Chasing Zero Infections Webinar:
Central Line-Associated Blood Stream Infection (CLABSI)
June 6, 2017

Sally Forsberg RNC-OB, BSN, MBA, NEA-BC, CPHQ
Florida Hospital Association
• Welcome
• HIIN Update
• Presentation: Hospitals in Action – “Stop CLABSI”
  Sergio Alvarez, Coral Gables Hospital
• Presentation: CLABSI – Back to Basics or New Challenges?
  Linda R. Greene, RN, MPS, CIC, Infection Prevention Manager, UR Highland Hospital, Rochester, N.Y.
• Questions / Discussion
• Next Chasing Zero Infections Webinar
• Evaluation & Continuing Nursing Education
HIIN Core Topics – Aim is 20% reduction

Adverse Drug Events (ADE)
Catheter-associated Urinary Tract Infections (CAUTI)
C. difficile infection (CDI)
Central line-associated Blood Stream Infections (CLABSI)
Injuries from Falls and Immobility
Pressure Ulcers (PrU)
Sepsis
Surgical Site Infections (SSI)
Venous Thromboembolisms (VTE)
Ventilator Associated Events (VAE)
Readmissions (12% reduction)
Worker Safety
MTC FHA HIIN

How are we doing with reducing CLABSI?
CLABSI Rate - All

<table>
<thead>
<tr>
<th></th>
<th>Oct-16</th>
<th>Nov-16</th>
<th>Dec-16</th>
<th>Jan-17</th>
<th>Feb-17</th>
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<tr>
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<td>0.9</td>
<td>0.8</td>
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Source: HRET Comprehensive Data System, June 5, 2017
CLABSI Rate - ICUs

Source: HRET Comprehensive Data System, June 5, 2017
Central line utilization - All

Source: HRET Comprehensive Data System, June 5, 2017
Central line utilization - ICUs

<table>
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<tr>
<th></th>
<th>Baseline</th>
<th>Oct-16</th>
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Source: HRET Comprehensive Data System, June 5, 2017
MTC HIIN Resources

- QI Fellowships & PFE Fellowship
- Listservs - Infection Focused
- TeamSTEPPS training
- Chasing Zero Infections Series
- Up Campaign - Soap Up (Hand Hygiene)
- Hospital Consultation with Experts

Check the weekly *MTC HIIN INFO Upcoming Events* email for all events

www.HRET-HIIN.org
Central Line-Associated Bloodstream Infection (CLABSI)

Importance: CLABSI are serious, but preventable infections when evidence-based guidelines for central line insertion and maintenance are properly prioritized and implemented. If not prevented, CLABSI result in increased length of hospital stay, increased cost and increased patient morbidity and mortality. An estimated 30,100 CLABSI occur in U.S. intensive care units each year (CDC, 2015), with up to 250,000 occurring across care settings (Klevens et al., 2004). Patient mortality rates associated with CLABSI range from 12 to 25 percent (CDC, 2011) and the cost of CLABSI range from $3,700 to $36,000 per episode (Scott, 2009).

Between 2008 and 2013, the adoption and implementation of evidence-based practices has been associated with a 46 percent reduction in CLABSI (CDC, 2014). Nonetheless, further efforts are needed to prevent patient harm, especially in non-critical care settings, including hemodialysis centers and inpatient wards. As almost 32 percent of CLABSI occur outside the ICU, the spread of ICU successes is necessary to achieve patient safety goals across patient populations. To learn more about how CLABSI impact patients, listen to Nora’s story.

Accomplishments: From 2011 to 2014, the AHA/HRET HEN prevented an estimated 893 CLABSI with an estimated cost savings of over $15 million.

PfP Goal: By September 27, 2018, a 20 percent reduction in Central Line-Associated Bloodstream Infections.
CLABSI resources available at www.HRET-HIIN.org:

- Change Package
- Top 10 Checklist
- Watch Past Webinars
- Additional Resources
### Chasing Zero Infections Series

<table>
<thead>
<tr>
<th>Didactic Webinars</th>
<th>Interactive Coaching Calls</th>
<th>In-Person Meetings</th>
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<tr>
<td>Apr. 11 – SSI</td>
<td></td>
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<tr>
<td><strong>Jun. 6 – CLABSI</strong></td>
<td></td>
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<td>Sep. 12 – Sepsis</td>
<td></td>
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<tr>
<td>Oct. 24 – Antibiotic Stewardship</td>
<td></td>
<td>Nov. 2017 – TBA*</td>
</tr>
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</table>

*To be announced

Check your **MTC HIIN INFO Upcoming Events** Weekly Email for event details and registration. To request an archived webinar – email **HIIN@fha.org**
Upcoming Events

- **In-Person Meeting: July 21** – Patient & Family Engagement (PFE) Summit - Powerful Partnerships: Improving Quality and Outcomes at Harry P. Leu Gardens (Registration: [http://www.cvent.com/d/z5qsfg/2K](http://www.cvent.com/d/z5qsfg/2K))
- **June 6** – The Conversation Project – Engage: Moving from Passive to Proactive
- **June 7** – Worker Safety Webinar – Strategies to Improve PPE Placement, Use and Compliance
- **June 8** – Quality Improvement Resources to Support Outpatient Areas and Physician Practices
- **June 15** – Reduce Readmissions Fishbowl Series 2
- **June 20** – Using the CDC’s TAP Strategy to Prevent HAIs: Running & Understanding TAP Reports
- **June 22** – Opioid Safety Fishbowl Series 2
- **June 23** – PFE Learning Collaborative Webinar
- **June 27** – CAUTI Webinar- Culturing Practices Matter: Spotlight on Asymptomatic Bacteriuria

Check your **MTC HIIN INFO Upcoming Events** Weekly Email for event details and registration
Presentation: Hospitals in Action
“Stop CLABSII”
Sergio Alvarez
Coral Gables Hospital
CLABSI
(Central Line Associated Blood Stream Infection)
INTRODUCTION TO CLABSI

- From 2008-2013, an estimated 30,100 central line-associated bloodstream infections (CLABSI) occurred in acute care facilities each year.
ABOUT CLABSI

CLABSI (Central Line-Associated Bloodstream Infection) refers to serious infections typically causing a prolongation of hospital stay and increased cost and risk of mortality of 12% to 25%.

