The evidence is clear.
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#### META-ANALYSIS

<table>
<thead>
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<tr>
<td>Chlorhexidine-impregnated dressing for the prophylaxis of central venous catheter-related complications: a systematic review and meta-analysis.</td>
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#### RANDOMIZED CONTROLLED TRIAL

<table>
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<tr>
<th>Title</th>
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<tr>
<td>Effectiveness of a chlorhexidine dressing on silver-coated external ventricular drain–associated colonization and infection: a prospective single-blinded randomized controlled clinical trial.</td>
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<td>A randomized trial on chlorhexidine dressings for the prevention of catheter-related bloodstream infections in neutropenic patients.</td>
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<tr>
<td>Tegaderm™ CHG Dressing significantly improves catheter-related infection rate in hemodialysis patients.</td>
<td>10</td>
</tr>
<tr>
<td>Randomized controlled trial of chlorhexidine dressing and highly adhesive dressing for preventing catheter-related infections in critically ill adults.</td>
<td>11</td>
</tr>
</tbody>
</table>

---

#### Topics Key

- **Infection Reduction**
  - Measurable decrease in catheter-related bloodstream infection (CRBSI) rate.

- **Antimicrobial Protection**
  - Microbial colonization and in vitro zone of inhibition.*

- **Ease of Use**
  - Product usability and clinician preference.

- **Health Economics**
  - Cost savings and overall economic impact.

---

*No clinical correlations intended.*
### Table of Contents

**RANDOMIZED CONTROLLED TRIAL (CONT.)**

Suppression of regrowth of normal skin flora under chlorhexidine gluconate dressings applied to chlorhexidine gluconate-prepped skin.


**PEER REVIEWED**

Sustained reduction of catheter-associated bloodstream infections with enhancement of catheter bundle by chlorhexidine dressings over 11 years.


Chlorhexidine-impregnated transparent dressings decrease catheter-related infections in hemodialysis patients: a quality improvement project.


Significant reduction of external ventricular drainage-associated meningoventriculitis by chlorhexidine-containing dressings: a before-after trial.


Clinical evaluation of a chlorhexidine intravascular catheter gel dressing on short-term central venous catheters.


### Topics Key

- **Infection Reduction**
  Measurable decrease in catheter-related bloodstream infection (CRBSI) rate.

- **Antimicrobial Protection**
  Microbial colonization and *in vitro* zone of inhibition.*

- **Ease of Use**
  Product usability and clinician preference.

- **Health Economics**
  Cost savings and overall economic impact.

*No clinical correlations intended.*
Table of Contents

PEER REVIEWED (CONT.)

Transparent film intravenous line dressing incorporating a chlorhexidine gluconate gel pad: a clinical staff evaluation.

Economic impact of Tegaderm chlorhexidine gluconate (CHG) dressing in critically ill patients.

Cost-effectiveness analysis of a transparent antimicrobial dressing for managing central venous and arterial catheters in intensive care units.

Chlorhexidine gluconate dressings reduce bacterial colonization rates in epidural and peripheral regional catheters.

Reduction of central venous line-associated bloodstream infection rates by using a chlorhexidine-containing dressing.

Use of a 1-piece chlorhexidine gluconate transparent dressing on critically ill patients.

Topics Key

Infection Reduction
Measurable decrease in catheter-related bloodstream infection (CRBSI) rate.

Antimicrobial Protection
Microbial colonization and in vitro zone of inhibition.*

Ease of Use
Product usability and clinician preference.

Health Economics
Cost savings and overall economic impact.

*No clinical correlations intended.
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POSTER

Fitness of use of Biopatch® and Tegaderm™ CHG for protecting central venous catheters and arterial lines in critically ill patients.

A different experience with two different chlorhexidine gluconate dressings for use on central venous devices.

Growth inhibition of microorganisms involved in CRBSIs by an antimicrobial transparent I.V. dressing containing chlorhexidine gluconate (CHG).

Antimicrobial activity of a CHG-impregnated gel pad for I.V. site protection.


ADDITIONAL INFORMATION

Instructions for Use

*No clinical correlations intended.
“Chlorhexidine-impregnated dressing is beneficial to prevent CVC-related complications.”


**META-ANALYSIS**

**RESULTS**

**Risk of Catheter Colonization**

![Risk of Catheter Colonization graph]

**Incidence of CRBSI**

![Incidence of CRBSI graph]

**TOPIC(S)**

- Infection Reduction

**DESIGN**

Meta-analysis of 12 randomized controlled trials with 6,028 patients that met inclusion criteria.

