Clinical Evidence Summary

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## PEER REVIEWED

<table>
<thead>
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<th>Outcomes Key</th>
<th>Title</th>
<th>Population:</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>📊</td>
<td>Infection and/or contaminated blood cultures</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>✅</td>
<td>Compliance and/or patient/staff satisfaction</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>🕒</td>
<td>Staff time and/or length of stay</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>💰</td>
<td>Cost</td>
<td></td>
<td>8</td>
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</table>

### 5
Antiseptic barrier cap effective in reducing central line-associated bloodstream infections: A systematic review and meta-analysis.  

### 6
A bundled approach to decrease primary bloodstream infections related to peripheral intravenous catheters.  

### 7
Strategies for the successful implementation of disinfectant port protectors to reduce CLABSI in a large tertiary care teaching hospital.  

### 8
Educational interventions alone and combined with port protector reduce the rate of central venous catheter infection and colonization in respiratory semi-intensive care unit.  

### 9
Impact of universal disinfectant cap implementation on central line-associated bloodstream infections.  

### 10
Port protectors in clinical practice: an audit.  

### 11
Central venous catheter protective connector caps reduce intraluminal catheter-related infection.  
**Outcomes Key**

- Infection and/or contaminated blood cultures
- Compliance and/or patient/staff satisfaction
- Staff time and/or length of stay
- Cost

**ABSTRACTS**

**Successful decrease of central line-associated bloodstream infections in an urban neonatal intensive care unit using a pediatric-specific interdisciplinary approach.**

**Systematic review on impact of use of disinfectant caps protectors for intravenous access ports on central line-associated bloodstream infections (CLABSI).**

**A significant decline in central line-associated bloodstream infections using alcohol-impregnated port protectors at a large non-profit acute care hospital.**
### ABSTRACTS

#### Alcohol-impregnated disinfectant caps reduce the rate of central-line associated bloodstream infections and nosocomial bacteremia.

<table>
<thead>
<tr>
<th>Outcomes Key</th>
<th>Population: Multiple Specialties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection and/or contaminated blood cultures</td>
<td>18</td>
</tr>
</tbody>
</table>

#### The impact of 70% isopropyl alcohol port protection caps on catheter related bloodstream infection in patients on home parenteral nutrition.
Small M. Presented at: World Congress Vascular Access; June 20, 2014; Berlin, Germany.

<table>
<thead>
<tr>
<th>Outcomes Key</th>
<th>Population: Home Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance and/or patient/staff satisfaction</td>
<td>19</td>
</tr>
</tbody>
</table>

#### Decreasing the incidence of central line-associated blood stream infections using alcohol-impregnated port protectors (AIPPS) in a neonatal intensive care unit.

<table>
<thead>
<tr>
<th>Outcomes Key</th>
<th>Population: Neonatal Intensive Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>20</td>
</tr>
</tbody>
</table>

#### Decreasing CLABSI rates and cost following implementation of a disinfectant cap in a tertiary care hospital.

<table>
<thead>
<tr>
<th>Outcomes Key</th>
<th>Population: Hospital Wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff time and/or length of stay</td>
<td>21</td>
</tr>
</tbody>
</table>

#### Impact of alcohol-impregnated protectors on incidence of catheter-associated bloodstream infections.

<table>
<thead>
<tr>
<th>Outcomes Key</th>
<th>Population: Oncology and Stem Cell Transplant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection and/or contaminated blood cultures</td>
<td>22</td>
</tr>
</tbody>
</table>

#### Reduction in central line associated bloodstream infection (CLABSI) in a neonatal intensive care unit with use of access site disinfection caps.
Pong A, Salgado C, Speziale M, Grimm P, Abe C. Presented at: Infectious Disease Society of America annual meeting; October 21, 2011; Boston, MA.

<table>
<thead>
<tr>
<th>Outcomes Key</th>
<th>Population: Neonatal Intensive Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff time and/or length of stay</td>
<td>23</td>
</tr>
</tbody>
</table>

## ADDITIONAL RESOURCES

### Abstracts / Articles
“...use of the antiseptic barrier cap can lower the occurrence of CLABSIs and is cost saving.”


**DESIGN**

Systematic review and meta-analysis

**METHODS**

Studies conducted in the hospital setting that compared 3M™ Curos™ Disinfecting Cap for Needleless Connectors and SwabCap® Disinfecting Caps to manual disinfection on the incidence of central line associated bloodstream infection (CLABSI) per 1000 catheter days were included.