PREVENT CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTION
CLABSI PREVENTION

To Prevent Central Line-Associated Bloodstream Infections (CLABSI) Outside ICUs:

1. Remove unnecessary central lines
2. Follow proper insertion practices
3. Facilitate proper insertion practices
4. Comply with CDC hand hygiene recommendations
5. Use appropriate agent for skin antisepsis
6. Choose proper central line insertion sites
7. Perform adequate hub/access port disinfection
8. Provide staff education on central line maintenance and insertion

• CLABSI can be prevented through proper insertion techniques and management of the central line
FINANCIAL IMPACT OF CLABSI

As per AHRQ (Agency for Healthcare Research and Quality), Central line-associated bloodstream infections (CLABSIs) result annually in:

- 84,551 to 203,916 preventable infections
- 10,426 to 25,145 preventable deaths
- $1.7 to $21.4 billion avoidable costs

1 CLABSI COST $45,254

TOTAL ANNUAL COSTS

The annual cost nationally for the five major hospital infections was $9.8 billion.*

- Surgical site infections: 33.7%
- Ventilator-associated pneumonia: 31.6%
- Central line-associated bloodstream infections: 18.9%
- C. difficile infections: 15.4%
- Catheter-associated urinary tract infections: <1%

*2012 U.S. dollars
Source: National Institutes of Health (Edward Riojas/MLive.com)
CLABSI INTERVENTIONS

Interventions to decrease the number of CLABSIs:

- Avoid using Central Lines, check criteria prior to insertion
- Mid-Line program
- Use appropriate hand hygiene
- Use chlorhexidine for skin preparation and daily baths
- Use full-barrier precautions during central venous catheter (CVC) insertion
- Avoid using the femoral vein in adult patients
- Remove unnecessary Central Lines (daily assess of the necessity of all Central Lines in use)
- Report number of Central Lines daily in Huddle
CELEBRATING 3 YEARS OF NO CLABSI\textsuperscript{es} AT CORAL GABLES HOSPITAL

- Last CLABSI reported at CGH in 04/13/2014
- 01/07/2017 was 3 years with NO CLABSI
RECOGNITION

On behalf of the patients, families and the Infection Prevention Nurse:
Thanks for 3 years without CLABSI to:

- Hospital Leadership
- All Coral Gables Hospital Staff
- All House Physicians
CLABSI – Back to Basics or New Challenges?

Linda R. Greene, RN, MPS, CIC, FAPIC
Manager, Infection Prevention
UR Highland Hospital
Rochester, NY
linda_greene@urmc.rochester.edu
Objectives

- Discuss recent guidelines related to CLABSI prevention
- Review recent challenges related to CLABSI
- Identify and review recent literature related to CLABSI prevention
- Describe key strategies for prevention
The most recent HAI report was published in 2016 based on 2014 data.

CLABSIIs decreased by 50% in acute care hospitals - the only HAI meeting the HHS Action Plan target

Central lines are seen across the continuum of care and use is expected to continue to grow

Most CLABSI can be prevented through proper insertion techniques and management
Polling Question

My CLABSI SIR is:

1. Better than average
2. Significantly better than average
3. About average
4. Worse than average
The Quality Reporting Programs (QRPs) for various care settings grew out of quality improvement requirements in the Patient Protection and Affordable Care Act of 2010 (ACA), which included reduction of HAIs. The following QRPs include CLABSI.

- **Hospital Inpatient Quality Reporting Program** Reporting CLABSI in ICUs in acute-care hospitals through the CDC/NHSN

- Reporting began in January 2011 for FY 2013 Medicare payment determination

- January 2015 – CMS expanded CLABSI reporting to medical, surgical, and medical/surgical wards for FY 2017 Medicare payment determination
Regulatory Issues

- **Long-Term Care Quality Reporting Program (long-term acute care hospitals)** Reporting CLABSI through NHSN
  
  - Reporting began in October 2012 for FY 2014 payment determination

- **Prospective Payment System-exempt Cancer Hospital Quality Reporting Program** Reporting CLABSI through NHSN
  
  - Reporting began in October 2012 for CY 2014 payment determination
## FY 2019 Value-Based Purchasing Domain Weighting

(Payment adjustment effective for discharges from October 1, 2018 to September 30, 2019)

Version 1: 02-16-2017

<table>
<thead>
<tr>
<th>Healthcare-Associated Infections</th>
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<th>Performance Period</th>
<th>Threshold</th>
<th>Benchmark</th>
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<tr>
<td>Measures</td>
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<td></td>
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<tr>
<td>Central Line-Associated Bloodstream Infections (CLABSI)</td>
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<tr>
<td>Catheter-Associated Urinary Tract Infections (CAUTI)</td>
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<tr>
<td>Surgical Site Infection (SSI): Colon</td>
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<td></td>
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<td>SSI: Abdominal Hysterectomy</td>
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<td>Methicillin-resistant Staphylococcus aureus (MRSA)</td>
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<td>C. difficile Infections (CDI)</td>
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<td>0.924</td>
<td>0.113</td>
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</table>
Figure 1.3. NQF CLABSI Prevention Infographic

NATIONAL QUALITY FORUM

Reducing Central Line-Associated Bloodstream Infection (CLABSI) Rates Across the Country

NEARLY 1 IN 20
HOSPITALIZED PATIENTS ANNUALLY ACQUIRE AN “HAI”
Central line-associated bloodstream infections (CLABSI) are considered one of the most deadly healthcare-associated infections (HAIs). Preventing HAIs, and CLABSI in particular, has become a national patient safety priority.