**METHODS**

Studies were randomized controlled trials comparing chlorhexidine-impregnated dressing versus other dressing or no dressing for prophylaxis of central venous catheter (CVC)-related complications.

**KEY FINDINGS**

- Chlorhexidine-impregnated dressing is beneficial to reduce the risk of catheter colonization for catheter-related bloodstream infections (CRBSI) for patients with CVC.
- Chlorhexidine-impregnated dressings were conducive to reduce the incidence of CRBSI.
- Chlorhexidine transparent dressing could effectively reduce the frequency of dressing changes to ease workload of nursing staff.

CLICK HERE to view Full Clinical Study

RETURN TO TABLE OF CONTENTS – 6
META-ANALYSIS

A chlorhexidine-impregnated dressing is beneficial in preventing catheter colonization and, more importantly, CRBSI.


**RESULTS**

<table>
<thead>
<tr>
<th>Catheter Colonization (% of catheters) &amp; CRBSI (% of patients)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
</tr>
<tr>
<td>CHG</td>
</tr>
<tr>
<td>Catheter Colonization</td>
</tr>
<tr>
<td>CRBSI</td>
</tr>
</tbody>
</table>

There was significant benefit to using a chlorhexidine-impregnated dressing for CVC and arterial catheters.

There was a low incidence rate of contact dermatitis using a chlorhexidine-impregnated dressing in adults.

**DESIGN**

Meta-analysis of nine randomized controlled trials that met inclusion criteria.

**METHODS**

Studies were randomized controlled trials comparing a chlorhexidine-impregnated dressing with conventional site care to assess the efficacy of a chlorhexidine-impregnated dressing for prevention of central venous (CVC) and arterial catheter-related colonization and catheter-related bloodstream infection (CRBSI).
Tegaderm™ CHG Dressing helps reduce the risk of EVD exit site contamination and EVDAIs.


**DESIGN**
Randomized controlled trial comparing bacterial regrowth at external ventricular drain (EVD) site five days post-op between control (standard dressing) and chlorhexidine gluconate dressings (Tegaderm™ CHG Dressing).

**METHODS**
Study assessed 57 subjects (29 in the Tegaderm™ CHG Dressing group and 28 in the standard dressing group). Secondary endpoints included sonicated EVDs, EVD-associated infections and surgical treatment of hydrocephalus.

**RESULTS**

Cutaneous Bacterial Regrowth at EVD Entry Site Five Days Post-op

<table>
<thead>
<tr>
<th>Dressing</th>
<th>CFU/cm²</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Dressing</td>
<td>15.7</td>
<td>0.004</td>
</tr>
<tr>
<td>Tegaderm™ CHG Dressing</td>
<td>5.87</td>
<td></td>
</tr>
</tbody>
</table>

**KEY FINDINGS**
Cutaneous bacterial regrowth at the EVD site was lower for Tegaderm™ CHG Dressing versus standard dressing.

Subcutaneous EVD Segment Sonification

<table>
<thead>
<tr>
<th>Dressing</th>
<th>CFU/cm²</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Dressing</td>
<td>209.78</td>
<td>0.06</td>
</tr>
<tr>
<td>Tegaderm™ CHG Dressing</td>
<td>10.1</td>
<td></td>
</tr>
</tbody>
</table>

Bacterial colonization of the subcutaneous EVD segment and tip was 95% less for Tegaderm™ CHG Dressing versus standard dressing.
Tegaderm™ CHG Dressing demonstrated an antimicrobial benefit during the complete long-term catheter therapy.


**RESULTS**

**Definite CRBSI within First 14 Days of CVC Placement**

<table>
<thead>
<tr>
<th>Dressing</th>
<th>Definite CRBSI Rate</th>
<th>Probable CRBSI Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Dressing</td>
<td>3.90% (p=0.375)</td>
<td></td>
</tr>
<tr>
<td>Tegaderm™ CHG Dressing</td>
<td>2.60%</td>
<td></td>
</tr>
</tbody>
</table>

Tegaderm™ CHG Dressing was well tolerated and significantly reduced definite and probable CRBSI.

**BACKGROUND**

In neutropenic patients, mortality due to catheter-related bloodstream infections (CRBSI) has been reported to be as high as 36%.


**DESIGN**

Open-label randomized, multi-center trial in 10 German hematological departments measuring definite catheter-related bloodstream infections (CRBSI) with the first 14 days of central venous catheter (CVC) placement.

**METHODS**

Study assessed 613 neutropenic patients (307 in the Tegaderm™ CHG Group and 306 in the standard dressing group).
First evidence-based study to show that Tegaderm™ CHG Dressing significantly reduces CRBSI rates in hemodialysis patients.