**RESULTS**

<table>
<thead>
<tr>
<th></th>
<th>Manual Disinfection (Scrub the Hub)</th>
<th>Antiseptic Barrier Caps*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Pooled CLABSI Incidence (per 1000 catheter days)</td>
<td>1.0</td>
<td>0.59</td>
</tr>
</tbody>
</table>

(p<0.001)

9 studies were included in the systematic review and 7 within the meta-analysis.

* Curos Disinfecting Cap for Needleless Connectors and SwabCap Disinfecting Caps

There were 41% fewer CLABSIs associated with use of the antiseptic barrier cap (IRR = 0.59, 95% CI = 0.45-0.77 p<0.001)

Overall median rate of compliance with barrier cap = 82.5%

Net cost savings ranged from $39,050 - $3,268,990
“Using a PIV maintenance bundle including disinfecting caps and tips can effectively lower the rate of primary bloodstream infections attributable to PIV lines.”


**RESULTS**

![Graph showing reduction in primary bloodstream infections](image)

**# of Primary Bloodstream Infections**

- **Pre Intervention**: 46 PLABSI, 17 CLABSI
- **Intervention**: >63% reduction

**Average BSI Rate for Peripheral and Central Lines (per 1000 patient days)**

- **Pre Intervention**: 0.57 PLABSI, 0.11 CLABSI
- **Intervention**: 0.10 CLABSI

*Because CLABSI bundle was implemented prior to study, no significant change to CLABSI rate was anticipated or observed during study time period.*

**DESIGN**

Before and after intervention study comparing hospital wide peripheral line-associated bloodstream infections (PLABSI) and intervention compliance.

**METHODS**

**Pre Intervention**: Primary bloodstream infection and IV catheter data collected

**Intervention**: PIV bundle implemented. 3M™ Curos Tips™ Disinfecting Cap for Male Luers added to existing Central Line-Associated Bloodstream Infection (CLABSI) bundle for all disconnected IV tubing. Compliance monitored for PIV and CLABSI bundles.

**PIV Bundle elements:**

- Prohibit disconnecting IV tubing for convenience
- 3M™ Curos™ Disinfecting Cap for Needleless Connectors on all ports for all patients
- 3M™ Curos Tips™ Disinfecting Cap for Male Luers on all disconnected tubing
- Assessment of IV site, removing IV catheters with indication of phlebitis
- Assessment of dressing, changing if nonocclusive or blood is present

Compliance with protecting all needleless connectors was near 90%.

Compliance with protecting male ends of disconnected IV tubing was near 90%.
“Inclusion of the alcohol impregnated disinfecting port protectors (AIDPP), as a component of the CLABSI bundle, hardwired adherence by audit accountability.”


**DESIGN**
Quasi-experimental study comparing hospital-wide central line-associated bloodstream infection (CLABSI) rates at a 1009-bed tertiary hospital using an evidence-based, multidisciplinary approach.

**METHODS**

Pre Intervention: Standard central line bundle of care

Intervention:
- Standard central line bundle of care
- 3M™ Curos™ Disinfecting Port Protectors implementation plan
- 3M™ Curos™ Disinfecting Port Protectors 21-Day Challenge
- 3M™ Curos Jet™ Disinfecting Caps for Needleless Connectors
- 3M™ Curos™ Stopper Disinfecting Caps for Open Female Luers
- 3M™ Curos Tips™ Disinfecting Caps for Male Luers

**RESULTS**

CLABSI per 1000 device days

<table>
<thead>
<tr>
<th></th>
<th>Pre Intervention (7/17 - 10/17)</th>
<th>Intervention (11/17 - 3/18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLABSI per 1000 device days</td>
<td>1.36</td>
<td>0.87</td>
</tr>
</tbody>
</table>

36% reduction trend

*The authors did not statistically test if the reduction in CLABSI was significant between the periods.