MORTALITY RATES ASSOCIATED WITH CLABSI INFECTIONS ARE AS HIGH AS

25%

EACH CLABSI INFECTION COSTS MEDICARE:

$26,000

WHY MEASURES MATTER
For the past eight years, CLABSI initiatives have saved as much as $1.8 billion in excess healthcare costs.*

$1.8 BILLION SAVED

46% REDUCTION

2008 ——— 2013

PROGRESS SO FAR
As promising as these results have been, there is more work to be done.

For the last two decades, the CDC—as well as private partners—increased efforts at reducing rates of HAIs, including CLABSI.

In 2003, NQF endorsed a measure developed by the CDC that addresses CLABSI rates. 27 states are now requiring public reporting of certain HAIs, including CLABSI, for all their hospitals.

Under Medicare, hospitals are encouraged to curb HAIs. Starting in FY2015, HHS reduces payments to hospitals that have the highest HAIs (top quartile) by 1%.
# CLABSI vs. CRBSI

<table>
<thead>
<tr>
<th>Criteria</th>
<th>CLABSI</th>
<th>CRBSI</th>
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<tbody>
<tr>
<td><strong>Purpose of definition</strong></td>
<td>Surveillance</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td><strong>Device removal required</strong></td>
<td>Usually no</td>
<td>Usually yes</td>
</tr>
<tr>
<td><strong>Cultures</strong></td>
<td>Qualitative blood cultures</td>
<td>Blood cultures with differential time to positivity</td>
</tr>
<tr>
<td><strong>Catheter tip culture recommended</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Major advantage</strong></td>
<td>Convenience, lower cost, readily available in most laboratories</td>
<td>High sensitivity; better positive predictive value</td>
</tr>
<tr>
<td><strong>Major disadvantage</strong></td>
<td>Often unable to distinguish a primary and secondary BSI; may overstate the true incidence of primary CLABSI</td>
<td>More complex, less convenient, expensive</td>
</tr>
</tbody>
</table>

http://apic.org/Resource_/TinyMceFileManager/2015/APIC_CLABSI_WEB.pdf
Definition of Central Line

- A central venous catheter, or CVC, is an intravascular device that terminates at or close to the heart or one of the great vessels at the chest.

Examples:

- Non-tunneled central venous catheters, such as those placed in subclavian, jugular or femoral veins
- Tunneled central venous catheters
- Dialysis catheters
- Peripherally inserted central catheters, also called PICCs
- Implanted ports

Central venous catheters are useful because they provide easy access to the vascular system.
CLABSI Pathogenesis

Mechanisms

▪ More Common
  • Pathogen migration along external surface
    o More common early (< 7 days)
  • Hub contamination with intraluminal colonization
    o More common > 10 days

▪ Less Common
  • Hematogenous seeding from another source
  • Contaminated infusates

http://www.cdc.gov/hai/pdfs/toolkits/CLABSItoolkit_white020910_final.pdf
How Bacteria Access the Central Line

Sources of Bacterial Contamination:

- Organisms on patient and health care worker’s skin
- Contaminated needleless access device
- Bacteria from the patient sources (not skin)
- Contaminated infusate
The Role of Biofilm

Biofilms

- Complex aggregation of microorganisms growing on a solid substrate
- Form on catheter surfaces
- Contribute to risk for CLABSI

Biofilm on central venous catheter
CLABSI Prevention

CLABSI Prevention Focuses on

- Insertion
- Maintenance
- Removal
Guidelines

- APIC NEW Guide to Prevention of CLABSI
- SHEA Compendium of Strategies to Prevent CLABSI
- CDC HICPAC Guidelines
- Infusion Nurse’s Society; Standards of Practice
Looking at CLABSI

Insertion

Maintenance

Special issues
Strategies to Prevent Central Line–Associated Bloodstream Infections in Acute Care Hospitals: 2014 Update

Jonas Marschall, MD;1,2, a Leonard A. Mermel, DO, ScM;3 a Mohamad Fakih, MD, MPH;4 Lynn Hadaway, MEd, RN, BC, CRNI;5 Alexander Kallen, MD, MPH;6 Naomi P. O’Grady, MD;7 Ann Marie Pettis, RN, BSN, CIC;8 Mark E. Rupp, MD;9 Thomas Sandora, MD, MPH;10 Lisa L. Maragakis, MD, MPH;11 Deborah S. Yokoe, MD, MPH12
Insertion Practices

- Standard chlorhexidine/alcohol based prep
- Standardized tray or cart
- Full barrier precautions
- Optimal site selection - changes femoral site
Basic Recommendations

Insertion practices:

- Kit or cart
- CHG/alcohol prep
- Insertion checklist
- Education
- Credentialing process for insertion
- CHG bathing in ICU
Objective: A systematic review of the literature to determine the risk of catheter-related bloodstream infections related to non tunneled central venous catheters inserted at the femoral site as compared to subclavian and internal jugular venous catheters.

Although earlier studies showed a lower risk of catheter-related bloodstream infections when the internal jugular was compared to the femoral site, recent studies show no difference in the rate of catheter-related bloodstream infections between the three sites.
Other Recommendations

- Avoid femoral line in obese patients

- Ensure appropriate nurse to patient ratio and limit float nurses

- Disinfect injection ports and apply mechanical friction for a minimum of 5 seconds
Other Recommendations

Ensure appropriate nurse-to-patient ratio and limit the use of float nurses in ICUs (quality of evidence:1).

Observational studies suggest that there should be a nurse-to-patient ratio of at least 1 to 2 in ICUs where nurses are managing patients with CVCs and that the number of float nurses working in the ICU environment should be minimized.
Problems with Insertion

- Lack of opportunities - resident education
- Need follow up learning sessions
- Education should include prevention practices, not just technical skills
Actions

- Ensure that any healthcare professional who inserts a CVC undergoes a credentialing process (as established by the individual healthcare institution) to ensure their competency before independently inserting a CVC.