**TOPIC(S)**

- Infection Reduction
- Health Economics

**DESIGN**

Prospective randomized cross-over trial measuring catheter-related infections (CRI) and catheter-related bloodstream infections (CRBSIs) in prevalent hemodialysis patients in inpatient and outpatient settings.

**METHODS**

Study compared two treatments – Tegaderm™ CHG Dressing (n=29) changed weekly versus a standard dry gauze dressing (n=30) changed three times/week at every dialysis session (n=59).

**RESULTS**

**CRBSI Incidence Rate (per 1,000 Catheter Days)**

- Standard Dressing with Gauze: 0.65
- Tegaderm™ CHG Dressing: 0.09

(p=0.05)

**Annual Healthcare Cost Savings**

- Standard Dressing
  - Annual total CRBSI: 294,827 €
  - Annual dressing costs: 40,822 €
- Tegaderm™ CHG Dressing
  - Annual total CRBSI: 21,037 €
  - Annual dressing costs: 350,000 €

**KEY FINDINGS**

- **86% reduction in CRBSI incidence rate with Tegaderm™ CHG Dressing.**
- **€237,940 annual healthcare cost savings on CRBSIs when using Tegaderm™ CHG Dressing versus standard dressings.**

CLICK HERE to view Abstract
Tegaderm™ CHG Dressing decreased the CRBSI rate in ICU patients with intravascular catheters.


<table>
<thead>
<tr>
<th>TOPIC(S)</th>
<th>RESULTS</th>
<th>KEY FINDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection Reduction</td>
<td>CRBSI Rate (per 1,000 Catheter Days)</td>
<td>CRBSI rate was 60% lower with Tegaderm™ CHG Dressing versus non-chlorhexidine dressing.</td>
</tr>
<tr>
<td>Antimicrobial Protection</td>
<td>Catheter Colonization Incidence (per 1,000 Catheter Days)</td>
<td>61% reduction in catheter colonization incidence with Tegaderm™ CHG Dressing.</td>
</tr>
</tbody>
</table>

**RESULTS**

**CRBSI Rate (per 1,000 Catheter Days)**

- **Non-chlorhexidine Dressing:** 1.3
- **Tegaderm™ CHG Dressing:** 0.5

(p=0.02)

**Catheter Colonization Incidence (per 1,000 Catheter Days)**

- **Non-chlorhexidine Dressing:** 10.9
- **Tegaderm™ CHG Dressing:** 4.3

(p<0.0001)

**KEY FINDINGS**

- CRBSI rate was 60% lower with Tegaderm™ CHG Dressing versus non-chlorhexidine dressing.
- 61% reduction in catheter colonization incidence with Tegaderm™ CHG Dressing.

**DESIGN**

Multi-center randomized controlled trial comparing major catheter-related infections (CRI) with or without catheter-related bloodstream infections (CRBSI) and catheter colonization rates within central venous (CVC) and arterial catheters.

**METHODS**

Trial compared chlorhexidine to non-chlorhexidine dressings to determine if Tegaderm™ CHG Dressing decreases catheter colonization and CRBSI rates in CVC and arterial catheters. Studies were conducted in 12 French ICUs with a total of 1,879 patients evaluated.

CLICK HERE to view Full Clinical Study
**Randomized Controlled Trial**

**Tegaderm™ CHG Dressings suppress regrowth better than BIOPATCH® Disks on prepped skin after 7-day wear time.**


**Results**

**Mean Skin Organism Log Count Over Time**

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Post-Prep</th>
<th>Day 1</th>
<th>Day 4</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHG Gel</td>
<td>3.5</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHG Disk</td>
<td>3.0</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>3.0</td>
<td>2.0</td>
<td></td>
<td>1.5</td>
<td>1.0</td>
</tr>
</tbody>
</table>

* p-values <0.01
** represents p-value <0.001

**Key Findings**

CHG gel had significantly lower skin organism regrowth than a standard transparent adhesive dressing.

At 7 days, CHG gel had significantly lower skin organism regrowth than CHG disks.

**Design**

Randomized controlled trial comparing suppression of microbe regrowth on CHG-prepped skin between control, CHG gel dressings and CHG disks.

**Methods**

Trial compared the skin organism suppression performance of CHG gel dressings and CHG disks on the backs of 30 healthy subjects.
“This large real-world data study further supports the current recommendations for the systematic use of CHG dressings on all catheters of ICU patients.”