Reduction of 1.36 to 0.87 CLABSI per 1000 device days

Used 21-Day Challenge to increase adherence rate from 67% to 94%

Potentially saved an adjusted $1.6M in 8 months, accounting for added cost of port protectors

VIEW FULL CLINICAL STUDY

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3M™ Curos™ Disinfecting Caps for Needleless Connectors combined with educational interventions led to zero rate of CLABSIs.


### DESIGN
Prospective randomized study, assessing the rate of CLABSIs, CVC colonizations and contaminated blood cultures before and after introduction of educational interventions alone and combined with Curos Disinfecting Caps.

### METHODS
Pre Intervention:
Standard central line bundle of care (n=86)

Intervention:
Randomized patients into two groups:
- Group 1: Educational intervention (n=25)
- Group 2: Curos Disinfecting Caps plus educational intervention (n=21)

### RESULTS

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>CLABSI Rate (per 1000 central line days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (Obs)</td>
<td>8.6</td>
</tr>
<tr>
<td>1 (Edu)</td>
<td>2.6</td>
</tr>
<tr>
<td>2 (Curos + Edu)</td>
<td>0</td>
</tr>
</tbody>
</table>

- **70% reduction** (p=0.0568) with Educational intervention alone
- **100% reduction** (p=0.096) with Curos Disinfecting Caps plus educational interventions

Contaminated blood cultures decreased to ZERO with Curos Disinfecting Caps plus educational interventions.

67% reduction of CVC colonizations with Curos Disinfecting Caps plus educational interventions.
“Disinfectant cap use was associated with an estimated savings of almost $300,000 per year in the hospital studied.”


**DESIGN**
Before and after intervention study comparing CLABSI rates and estimated costs in patients (newborn to adult) with CVCs and PIVs from 13 units at a Level 1 Trauma Center.

**METHODS**

**Pre Intervention:**
Standard central line bundle of care

**Intervention:**
3M™ Curos™ Disinfecting Cap for Needleless Connectors placed on central, peripheral and IV tubing needleless connectors

**RESULTS**

Mean CLABSI Rate (per 1000 catheter days)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>1.5</td>
<td>0.88</td>
</tr>
</tbody>
</table>

>40% reduction (p=0.004)

10% Increase in compliance was associated with 7% drop in infection rates

Estimated decrease of 68 patient hospital days after cap implementation

Estimated annual savings = $282,840

REQUEST FULL CLINICAL STUDY

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The number of vascular access device (VAD) related bacteraemias was reduced by 69% when compliance with Curos™ cap placement was 80% or more.


**Design**
Before and after intervention study comparing VAD related bacteraemia for CVCs, PIVs and arterial lines from four wards at two hospital sites.

**Methods**
- **Pre Intervention:** Scrub the hub using CHG/IPA wipes prior to IV access
- **Intervention:** 3M™ Curos™ Disinfecting Cap for Needleless Connectors placed on all needleless devices
- **Post intervention:** Scrub the hub protocol resumed

**Results**

Catheter-related Bloodstream Infections (per 1000 line days)

<table>
<thead>
<tr>
<th></th>
<th>Pre Intervention (10/13 - 3/14)</th>
<th>Intervention (4/14 - 9/14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated potential time savings from passive disinfection compared to scrub the hub equated to</td>
<td>82.4 working days/yr</td>
<td></td>
</tr>
<tr>
<td>Compliance to protocol increased from</td>
<td>27% to 80% during the intervention period</td>
<td></td>
</tr>
<tr>
<td>100% of staff surveyed preferred disinfecting caps</td>
<td>92% of patients provided positive feedback</td>
<td></td>
</tr>
<tr>
<td>Estimated cost savings with passive disinfection =</td>
<td>£387366.22</td>
<td></td>
</tr>
</tbody>
</table>

Infection rates began to increase when scrub the hub was resumed in the post intervention period (10/14 - 3/15).
Pre Intervention: Scrub the hub protocol

Intervention: 3M™ Curos™ Disinfecting Cap for Needleless Connectors placed on all CVC and IV tubing needleless connectors

"The implementation of the port protector cap system resulted in lower infection rates compared with an alcohol swab technique."


Before and after intervention study comparing CLABSI rates in patients with CVCs from 2 ICUs.