- Consider using simulation training for proper catheter insertion technique.
Standardized Checklist

Evidence supports the use of a standardized checklist.

2014 AJIC NICUs Zachariah et. Al

More than 95% compliance with the checklist associated with lower CLABSI rates.
INS Guidelines
Central Venous Access Device

- Implement bundle:
  - hand hygiene
  - skin antisepsis
  - avoid femoral vein*
  - ensure adherence to sterile technique
  - kit or cart

- Use ultrasound technology
Maintenance
## Example: Adult Subclavian Catheter (Nontunneled)

<table>
<thead>
<tr>
<th>CDC Recommendation</th>
<th>Evidence Category</th>
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<tbody>
<tr>
<td>Avoid subclavian site in hemodialysis patients and patients with advanced kidney disease</td>
<td>IA</td>
</tr>
<tr>
<td>Hand hygiene prior to insertion and manipulation</td>
<td>IB</td>
</tr>
<tr>
<td>Maximum sterile barriers on insertion</td>
<td>IB</td>
</tr>
<tr>
<td>CHG skin antisepsis on insertion</td>
<td>IA</td>
</tr>
<tr>
<td>Optimum insertion site selection:</td>
<td>IB</td>
</tr>
<tr>
<td>• Use subclavian, rather than jugular or femoral vein, in adult patients for nontunneled CVC placement</td>
<td>IA</td>
</tr>
<tr>
<td>• Avoid using femoral vein in adult patients</td>
<td>IA</td>
</tr>
<tr>
<td>Use antimicrobial catheter for expected duration of use &gt; 5 days.</td>
<td>IA</td>
</tr>
<tr>
<td>Designate only trained personnel for catheter insertion and maintenance.</td>
<td>IA</td>
</tr>
<tr>
<td>Aseptic site and topical dressing management:</td>
<td>IA</td>
</tr>
<tr>
<td>• Clean skin with &gt; 0.5 percent CHG with alcohol or designated alternative during dressing changes</td>
<td>IA</td>
</tr>
<tr>
<td>• Use a sterile dressing (gauze or transparent semipermeable) to cover the insertion site</td>
<td>IA</td>
</tr>
<tr>
<td>Use sutureless catheter securement device</td>
<td>II</td>
</tr>
<tr>
<td>Replacement of components:</td>
<td>IA</td>
</tr>
<tr>
<td>• Replace primary and secondary administration sets and add-on devices no more than every 96 hours but at least every 7 days</td>
<td>IA</td>
</tr>
<tr>
<td>• Replace tubing for blood, blood products, or fat emulsions (those admixed with amino acids and glucose or infused separately) within 24 hours of initiating the infusion</td>
<td>IB</td>
</tr>
<tr>
<td>• Replace needleless components at least as frequently as the administration set. Do not change needleless connectors more frequently than every 72 hours</td>
<td>II</td>
</tr>
<tr>
<td>Aseptic intermittent access with appropriate antiseptic</td>
<td>IA</td>
</tr>
<tr>
<td>Daily patient bathing with 2 percent CHG</td>
<td>II</td>
</tr>
<tr>
<td>Use antimicrobial lock solution for prophylaxis</td>
<td>II</td>
</tr>
<tr>
<td>Use CHG sponge dressing for short-term catheters in patients &gt; 2 months.</td>
<td>IB</td>
</tr>
<tr>
<td>Prompt removal of catheter when no longer required</td>
<td>IA</td>
</tr>
<tr>
<td>For therapy &gt; 6 days, use a midline or PICC (if not already in place)</td>
<td>II</td>
</tr>
</tbody>
</table>

Figure 6.2 Central Line Maintenance Bundle Checklist

Central Line Maintenance Bundle

Hand Hygiene
☐ Wash hands with conventional soap and water or with an alcohol-based hand rub (ABHR) prior to and after accessing (Cat. IB):
  ✔ The central line
  ✔ The dressing
  ✔ The needleless access device (including hubs, connectors, and ports)

Dressing Change
☐ Dressing is clean, dry, and intact (IE).
☐ Transparent dressing changed at least every 7 days (IB)
  or
☐ If gauze dressing is used, gauze dressing is changed every 48 hours (II).
☐ Site is cleaned with chlorhexidine-based preparation using a back and forth motion for 30 seconds (IA).

Scrub the Hub
☐ Catheter hubs, needleless connectors, and injection ports are cleaned before accessing the catheter with chlorhexidine, iodine, or 70 percent alcohol (IA) and a twisting motion used for at least 15 seconds.

Tubing and Devices
☐ Administration sets not used for blood products or lipids are changed no more frequently than 96 hours (IA)
☐ IV tubing and devices for total parenteral nutrition (TPN) and blood/blood products are replaced within 24 hours of starting the infusion (IB).
☐ Needleless access devices are changed using aseptic technique, no more frequently than 72 hours (II).

Removing the Line When No Longer Needed
☐ The need for daily intravascular access with a central line is assessed daily to determine if the line is still indicated and documented in the medical record (IA). If not indicated, the central line is removed.

Optional
☐ If applicable, chlorhexidine-impregnated sponge dressing (IB) or chlorhexidine-impregnated dressing can be used. If a chlorhexidine-impregnated sponge dressing is used, it is oriented correctly and changed at the same time as the transparent dressing.
☐ If applicable, a sterile, suture-free securing device for catheter stabilization is used and changed at the same time as the transparent dressing (II).
☐ If applicable, patient bathed daily with 2 percent chlorhexidine (II).