Infection Reduction

DESIGN
Real-world data study from 2006 to 2014 at a 35-bed mixed adult ICU in the Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland, a primary and referral hospital for a population of 250,000 and 1,500,000, respectively.

METHODS
11-year study evaluated the impact of incrementally introducing CHG dressings (sponge or gel) to an ongoing catheter bundle on the rates of catheter-related bloodstream infections (CRBSI). This was measured as part of a surveillance program and expressed as incidence density rates per 1,000 catheter-days for every central venous catheter (CVC), including dialysis catheters and introducer sheaths for pulmonary artery (PA) catheters, and arterial catheters.

RESULTS
CRBSI Rates (per 1,000 CVC and Arterial Catheter Days) — 18,286 Patients

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate (per 1,000 CVC and Arterial Catheter Days)</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronovost Central Line Bundle (P-CLB) (27,713 catheter days)</td>
<td>1.12</td>
<td>(p=0.002*)</td>
</tr>
<tr>
<td>P-CLB + CHG Sponge (26,128 catheter days)</td>
<td>0.42</td>
<td>(p&lt;0.001*)</td>
</tr>
<tr>
<td>P-CLB + CHG Gel (30,349 catheter days)</td>
<td>0.1</td>
<td></td>
</tr>
</tbody>
</table>

*p-values represent comparisons to standalone P-CLB

KEY FINDINGS
Chlorhexidine dressings were associated with a sustained 11-year reduction of CRBSIs.

Data indicates the skin reaction rates for CHG gel and CHG sponge were equivalent at 0.3 /1,000 device days.
Tegaderm™ CHG Dressing helps reduce the risk of CRI rates for hemodialysis patients with tunneled CVC.


**RESULTS**

<table>
<thead>
<tr>
<th>RESULTS</th>
<th>CRI Rates (per 1,000 Catheter Days) per Respective Outpatient Units During Intervention Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EDN (phase 2)</td>
</tr>
<tr>
<td></td>
<td>Pre-Intervention</td>
</tr>
<tr>
<td></td>
<td>1.89</td>
</tr>
<tr>
<td></td>
<td>EDG (phase 2)</td>
</tr>
<tr>
<td></td>
<td>EDC (phase 1)</td>
</tr>
</tbody>
</table>

**KEY FINDINGS**

Tegaderm™ CHG Dressing was associated with a substantial reduction in CRIs across 3 hemodialysis units.

In one unit, there was an 86% reduction in infection rate.

**TOPIC(S)**

Infection Reduction

**DESIGN**

Prospective before and after intervention study measuring catheter-related infection (CRI) rates in patients with dialysis catheters.

**METHODS**

Comparison of CRI rates in two dressing regimens – Tegaderm™ CHG Dressing and adhesive dry gauze dressings with an antibiotic ointment in hemodialysis patients having tunneled central venous catheters (CVC). The study was conducted in two phases: Phase 1 assessed the impact of Tegaderm™ CHG Dressing on one dialysis unit (EDC) versus two control dialysis units (EDG and EDN); Phase 2 introduced Tegaderm™ CHG Dressing to the two control dialysis units.

[CLICK HERE to view Full Clinical Study](#)
Use of Tegaderm™ CHG Dressing helps reduce the risk of EVD-associated MV rates without increasing costs or workloads.


**RESULTS**

**EVD-Associated MV Rate (per 1,000 EVD Days)**

- **Control Period** (42 discontinuous months): 6.98
- **Tegaderm™ CHG Dressing Intervention** (30 months): 1.70

(p=0.005)

**BACKGROUND**

Additional studies assessing the safety and application of CHG for neurovascular devices include:


**METHODS**

Study replaced standard gauze dressings with Tegaderm™ CHG Dressing. Evaluation and calculation of the EVD-associated MV rates were performed by an interdisciplinary and interprofessional health team twice weekly during infectious disease rounds.

**KEY FINDINGS**

- No adverse events (e.g., skin reactions) occurred.
- There was a 68% reduction in MV rates.
- The intervention significantly reduced rates without increasing costs or workloads.
Tegaderm™ CHG Dressing group saw a significant reduction in the number of microorganisms recovered from the CVC insertion site compared to non-antimicrobial dressings.


**RESULTS**

**CVC Microbes Median CFU/cm²**

- **Suture material**
  - Standard Dressing (N=136): 2 (p<0.001)
  - Tegaderm™ CHG Dressing (N=136): 56

- **Suture-skin site**
  - Standard Dressing (N=136): 0.6 (p<0.001)
  - Tegaderm™ CHG Dressing (N=136): 22.3

- **Insertion site**
  - Standard Dressing (N=136): 10.2 (p<0.001)
  - Tegaderm™ CHG Dressing (N=136): 0

**KEY FINDINGS**

Tegaderm™ CHG Dressing significantly reduced the number of microorganisms on the catheter insertion site and catheter device insertion site.