**RESULTS**

CLABSI Rate (per 1000 catheter days)

- Pre Intervention (2010)
  - 1.9

- Intervention (3/11 - 2/12)
  - 0.5

>73% reduction (p=0.1260)

Compliance increased from 63% to 80% after moving from single caps to multiple cap strips to hang on IV pole for bedside access

The trial resulted in a calculated net savings of $39,050
“Application of the bundle resulted in a significant and sustained reduction in CLABSI rates in long-term acute care hospitals (LTACHs) for 14 months.”


**RESULTS**

<table>
<thead>
<tr>
<th>CLABSI Standardized Infection Ratio (SIR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre Intervention</strong> (2/12 - 7/12)</td>
</tr>
<tr>
<td>1.28</td>
</tr>
</tbody>
</table>

\[(p=0.01)\]

The study concluded that the mean number of CLABSIs per LTACH decreased by 4.5 in the 14 months after the intervention. The infection reduction could have potentially saved 20 patients’ lives.*

*assuming a 15% mortality rate

Estimated potential savings of approximately $3.7 million for the LTACHs studied

**Design**

Before and after intervention study comparing CLABSI in patients with CVCs from 30 long-term acute care hospitals (LTACHs).

**Methods**

Pre Intervention:
No formal standardized CVC maintenance protocol in place

Intervention:
Implementation of CVC maintenance bundle and care team trained on CVC care

CVC bundle:
- CDC guideline recommendations
- Mandatory use of 3M™ Curos™ Disinfecting Cap for Needleless Connectors on all IV needleless connectors
- Chlorhexidine gluconate dressings

The number of central line days was 120,137 before and 119,412 after bundle implementation.
Implementation of port protectors and needleless neutral pressure connectors was associated with a significant reduction in the rate of CLABSIs and contaminated blood cultures (CBCs).


**DESIGN**

Before and after intervention study comparing CLABSI and CBC rates in adult hematology and oncology patients with CVCs.

**METHODS**

Pre Intervention:
Scrub the hub protocol

Intervention:
Needleless neutral pressure connectors and 3M™ Curos™ Disinfecting Cap for Needleless Connectors placed on CVC hubs

**RESULTS**

CLABSI Rate (per 1000 catheter days)

<table>
<thead>
<tr>
<th></th>
<th>Pre Intervention (2009)</th>
<th>Intervention (1/10 - 7/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>2.3</td>
<td>0.3</td>
</tr>
<tr>
<td>87% reduction (p=0.03)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CBC Rate (%)

<table>
<thead>
<tr>
<th></th>
<th>Pre Intervention (2009)</th>
<th>Intervention (1/10 - 7/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>2.5</td>
<td>0.2</td>
</tr>
<tr>
<td>92% reduction (p=0.002)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The number of central line days was 6,851 in the pre intervention and 3,005 in the intervention period.
“Following implementation of the caps, the rates of CLABSI within the burn ICU were significantly reduced...”


**BACKGROUND**

Despite > 90% compliance to the CVC bundle, the CLABSI rate in the burn ICU was higher than benchmark.

**DESIGN**

Prospective before and after intervention study comparing CLABSI rates in burn patients with CVCs.

**METHODS**

**Pre Intervention:**
CDC recommended CVC bundle and scrub the hub protocol

**Intervention:**
3M™ Curos™ Disinfecting Cap for Needleless Connectors added to CVC bundle as a standard of care Jan 2012

**RESULTS**

CLABSI Rate (per 1000 central line days)

<table>
<thead>
<tr>
<th></th>
<th>Pre Intervention (7/11 - 12/11)</th>
<th>Intervention (1/12 - 6/12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLABSI Rate</td>
<td>7.43</td>
<td>2.36</td>
</tr>
<tr>
<td>Reduction</td>
<td>68%</td>
<td></td>
</tr>
</tbody>
</table>

The number of central line days was 673 in the preintervention and 1272 in the intervention period.

“... ease of use with the caps simplified daily tasks, leading to higher compliance.”
Post intervention CLABSI rate improved from 5.2 to 0.4 per 1000 line days in 2014 (p<0.05).


**DESIGN**

Before and after intervention study comparing CLABSI in NICU patients.