This material was prepared by IPRO, the Medicare Quality Improvement Organization for New York State, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents do not necessarily reflect CMS policy. 150402-001 11.10

http://apic.org/Resource/TinyMceFileManager/2015/APIC_CLABSI_WEB.pdf
Blood Cultures

Key Points:
• Peripheral Draw
• Strict Aseptic Technique
• Correct prep
• Feedback
### Optimize BC Technique

**Table 1**

<table>
<thead>
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<th>Lead author (year)</th>
<th>Ref</th>
<th>Setting</th>
<th>Study period (mths)</th>
<th>Persons drawing blood</th>
<th>Antiseptic</th>
<th>Alcohol pad for BC bottle tops</th>
<th>Sterile drape</th>
<th>Gloves</th>
<th>Needle device</th>
<th>BC bottle(s)</th>
<th>Instructions</th>
<th>Pre-intervention BCC rate (%)</th>
<th>Post-intervention BCC rate (%)</th>
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</thead>
<tbody>
<tr>
<td>Trautner (2002)</td>
<td>68</td>
<td>One hospital</td>
<td>7</td>
<td>Physicians, medical students, healthcare technicians</td>
<td>Kit 1: 2%CHG/70% IPA</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>Y</td>
<td>Y</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Schifman (1993)</td>
<td>69</td>
<td>One hospital</td>
<td>15</td>
<td>Physicians and nurses</td>
<td>10% acetone/70% IPA, 10% PI swab, 70% IPA and 2% IT</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>4.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Wilson (2000)</td>
<td>70</td>
<td>Four hospitals</td>
<td>NS</td>
<td>Physicians</td>
<td>70% IPA and 2% IT</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>Y</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Self (2014)</td>
<td>71</td>
<td>Two emergency departments</td>
<td>27</td>
<td>Nurses and phlebotomy</td>
<td>Large 2% CHG/70% IPA applicator</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weinbaum (1997)</td>
<td>72</td>
<td>One hospital, two adult units: Unit A</td>
<td>3,6,9</td>
<td>Unit A: House staff (without kits), Phlebotomists (with kits), House staff (with kits)</td>
<td>Isopropanol with IT</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit B: med/surg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madeo (2003)</td>
<td>73</td>
<td>Emergency Department</td>
<td>2</td>
<td>Medical and nursing staff</td>
<td>Large 62% ethyl alcohol wipe</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>Y</td>
<td>Y</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>Ramber (2009)</td>
<td>74</td>
<td>One hospital</td>
<td>4</td>
<td>Physicians</td>
<td>2% CHG</td>
<td>NS</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>43*</td>
<td>25*</td>
</tr>
<tr>
<td>Dhillon (2009)</td>
<td>75</td>
<td>One hospital</td>
<td>12</td>
<td>Physicians</td>
<td>2% CHG</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>NS</td>
<td>N</td>
<td>Y</td>
<td>8.7</td>
<td>3.0</td>
</tr>
<tr>
<td>Thomas (2011)</td>
<td>76</td>
<td>Two hospitals</td>
<td>12</td>
<td>Physicians</td>
<td>2% CHG/70% IPA antiseptic sponge applicator</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>Y</td>
<td>Y</td>
<td>0.2</td>
<td>3.8</td>
</tr>
<tr>
<td>Weightman (2012)</td>
<td>77</td>
<td>One hospital</td>
<td>48</td>
<td>Phlebotomists, physicians, nurses</td>
<td>2% CHG/70% IPA</td>
<td>NS</td>
<td>NS</td>
<td>N</td>
<td>NS</td>
<td>Y</td>
<td>Y</td>
<td>6.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Marini (2013)</td>
<td>78</td>
<td>Pediatric emergency department</td>
<td>12</td>
<td>Nurses and clinical assistants</td>
<td>Alcohol</td>
<td>BCC rate, percent contaminated cultures/total no. of cultures (%)</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>2.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>

BCC rate, percent contaminated cultures/total no. of cultures (%); CHG, chlorhexidine gluconate; IPA, isopropyl alcohol; IT, iodine tincture; N, No; NS, not stated; Y, yes.

*Contaminates cultures/total number of positive BCs sets (%).
Decrease Contamination

<table>
<thead>
<tr>
<th>Education</th>
<th>BC drawing kit</th>
<th>Sterile drape</th>
<th>Sterile gloves</th>
<th>Cleaning tops of BC bottles</th>
<th>CHG-IPA skin prep</th>
<th>Counseling high-contamination individuals privately</th>
<th>Feedback to staff</th>
<th>Checklist</th>
<th>Preintervention rate (%)</th>
<th>Postintervention rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>6.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td>Y*</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>4.3</td>
<td>Hospital A: 4.83; hospital B: 2.51</td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>4.3</td>
<td>1.7</td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>24</td>
<td>8</td>
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<tr>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>3.4</td>
<td>2.0</td>
</tr>
<tr>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>3.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>12</td>
<td>1.5</td>
</tr>
<tr>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>3.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>2.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>9.73</td>
<td>1.19</td>
</tr>
<tr>
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<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>6.0</td>
<td>4.6</td>
</tr>
</tbody>
</table>
### Blood Cultures

#### Table 3
**Collecting blood samples for culture from central catheters**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shut off intravenous infusions, optimally for 3-5 minutes (depending on patient’s condition)</td>
</tr>
<tr>
<td>2</td>
<td>Scrub positive-pressure device on the hub with alcohol for 15 seconds; allow to dry</td>
</tr>
<tr>
<td>3</td>
<td>Flush catheter 3 times by using push-pull method to remove residual solution</td>
</tr>
<tr>
<td>4</td>
<td>Remove positive-pressure device; cleanse catheter hub with alcohol or chlorhexidine</td>
</tr>
<tr>
<td>5</td>
<td>Attach new positive-pressure device and sterile syringe to catheter to obtain blood sample</td>
</tr>
</tbody>
</table>