Microbes collected from underneath Tegaderm™ CHG Dressing did not exhibit resistance or susceptibility to CHG.

*Tegaderm™ CHG Dressing is not indicated to reduce bacterial colonization of sutures and suture sites.*
99% of clinical staff surveyed recommended continuing the use of Tegaderm™ CHG Dressing.


TOPIC(S)

- Ease of Use

DESIGN

Clinical staff evaluation of a Tegaderm™ CHG Dressing compared to a standard dressing (n=81).

METHODS

The study group was from the Critical Care unit and followed patients (>14,200) with short-term central venous catheter (CVC) or vascular access catheter (VAC) for dialysis. Study was divided into two phases: 9 months of Tegaderm™ CHG Dressing use was compared to 12 months of standard dressing use. Staff completed evaluation following implementation of Tegaderm™ CHG Dressing.

RESULTS

Tegaderm™ CHG Dressing Ratings Relative to a Standard Dressing

- Skin condition under the dressing
- Dressing lasts for 7 days
- Dressing lasts long enough for patient care plan
- Ease of removal from CVC
- Ease of removal from skin
- Protection from contamination
- Ability of the gel to hold the catheter
- Ability to absorb fluid
- Ability to see through
- Sticks well to skin
- Speed to apply
- Simple to apply
- Overall performance of the dressing

KEY FINDINGS

- 86% of the clinical staff surveyed rated the performance of the Tegaderm™ CHG Dressing as better or much better than the standard dressing.
- The Tegaderm™ CHG Dressing performed well in a diverse group of critical care patients.
- 98.7% of clinicians recommended continued use of Tegaderm™ CHG Dressing.

CLICK HERE to view Abstract
The use of Tegaderm™ CHG Dressing results in an overall cost savings of £77,427 per 1,000 adult patients compared to standard care.


**RESULTS**

Breakdown of Different Costs for Standard and Tegaderm™ CHG Dressing (for a Cohort of 10,000 Patients)

- **Tegaderm™ CHG Dressing** has a 98.5% probability of saving £77,000 per year per 1,000 patients.

- CRBSI risk with Tegaderm™ CHG Dressing was 0.6 per 1,000 catheter days, versus 1.48 per 1,000 catheter days with a standard dressing.

**KEY FINDINGS**

- Tegaderm™ CHG Dressing has a 98.5% probability of saving £77,000 per year per 1,000 patients.

- CRBSI risk with Tegaderm™ CHG Dressing was 0.6 per 1,000 catheter days, versus 1.48 per 1,000 catheter days with a standard dressing.
The Tegaderm™ CHG Dressing is more cost-effective than a non-chlorhexidine dressing in this base case scenario.


TOPIC(S)
Health Economics

DESIGN
A novel health economic model (30-day time non-homogenous Markov model).

METHODS
Study used to estimate cost-effectiveness of using Tegaderm™ CHG Dressing compared to non-chlorhexidine dressings in a multi-center French ICU scenario (12) based on the number of catheter-related bloodstream infections (CRBSI) avoided.

RESULTS
Using a Tegaderm™ CHG Dressing is more cost effective than using a non-antimicrobial transparent dressing.

KEY FINDINGS
Tegaderm™ CHG Dressing was associated with 11.8 fewer infections per 1,000 patients.

The incremental cost-effectiveness ratio is €12,046 per CRBSI reduction.

The incremental net monetary benefit per patient is €344.88.
**Tegaderm™ CHG Dressing helps reduce the risk of bacterial colonization of the tip and the insertion site of epidural and local regional catheters used in anesthesia.**


**RESULTS**

**Positive Culture Results**

<table>
<thead>
<tr>
<th></th>
<th>Insertion Sites</th>
<th>Catheter Tips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Dressing</td>
<td>41%</td>
<td>86%</td>
</tr>
<tr>
<td>Tegaderm™ CHG Dressing</td>
<td>8%</td>
<td>3%</td>
</tr>
</tbody>
</table>

80% reduction in insertion site colonization with use of Tegaderm™ CHG Dressing.

86% reduction in catheter tip colonization with use of Tegaderm™ CHG Dressing.

**KEY FINDINGS**

**TOPIC(S)**

Antimicrobial Protection

**DESIGN**

Prospective study that included a total of 337 anesthesia catheters from 308 patients in a routine clinical setting.