**INTERVENTION**

Implementation of an interdisciplinary pediatric CLABSI committee and multiple interventions including:

- Insertion checklist, placement of non-emergent lines in dedicated procedure room
- Daily assessment of line necessity
- Daily assessment of dressing, exit site and presence of 3M™ Curos™ Disinfecting Cap for Needleless Connectors

**RESULTS**

CLABSI Infections (per 1000 line days)

- Pre Intervention (2012) - 5.2
- Intervention (2013) - 1.0
- Post Intervention (2014) - 0.4

92% overall reduction (p<0.05)
By utilizing disinfecting caps compliance is more accurate and a significant reduction can be seen in the burden of CLABSIs.


**METHODS**

A systematic review was conducted according to the MOOSE guidelines using MEDLINE, EMBASE, CINAHL, Scopus and the Cochrane Database without any limits. Searches were conducted to identify articles needing inclusion criteria and were independently screened by the authors.

**RESULTS**

CLABSI reduction ranged from 30% to 87% in the 9 studies included in the systematic review.

9 quasi-experimental studies examining the effect of 3M™ Curos™ Disinfecting Caps for Needleless Connectors and Swabcap® Disinfecting Caps on CLABSI were included.
Implementation of disinfecting caps was associated with a reduced rate of hospital wide CLABSI, cost savings and increased nursing satisfaction.


**DESIGN**

Before and after intervention study comparing hospital wide CLABSI standardized infection ratios (SIR).

**METHODS**

**Pre Intervention:** 15 second scrub the hub protocol

**Intervention:** Implemented 3M™ Curos™ Disinfecting Cap for Needleless Connectors hospital wide

**RESULTS**

Adult CLABSI SIR

<table>
<thead>
<tr>
<th></th>
<th>Pre Intervention (1/12 - 10/12)</th>
<th>Intervention (11/12 - 8/13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult CLABSI SIR</td>
<td>0.85</td>
<td>0.27</td>
</tr>
</tbody>
</table>

68% reduction (p=0.003)
“When disinfectant caps were used on all IV ports, the rate of both CLABSI and nosocomial BSI fell significantly.”


### RESULTS

<table>
<thead>
<tr>
<th></th>
<th>CLABSI Rate (per 1000 line days)</th>
<th>Nosocomial BSI Rate (per 1000 patient days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Intervention</td>
<td>1.5</td>
<td>0.73</td>
</tr>
<tr>
<td>Intervention</td>
<td>0.4</td>
<td>0.47</td>
</tr>
</tbody>
</table>

#### DESIGN

Before and after intervention study comparing CLABSI and nosocomial bloodstream infections (BSI) in 4 hospital units (ICU, step down, 2 med/surg units).

#### INTERVENTION

3M™ Curos™ Disinfecting Cap for Needleless Connectors or Swabcap® Disinfecting Caps placed on all needleless IV access ports of peripheral and central lines.

The number of line days was 10,441 in the baseline and 9,536 in the intervention period.

In units that did not implement disinfectant caps, there was no significant difference in CLABSI or nosocomial BSI rates.
99.3% of patients were compliant with the intervention and 99.6% were extremely happy with in-home use of disinfecting caps.

Small M. The impact of 70% isopropyl alcohol port protection caps on catheter related bloodstream infection in patients on home parenteral nutrition. Presented at: World Congress Vascular Access; June 20, 2014; Berlin, Germany.

**DESIGN**

Before and after intervention study comparing CRBSI in-home care patients on parenteral nutrition.

**INTERVENTION**

3M™ Curos™ Disinfecting Cap for Needleless Connectors placed on needleless connectors and patients instructed to continue to actively disinfect the hub after cap removal, immediately before access.

**RESULTS**

Mean CRBSI Rate (per 1000 catheter days)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean CRBSI Rate</td>
<td>1.36</td>
<td>0.47</td>
</tr>
<tr>
<td>65% reduction</td>
<td>(p&lt;0.001)</td>
<td></td>
</tr>
</tbody>
</table>

99.3% of patients were compliant

99.6% of patients were extremely happy with the product
A significant decline in the incidence of CLABSIs was observed after the addition of Curos™ disinfecting caps to an existing central line bundle.