*aBased on information from Mathew et al,7 Holmes,17 and Mermel.18*
# Examples

## Highland Hospital Clinical Practice Guideline

**Blood cultures in patients with fever, sepsis syndrome, or suspected blood stream infection**

7/21/14 DRAFT

<table>
<thead>
<tr>
<th>Suspected Blood Stream Infection</th>
<th>Recommended Blood Cultures (BCs):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number and Site(s)</td>
</tr>
<tr>
<td>Central Line or implanted vascular device not present</td>
<td></td>
</tr>
<tr>
<td>Any source</td>
<td>≥ 2 Peripheral venipuncture</td>
</tr>
<tr>
<td>Possible endocarditis</td>
<td>≥ 3 Peripheral venipuncture</td>
</tr>
<tr>
<td>Central Line or implanted vascular device present</td>
<td></td>
</tr>
<tr>
<td>Other source suspected (e.g., intra-abdominal, cellulitis, pneumonia, wound, UTI, etc.)</td>
<td>≥ 2 Peripheral venipuncture</td>
</tr>
<tr>
<td>Central line infection suspected, or source unknown.</td>
<td>1 Peripheral venipuncture</td>
</tr>
<tr>
<td>Lines in place &gt;5d are infected infrequently and should not routinely be cultured.</td>
<td>(≥ 2 total blood cultures)</td>
</tr>
<tr>
<td>Purulence, cellulitis, phlebitis or DVT at central line site</td>
<td>≥ 2 Peripheral venipuncture</td>
</tr>
<tr>
<td>Possible endocarditis</td>
<td>≥ 3 Peripheral venipuncture</td>
</tr>
</tbody>
</table>

### Suspected fungemia (other than Candida, e.g., histoplasmosis, cryptococcosis, coccidioidomycosis)

Fungal isolator blood culture

**Routine BCs detect Candida.** Fungal isolator BCs are indicated only for detection of other fungal pathogens in select patients. ID approval required.

### Suspected mycobacterial infection

AFB isolator blood culture

**For suspected mycobacterium avium intracellulare (MAI), e.g., in HIV patients. ID approval required.**

---

1. Number of routine BC sets (not bottlenecks). BC by peripheral venipuncture is always preferred, except for the purpose of ruling out line infection. Always try to obtain at least 1 BC by peripheral venipuncture. Do not draw BC while inserting peripheral IV. If peripheral venipuncture is unobtainable, substitute BC from line. Two or more BC sets are always required, except in neonates.

2. If peripheral venipuncture is unobtainable, substitute BC from another central line, arterial line or implanted device.

3. Differential times to positivity of routine BCs are utilized to assess for line infection. Bacterial isolator quantitative BCs are used only in consultation with Infectious Disease.
The use of passive disinfection caps containing disinfecting agents such as isopropyl alcohol has been shown to reduce the intraluminal contamination and reduce the rates of CLABSI.
Impact of alcohol-impregnated port protectors and needleless neutral pressure connectors on central line--associated bloodstream infections and contamination of blood cultures in an inpatient oncology unit

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*Center for Quality Outcomes, West Virginia University Hospitals, Morgantown, WV
Pharmacy Department and Mary Babb Randolph Cancer Center, West Virginia University Hospitals, Morgantown, WV
Oncology hematopoietic malignancy and transplantation program, West Virginia University, Morgantown, WV

Key Words:
Catheter associated infections
Central venous catheters
Positive blood cultures
Infection control

Background: A major risk factor for the development of bloodstream infection is the presence of a central venous catheter (CVC), especially in immunocompromised patients. CVC hub contamination is a risk factor for central line--associated bloodstream infection (CLABSI).

Methods: This observational before-after trial in a tertiary care hospital’s oncology unit included adult patients with a CVC. During the intervention period, the practice of central line hub care was changed from cleaning with alcohol wipes to using alcohol-impregnated port protectors. To accommodate the protectors, the needleless hubs were changed to a neutral pressure connector. The intervention period (January-July 2010) was compared with a historical control (January-December 2009).

Results: A total of 3,005 central line-days and 1 CLABSI (a rate of 0.3 infections/1,000 central line-days) were documented during the intervention period, compared with 6,831 central line-days and 16 CLABSI (2.3 infections/1,000 central line-days) during the control period (relative risk, 0.14; 95% confidence interval [CI], 0.02-1.07; P = .03). The rate of contaminated blood cultures (CBCs) from central lines was 2.5% (17 of 652) during the control period, but only 0.2% (1 of 470) during the intervention period (relative risk: 0.09; 95% CI, 0.01-0.65; P = .002).

Conclusions: The implementation of alcohol-impregnated port protectors and needleless neutral pressure connectors significantly reduced the rates of CLABSI and CBCs in our oncology patient population.
Implementation of daily chlorhexidine bathing to reduce colonization by multidrug-resistant organisms in a critical care unit

Jackson S. Musuuza PhD, MBChB, MPH \textsuperscript{a,b}, Ajay K. Sethi PhD, MHS \textsuperscript{c}, Tonya J. Roberts PhD, RN \textsuperscript{a,d}, Nasia Safdar MD, PhD \textsuperscript{a,b,6}

\textsuperscript{a} William S. Middleton Memorial Veterans Affairs Hospital, Madison, WI
\textsuperscript{b} Department of Medicine, University of Wisconsin School of Medicine and Public Health, Madison, WI
\textsuperscript{c} Department of Population Health Sciences, University of Wisconsin, Madison, WI
\textsuperscript{d} School of Nursing, University of Wisconsin, Madison, WI

\textbf{Background:} Colonized patients are a reservoir for transmission of multidrug-resistant organisms (MDROs). Not many studies have examined the effectiveness of daily chlorhexidine gluconate (CHG) bathing under routine care conditions. We present a descriptive analysis of the trends of MDRO colonization following implementation of daily CHG bathing under routine clinical conditions in an intensive care unit (ICU).

\textbf{Methods:} From May 2011 to January 2013, we screened patients admitted to a 24-bed ICU for and methicillin-resistant \textit{Staphylococcus aureus} (MRSA), vancomycin-resistant enterococci (VRE), and fluoroquinolone-resistant gram-negative bacilli (FQGNB). We calculated and plotted monthly incidence and prevalence of colonization of these MDROs.

