0 CLABSIs for >2 years

Cost Savings $200K

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

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

**Prevantics® Device Swab**

Reduced CRBSI rate by 83% while increasing staff compliance

- **2.8/1000 Line Days** → **0.48/1000 Line Days**
- **12 BSIs** → **1 BSI**
- **80% Staff Compliance**

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

Helped avoid >298 CRBSIs and 58 patient deaths*

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

44% System-wide CRBSI Reduction

Approximate Cost Avoidance Over 4 Years...

$13.5 million†
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.
24 BSIs Prevented

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

2.4/100 Patient Months

2008 2009

Cost Savings $480K

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

**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
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.
Prevantics® Device Swab

Delivered long-term BSI protection in an infection prevention bundle

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