**METHODS**

Examination of the effect of Tegaderm™ CHG Dressing applied to two separate patient groups requiring local regional or epidural anesthesia. Catheter tips and insertion sites were assessed for colonization after treatment was discontinued.
Tegaderm™ CHG Dressing helps reduce the risk of CLABSI.


**TOPIC(S)**

- Infection Reduction

**DESIGN**

Before and after historical central line-associated bloodstream infection (CLABSI) study of 1,298 patients at two intensive care units (ICUs) from November 2010 to May 2012.

**METHODS**

Studies compared the number of CLABSIs and infection rates between patients with standard dressings and Tegaderm™ CHG Dressing. The results were also compared to historical data.

**RESULTS**

<table>
<thead>
<tr>
<th></th>
<th>CLABSI Rate (per 1,000 Catheter Days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Dressing</td>
<td>5.9</td>
</tr>
<tr>
<td>Tegaderm™ CHG Dressing</td>
<td>1.5</td>
</tr>
</tbody>
</table>

(p=<0.0001)

**KEY FINDINGS**

- 74% reduction in CLABSI using Tegaderm™ CHG Dressing compared to standard dressings in the observation phase.

- The low rate of adverse events associated with Tegaderm™ CHG Dressing was a positive result.

- The durability of Tegaderm™ CHG Dressing was confirmed to be 7 days.
“A low rate of catheter-related bloodstream infections can be maintained, nurses’ satisfaction achieved, and cost savings realized with the dressing.”


**RESULTS**

**Performance Ratings for a One-piece Tegaderm™ Dressing with Chlorhexidine Gluconate**

<table>
<thead>
<tr>
<th>TOPIC(S)</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Economics</td>
<td>Estimated savings in the ICU for a similar 6-month period would be $1,463.76 and estimated savings hospital-wide would be $19,511.91.</td>
</tr>
<tr>
<td>Ease of Use</td>
<td>Nurses prefer Tegaderm™ CHG Dressing over BIOPATCH® Disks.</td>
</tr>
</tbody>
</table>

**DESIGN**

Quality improvement observation study completed in an adult medical-surgical intensive care unit (ICU) in a 714-bed tertiary care facility during a period of 1,881 device days.

**METHODS**

Comparison of the effectiveness of a one-piece Tegaderm™ CHG Dressing versus a dressing plus a BIOPATCH® Disk on patients with a central venous catheter in the ICU. Patients were monitored for catheter-related bloodstream infections. Evaluation of cost and nurses’ satisfaction (n=30) with the new dressing.
BIOPATCH® was replaced with Tegaderm™ CHG for all central venous catheters and arterial lines for all ICU patients because healthcare workers reported significant improvement in fitness of use.


**TOPIC(S)**
Ease of Use

**DESIGN**
Clinical staff evaluation at 5 ICUs (2,000 admissions and 11,000 patient-days annually).

**METHODS**
Study compared the fitness of use of BIOPATCH® Disks (n=24) and Tegaderm™ CHG Dressings (n=42) in a mixed ICU based on a questionnaire given to healthcare workers.

**RESULTS**

Comparison of Staff Satisfaction Evaluation

<table>
<thead>
<tr>
<th>Ease of Use</th>
<th>BIOPATCH®</th>
<th>Tegaderm™ CHG Dressing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Good</td>
<td>74%</td>
<td>13%</td>
</tr>
<tr>
<td>Good</td>
<td>26%</td>
<td>46%</td>
</tr>
<tr>
<td>Average</td>
<td>0%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Percent of Respondents

(p<0.001)

**KEY FINDINGS**

There was significant improvement of the ease of installation reported for Tegaderm™ CHG Dressing compared to BIOPATCH® Disks.

In most cases, staff reported that Tegaderm™ CHG Dressing improved coverage of the insertion and suture sites.
Tegaderm™ CHG Dressing is designed to ensure consistently correct placement with the CHG gel pad completely covering the catheter insertion site in 100% of tested applications.


### DESIGN
Clinical audits of dressing application and occlusiveness conducted in 2009 while using a BIOPATCH® Disk and in 2012 while using a Tegaderm™ CHG Dressing.

### METHODS
Audit evaluated the frequency of correct application for BIOPATCH® Disks and Tegaderm™ CHG Dressing in 248 dressing applications.