**DESIGN**

Before and after intervention study comparing CLABSI standardized infection ratios (SIR) in level 3 NICU patients.

**METHODS**

*Pre Intervention:* Evidence-based central line bundle including 15 second scrub the hub protocol

*Intervention:* Implemented 3M™ Curos™ Disinfecting Cap for Needleless Connectors on IV access ports

**RESULTS**

CLABSI SIR

<table>
<thead>
<tr>
<th>Year</th>
<th>SIR</th>
<th>58% overall reduction (p=0.04)***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Intervention (2010)</td>
<td>1.723</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1.013*</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>0.722**</td>
<td></td>
</tr>
</tbody>
</table>

*Intervention began Q1 2011; Results included Q4 2011 when Curos disinfecting caps not in use

**Use of Curos disinfecting caps resumed Jan 2012

***Comparison is between 2010 and 2012
“The use of a disinfectant cap is effective in reducing the rate of CLABSI and contaminated blood cultures and provides a substantial cost savings.”


**DESIGN**

Before and after intervention study comparing CLABSI and nursing compliance in a Level I Trauma Center.

**METHODS**

*Pre Intervention:* Baseline data found that 55% of nurses scrub the needleless connector for < 5 seconds

*Intervention:* 3M™ Curos™ Disinfecting Cap for Needleless Connectors implemented on all central and peripheral needleless connectors in all inpatient departments (excluding women’s services)

**RESULTS**

<table>
<thead>
<tr>
<th>CLABSI Rate (per 1000 line days)</th>
</tr>
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<tbody>
<tr>
<td>2.4</td>
</tr>
</tbody>
</table>

64% reduction (p=0.02)

There was a non-significant decrease in contaminated blood cultures from 2.5% before to 1.4% after intervention.

Nursing compliance to the disinfecting cap increased significantly from 73% to 88% during the study (p=0.01).

Total estimated cost savings per month $95,000
Following discontinuation of disinfecting caps, the CABSIs rate returned to the pre intervention rate.


**DESIGN**

Before and after intervention study comparing catheter-associated bloodstream infection (CABSIs) between a control and intervention unit caring for acute leukemia and stem cell transplant patients.

**INTERVENTION**

Implementation of 3M™ Curos™ Disinfecting Cap for Needleless Connectors on CVC needleless connectors.

**RESULTS**

Median CABSIs Rate (per 1000 central line days)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>CABSIs Rate</td>
<td>5.3</td>
<td>3.7</td>
</tr>
</tbody>
</table>

30% reduction

The number of central line days was 20,126 in the pre intervention and 20,206 in the intervention period.

Analysis of CABSIs rate in a control unit during the same time periods were 5.6 (2010) and 5.4 (2011) per 1000 central line days.
The CLABSI rate decreased 68% the first year after implementation of Curos™ disinfecting cap, used in conjunction with other CLABSI prevention measures.

Pong A, Salgado C, Speciale M, Grimm P, Abe C. Reduction in central line associated bloodstream infection (CLABSI) in a neonatal intensive care unit with use of access site disinfection caps. Presented at: Infectious Disease Society of America annual meeting; October 21, 2011; Boston, MA.

**DESIGN**

Before and after intervention study comparing CLABSI and blood culture contaminants in level 4 NICU patients.

**METHODS**

**Pre Intervention:** CLABSI prevention measures in place:
- Sterile insertion technique
- Hand hygiene
- Hub cleansing with access
- Standards for dressing and tubing changes
- Prompt catheter removal

**Intervention:** 3M™ Curos™ Disinfecting Cap for Needleless Connectors added to all CVC needleless connectors

**RESULTS**

The number of central line days was 7,533 in the pre intervention and 6,782 in the intervention period.
ABSTRACTS


Kelleher J, Almeida R, Cooper H, Stauffer S. Achieving Zero CoN CLBSI in the NICU. Providence Sacred Heart Medical Center and Children’s Hospital, Spokane, WA, 2013.


Davis M. Forcing the function: implementation and evaluation of an IV port protector to decrease CLABSI. Legacy Health, Portland, OR, 2013.


ARTICLES


Doherty M, Heys P. Clinical support for all patients, all lines, all the time (AAA). Temple University Hospital case study, Philadelphia, PA, 2013.