\textbf{Results:} Prevalence decreased in the immediate aftermath of daily CHG bathing implementation and generally remained at that level throughout the observation period. We observed low rates of incidence of MDRO colonization with VRE=FQGNB-MRSA. Monthly prevalence of colonization and incidence for the composite of MRSA, VRE, and/or FQGNB was 1.9\%\textsuperscript{-}2.7\% and 0.1\%\textsuperscript{-}0.1\% per 100 patient-days, respectively.

\textbf{Conclusions:} Following the implementation of daily CHG bathing, the incidence of MDROs remained low and constant over time, whereas the prevalence decreased immediately after the implementation.

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The Role of Universal Decolonization

The results of the REDUCE MRSA trial indicated that universal decolonization was more effective than targeted decolonization or screening and isolation in reducing BSIs from any pathogen.

For a hospital with 1,000 ICU admissions per year, estimated decolonization would prevent 9 BSIs and potentially save approximately $171,000 annually.

Universal ICU Decolonization Protocol for CHG Bathing

- Chlorhexidine gluconate (CHG) replaces routine bathing for entire ICU stay.
- Do NOT use soap below the jawline. Certain soaps and lotions can inactivate CHG.
- Only use CHG-compatible lotions and/or barrier products.
- Dispose of all cloths in the trash. Do NOT flush.

**BATHE WITH CHG USING FIRM MASSAGE TO REMOVE BACTERIA**

**INCONTINENCE:**
- Clean with chux and water, NOT soap.
- Then bathe with CHG cloths, air dry.
- Use as many CHG cloths as needed.
- Apply CHG compatible barrier.
- Repeat throughout the day, as needed.

**LINES AND TUBES:**
- CHG is safe on lines, tubes, and devices.
- Bathe with CHG right up to dressing.
- Okay to bathe over occlusive dressings.
- After bathing skin, clean 6 inches of tubes/Foley nearest patient.

**ONLY USE CHG CLOTHS BELOW THE JAWLINE**

Front
1. Neck, shoulders, and chest.
2. Both arms and hands.
3. Abdomen then groin and perineum.
4. Right leg and foot.
5. Left leg and foot.
6. Back of neck, back, and then buttocks.

Skin may feel sticky for a few minutes. Do NOT wipe off. Allow to air dry.

Back
6
Large multicenter study

More than 4900 admissions to ICU, show a 36% reduction in the incidence of bacteremia in patients receiving daily chlorohexidine bathing.
Impact of a Central Line Infection Prevention Bundle in Newborn Infants

Rowena McMullan, FRACP,¹,² Adrienne Gordon, PhD¹,²

OBJECTIVE. To compare central line use and central line-associated bloodstream infection in newborn infants before and after the introduction of a central line infection prevention bundle in order to determine the effectiveness of the bundle and to identify areas for further improvement.

DESIGN. Retrospective cohort analysis of prospectively collected data.

SETTING. Level 5 neonatal intensive care unit in Sydney, Australia.

PATIENTS. Newborn infants admitted to the Royal Prince Alfred Hospital Neonatal Intensive Care Unit who had a central venous catheter (CVC) inserted.

METHODS. Data regarding clinical characteristics, CVC use, and infection were collected before and after the introduction of a bundle of interventions. The bundles encompassed (1) insertion of CVC, (2) maintenance of CVC, (3) an education program, and (4) ongoing surveillance and feedback.

RESULTS. Baseline and intervention groups were comparable in clinical characteristics. The number of CVCs inserted was reduced in the intervention group (central line utilization rate, 0.16 vs 0.2, P < .0001). Overall CVC dwell time was reduced, resulting from significant reduction in peripherally inserted CVC dwell time (6 days [95% CI, 5.0–11.8 days] vs 7.3 days [4.0–10.4 days], P = .0004). Central line-associated bloodstream infections were significantly reduced, predominantly secondary to decreased peripherally inserted CVC–related bloodstream infections (1.2/1,000 central line–days vs 11.5/1,000 central line–days, P < .0001).

CONCLUSION. This central line infection bundle was effective in reducing CVC use, dwell time, and central line–associated bloodstream infections.
Analysis

Before and after study - Level 5 Neonatal ICU

Bundle components:

- Insertion criteria
- Maintenance criteria
- Education program
- Surveillance and feedback
- Decreased from 11.5 per 1,000 line days to 1.2 per 1,000 line days
Key Points

- Before/after study
- Practice change scrubbing hub to port protector
- Pre-intervention: 16/CLABSI per 1,000 line days
- Post-intervention: 1/CLABSI per 1,000 line days
- P = .03
- Blood culture contamination also decreased
Plastics Rounds- Remove Unnecessary lines

The Team:

- Nurse manager or charge nurse
- Infection Prevention
- MD
- Nurses caring for the patient
Polling Questions

Where do you think your hospital is related to CLABSI prevention?

1. Many opportunities
2. Need to focus more on maintenance
3. Special populations and special needs
Line Manipulation

Tamper Resistant locks
Contractual agreements
Beyond the ICU: Expanding Target Populations

Figure 9.1. Percent of Population with New Cases of CKD, by Age Group

- Medicare ages 65+
- MarketScan ages 20–64

*MarketScan represents data from employer group health plans.

Source: National Kidney and Urologic Diseases Information Clearinghouse.
Available at kidney.niddk.nih.gov/kudiseases/pubs/kustats/#22.
HICPAC Guidelines

- Avoid the subclavian site in hemodialysis patients and patients with advanced kidney disease, to avoid subclavian vein stenosis 1A

- Do not use topical antibiotic ointment or creams on insertion sites, except for dialysis catheters, because of their potential to promote fungal infections and antimicrobial resistance IB

- Use povidone iodine antiseptic ointment or bacitracin/gramicidin/ polymyxin B ointment at the hemodialysis catheter exit site after catheter insertion and at the end of each dialysis session only if this ointment does not interact with the material of the hemodialysis catheter per manufacturer’s recommendation
Dialysis

- Do not routinely replace CVCs, PICCs, hemodialysis catheters, or pulmonary artery catheters to prevent catheter related infections. Category IB

- If temporary access is needed for dialysis, a tunneled cuffed catheter is preferable to a non-cuffed catheter, even in the ICU setting, if the catheter is expected to stay in place for > 3 weeks
Venous Access

Guidelines for Venous Access in Patients with CKD
A. Identify CKD patients who may need hemodialysis treatment in the future, particularly patients with CKD Stages 3, 4 or 5. This also includes stage 5 CKD patients currently receiving hemodialysis or peritoneal dialysis and/or patients with a functional kidney transplant.