### RESULTS

**Percentage of Dressings Correctly Placed at the Insertion Site**

<table>
<thead>
<tr>
<th></th>
<th>CHG Gel n=120</th>
<th>CHG Sponge n=128</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>100%</td>
<td>31%</td>
</tr>
<tr>
<td>75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### KEY FINDINGS

**BIOPATCH® Disks**

- **Placed incorrectly** at the insertion site 69% of the time despite repeated educational sessions.

**Inappropriate placement**

- Of the BIOPATCH® Disks included the disk placed on top of the catheter, disk upside down, radial slit not approximated, or disk too small for catheter size.

[CLICK HERE to view Abstract]
The Tegaderm™ CHG Dressing demonstrated broad-spectrum antimicrobial activity against all 37 strains of microorganisms tested.


<table>
<thead>
<tr>
<th>TOPIC(S)</th>
<th>RESULTS</th>
<th>KEY FINDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimicrobial Protection</td>
<td>Tegaderm™ CHG Dressing demonstrates in vitro efficacy against 37 strains of microorganisms including gram-positive and gram-negative bacteria and yeasts.</td>
<td>Many of the 37 strains tested were resistant organisms, including MRSA, MRSE, VRE, and MDR strains.</td>
</tr>
</tbody>
</table>

**RESULTS**

**Tegaderm™ CHG Dressing demonstrates in vitro efficacy against 37 strains of microorganisms including gram-positive and gram-negative bacteria and yeasts.**

<table>
<thead>
<tr>
<th>Enterococcus (5 strains)</th>
<th>Pseudomonas aeruginosa (5 strains)</th>
<th>Candida (2 strains)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus (8 strains)</td>
<td>Escherichia coli (1 strain)</td>
<td>Coag Neg Staph (7 strains)</td>
</tr>
<tr>
<td>Klebsiella (2 strains)</td>
<td>Enterobacter (1 strain)</td>
<td>Other (6 strains)</td>
</tr>
</tbody>
</table>

**KEY FINDINGS**

Many of the 37 strains tested were resistant organisms, including MRSA, MRSE, VRE, and MDR strains.

*Tegaderm™ CHG Dressing retains its antimicrobial properties as demonstrated by the aged dressing’s ability to produce similar zones of inhibition* compared to unaged dressings.

*No clinical correlations intended.*
Tegaderm™ CHG Dressing provides antimicrobial protection under the catheter.


**TOPIC(S)**

- Antimicrobial Protection

**DESIGN**

*In vitro* study to assess the zones of inhibition generated from surface CHG and diffused CHG.*

**METHODS**

Multiple *in vitro* methodologies were used in this study:

1. **Surface availability:** Evaluated the presence of CHG on the surface of Tegaderm™ CHG Dressing and BIOPATCH® in the absence of additional moisture.

2. **CHG diffusion:** Evaluated the diffusion of CHG from Tegaderm™ CHG Dressing through an agar plate to areas not in direct contact.

**RESULTS**

**Method 1: Provides Antimicrobial Protection without Moisture**

Images of agar plates inoculated with *S. epidermidis* at 24 hours

The darker zone in the center of the Tegaderm™ CHG Dressing photo demonstrates bacterial inhibition.*

![Images of agar plates](image)

**Method 2: Provides Antimicrobial Protection under the Catheter**

Images of agar plates inoculated with *S. epidermidis*

- The darker zone demonstrates bacterial inhibition under and around the catheter.
- The imprint left by the gel pad is visible in the photo.

![Images of agar plates](image)

*No clinical correlations intended.

**KEY FINDINGS**

Tegaderm™ CHG Dressing provides antimicrobial protection **without any additional moisture.**

CHG from the Tegaderm™ CHG Dressing is **diffused** under the catheter.
Tegaderm™ CHG Dressing provides continuous antimicrobial activity.


**TOPIC(S)**

- Antimicrobial Protection

**DESIGN**

*In vivo* trials in healthy volunteers of immediate and long-term cutaneous antimicrobial activity to analyze prevention of skin floral regrowth on alcohol prepped subclavian sites and cumulative kill of skin flora on unprepped sites over 10 days of exposure.

**METHODS**

Study compared the antimicrobial effectiveness of Tegaderm™ CHG Dressing to BIOPATCH® Disks on healthy adult volunteers.

**RESULTS**

**Provides Immediate and Persistent Reduction of Microbes**

*In vivo* kill time of normal flora on unprepped skin on healthy adult volunteers.

![Graph showing antimicrobial activity comparison](Image)

- **Tegaderm™ CHG Dressing**
- **BIOPATCH® Disk**

Days: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Microflora Count (Log CFU/cm² +/- SEM*)

- 3.5
- 3.0
- 2.5
- 2.0
- 1.5
- 1.0
- 0.5
- 0.0

*(p=0.008)*

*SEM: Scanned Electron Microscopy*

**KEY FINDINGS**

Tegaderm™ CHG Dressing is proven to be as effective as or better than BIOPATCH® Disks at persistently reducing microbes at each time point.

[CLICK HERE to view Poster]
Description

3M™ Tegaderm™ CHG Chlorhexidine Gluconate I.V. Securement Dressing is used to cover and protect catheter sites and to secure devices to the skin. It is available in a variety of shapes and sizes. Tegaderm™ CHG I.V. Securement Dressing consists of a transparent adhesive dressing and an integrated gel pad containing 2% w/w Chlorhexidine Gluconate (CHG), a well known antiseptic agent with broad spectrum antimicrobial and antifungal activity.

The transparent film provides an effective barrier against external contamination including fluids (waterproof), bacteria, viruses* and yeast, and protects the I.V. site.

*In vitro testing (log reduction and barrier testing) demonstrates that the Tegaderm™ CHG gel pad in the Tegaderm™ CHG I.V. Securement Dressing has an antimicrobial effect against, and is a barrier to, a variety of gram-positive and gram-negative bacteria, and yeast in the dressing. The gel pad absorbs fluid.

Tegaderm™ CHG I.V. Securement Dressing is transparent, allowing continual site observation, and is breathable, allowing good moisture vapor exchange.

Indications

3M™ Tegaderm™ CHG Chlorhexidine Gluconate I.V. Securement Dressing can be used to cover and protect catheter sites and to secure devices to skin. Common applications include securing and covering IV catheters, other intravascular catheters and percutaneous devices.

Tegaderm™ CHG I.V. Securement Dressing is intended to reduce vascular catheter colonization and catheter-related bloodstream infections (CRBSI) in patients with central venous or arterial catheters.

Warnings

• DO NOT USE TEGADERM™ CHG I.V. SECUREMENT DRESSING ON PREMATURE INFANTS OR INFANTS YOUNGER THAN 2 MONTHS OF AGE. USE OF THIS PRODUCT ON PREMATURE INFANTS MAY RESULT IN HYPERSENSITIVITY REACTIONS OR NECROSIS OF THE SKIN.

• FOR EXTERNAL USE ONLY. DO NOT ALLOW THIS PRODUCT TO CONTACT EARS, EYES, MOUTH OR MUCOUS MEMBRANES.

• THE SAFETY AND EFFECTIVENESS OF TEGADERM™ CHG I.V. SECUREMENT DRESSING HAS NOT BEEN ESTABLISHED IN CHILDREN UNDER 18 YEARS OF AGE.

• DO NOT USE TEGADERM™ CHG I.V. SECUREMENT DRESSING DIRECTLY OVER BURN INJURY.

• DO NOT USE THIS PRODUCT ON PATIENTS WITH KNOWN HYPERSENSITIVITY TO CHLORHEXIDINE GLUCONATE. THE USE OF CHLORHEXIDINE GLUCONATE CONTAINING PRODUCTS HAS BEEN REPORTED TO CAUSE IRRITATIONS, SENSITIZATION, AND GENERALIZED ALLERGIC REACTIONS.

Hypersensitivity reactions associated with topical use of Chlorhexidine Gluconate have been reported in several countries. The most serious reactions (including anaphylaxis) have occurred in patients treated with lubricants containing Chlorhexidine Gluconate, which were used during urinary tract procedures. Preparations of this type are not approved for sale in the U.S. under any circumstances. Caution should be taken when using Chlorhexidine Gluconate containing preparations, and the patient should be observed for the possibility of hypersensitivity reactions.

• IF ALLERGIC REACTIONS OCCUR, DISCONTINUE USE IMMEDIATELY, AND IF SEVERE, CONTACT A PHYSICIAN.

Caution: Federal Law restricts the device to sale by or on the order of a licensed health care professional.

Precautions

3M™ Tegaderm™ CHG I.V. Securement Dressing should not be placed over infected wounds. This device is not intended to treat catheter-related bloodstream infections (CRBSI) or other percutaneous device-related infection.

Any active bleeding at the insertion site should be stabilized before applying the dressing. Do not stretch the dressing during application. Mechanical skin trauma may result if dressing is applied with tension.

The skin should be clean, dry and free of detergent residue. Allow all preps and protectants to dry completely before applying the dressing to prevent skin irritation and to ensure good adhesion.
To learn more about 3M™ Tegaderm™ CHG Dressing or to schedule a product evaluation, visit us at 3M.com/TegadermCHG