B. Venous Access for Stages 3-5 CKD Patients
1. The dorsal veins of the hand are the preferred location for phlebotomy and peripheral venous access.
2. The internal jugular veins are the preferred location for central venous access.
3. The external jugular veins are an acceptable alternative for venous access.
4. The subclavian veins should not be used for central venous access.
5. Placement of a PICC should be avoided.

Source: Alice Archer, BSN, RN, CCRN, CRNI, Louisville, KY.
Other Issues

Long term lines:

- PICCs
- Implantable Ports
- Tunneled Catheters

- Surgically placed
- Tunneled under the skin before entering the vein
- A cuff anchors the line and provides a barrier to the entry of microorganisms
- Used for chemotherapy, TPN, and other long term infusion therapy
- Used for hemodialysis access
Port or CVAD

Hand hygiene prior to all infusion-related procedures

• Aseptic technique with all catheter access procedures
• Proper changing of administration sets
• Changing needleless connectors according to manufacturer guidelines
• Attention to disinfection of needleless connectors prior to access
• Maintaining a sterile dressing over the needle-insertion site
• Maintenance of a port or other CVAD requires strict adherence to infection prevention practices
Brief Report

Prospective evaluation of peripherally inserted central catheter complications in both inpatient and outpatient settings

Christina Liscynesky MD *, Jessica Johnston MS, Kelci E. Haydocy MPH, Kurt B. Stevenson MD, MPH

Division of Infectious Diseases, Department of Internal Medicine, The Ohio State University Wexner Medical Center, Columbus, OH 43210

Key Words:
Central line-associated bloodstream infection
Intraluminal thrombosis

We describe a prospective observational cohort (N = 187) to evaluate peripherally inserted central catheter line complications concurrently from the time of placement until removal. A significantly higher percentage of patients who experienced intraluminal thrombosis were receiving total parenteral nutrition (P ≤ .001) and had a dual lumen catheter (P = .01). Among patients with a confirmed or suspected infection, a significantly higher proportion received total parenteral nutrition (P = .01), had dual-lumen catheters (P = .04), and were neutropenic (P = .04).

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Preventing Central Line–Associated Bloodstream Infections: A Qualitative Study of Management Practices

Ann Scheck McAlearney, ScD, MS; Jennifer L. Hefner, PhD, MPH; Julie Robbins, PhD, MHA; Michael I. Harrison, PhD; Andrew Garman, PsyD, MS

OBJECTIVE. To identify factors that may explain hospital-level differences in outcomes of programs to prevent central line–associated bloodstream infections.

DESIGN. Extensive qualitative case study comparing higher- and lower-performing hospitals on the basis of reduction in the rate of central line–associated bloodstream infections. In-depth interviews were transcribed verbatim and analyzed to determine whether emergent themes differentiated higher- from lower-performing hospitals.

SETTING. Eight US hospitals that had participated in the federally funded On the CUSP—Stop BSI initiative.

PARTICIPANTS. One hundred ninety-four interviewees including administrative leaders, clinical leaders, professional staff, and frontline physicians and nurses.

RESULTS. A main theme that differentiated higher- from lower-performing hospitals was a distinctive framing of the goal of “getting to zero” infections. Although all sites reported this goal, at the higher-performing sites the goal was explicitly stated, widely embraced, and aggressively pursued; in contrast, at the lower-performing hospitals the goal was more of an aspiration and not embraced as part of the strategy to prevent infections. Five additional management practices were nearly exclusively present in the higher-performing hospitals: (1) top-level commitment, (2) physician-nurse alignment, (3) systematic education, (4) meaningful use of data, and (5) rewards and recognition. We present these strategies for prevention of healthcare-associated infection as a management “bundle” with corresponding suggestions for implementation.

CONCLUSIONS. Some of the variance associated with CLABSI prevention program outcomes may relate to specific management practices. Adding a management practice bundle may provide critical guidance to physicians, clinical managers, and hospital leaders as they work to prevent healthcare-associated infections.
Culture Matters

What sets high performers apart?

1. Aggressive goal setting - getting to zero
2. Top – level commitment - leaders walk the talk
3. Physician- nurse alignment – collaboration
4. Systematic approach to education - described as systematic, comprehensive and repetitive. Included in orientation at all levels. Structured.
5. Meaningful use of data - everyone knew data and trends
6. Recognition for success – incentives tied to goals
Words of Wisdom

- Zero CLABSIs is possible, even without the “extras”
- Getting back to basics is the foundation of good line care
- Presence out on the floors and unit champions is important!
- Always believe you can get there… that is the first step in the journey
Q&A
August 8 at 12 PM: Interactive Coaching Call

- Clostridium difficile Infection
- **Format:** Latest evidence, polling questions, discussion questions
- **You can participate:** Send your discussion questions to sally@fha.org
- **Registration Link:** [https://cc.readytalk.com/r/rgqbicbaliab&eom](https://cc.readytalk.com/r/rgqbicbaliab&eom)
Eligibility for Nursing CEU requires submission of an evaluation survey for each participant requesting continuing education:

https://www.surveymonkey.com/r/ChasingZero060617

- Share this link with all of your participants if viewing today’s webinar as a group
- Be sure to include your contact information and Florida nursing license number
- FHA will report 1.0 credit hour to CE Broker and a certificate will be sent via e-mail (Please allow at least 2 weeks)
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