Preventing CLABSIs: Tales From the Front Line

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Our Hospital’s Success

- Early adopters of best practice
- Culture of safety with transparency and “just culture”
- Community hospital with great results
- Share our journey
Central Line Use

• Central lines are necessary to provide lifesaving medications and treatment to patients.

• Central lines can be a source of infection that harm patients.

• Central Line-Associated Blood Stream Infections (CLABSI) are preventable when evidence-based guidelines are used.¹⁻³

• Implementation of EBP policies, education of and monitoring compliance with central line best practice is critical to eliminating CLABSI.⁴
CLABSI Prevention Literature Review

• Central line insertion and maintenance guidelines

• Supplemental strategies
  – Considered if basic practices are not eliminating CLABSI

• Education of guidelines and expectations

• Safety culture where concerns and suggestions are welcomed and supported by leadership

• Auditing of central line care
  – Peer-to-peer feedback
Expectation is to Have 0!

- Financial
- Mortality
- Patient satisfaction
- Leadership engagement is important
- Multidisciplinary representatives such as an infection preventionist, bedside staff, venous access team, documentation specialists must be involved in prevention planning³
- Policies and procedures developed from evidence-based practice
Sources of Central Line Colonization$^{3,5,8}$

**Skin Organisms**
- Endogenous
  - Skin flora
- Extrinsic
  - HCW hands
  - Contaminated disinfectant

**Contaminated Catheter Hub**
- Endogenous
  - Skin flora
- Extrinsic
  - HCW hands

**Contaminated Infusate**
- Fluid
- Medication
- Extrinsic
- Manufacturer

- Fibrin sheath, Thrombus

Hematogenous - from a distant infection
Intraluminal: Where We Have the Most Risk, Control, and Opportunity

• HAND HYGIENE - including the patient

• Minimal manipulation of catheter and related devices

• Rigorous disinfectant practices when catheter or related devices must be manipulated³
Application of Guidelines

• Develop policies that focus on the components of the guidelines and basic care of central lines

• Educate upon hire; consider regular refreshers
  – Include hands-on activities
  – Establish expectations
  – Everyone has the same knowledge

• Compliance and accountability is essential

• Educate patient and family as appropriate
INSERTION
BEST PRACTICE
Insertion Best Practice

• Ensure central line is needed\(^6\)
  – Total Parenteral Nutrition (TPN)
  – Vasopressors
  – Highly noxious agents

• Could a PICC central line meet the needs?\(^7\)
  – Safer insertion site
  – Compatible with care in non-ICU areas and at home

• Could a midline meet the needs?\(^6\)
  – With advancement in ultrasound guidance, midline and short venous catheters are increasingly possible
• Ensure aseptic insertion practices
  – Healthcare personnel, who are trained in insertion practices to observe insertion
  – Empower healthcare personnel to stop the insertion procedure if aseptic technique is not followed\textsuperscript{3,8}
Insertion Best Practice

• Use an all-inclusive catheter cart or kit

• Choose the best site to minimize infections and mechanical complications

• Use ultrasound guidance insertion

• Use an alcohol chlorhexidine antiseptic for skin preparation\textsuperscript{3,8}
• Perform hand hygiene before insertion and before any contact with the central line or its attachments.\textsuperscript{3,8}
Insertion Best Practice

- Choose the best site to minimize infections and mechanical complications
- PICC lines are *not* an alternative\(^3,8\)
Insertion Best Practice

• Use maximal sterile barrier precautions\textsuperscript{3,8}
  – Sterile full body drape
  – Mask, cap, gown, sterile gloves
MAINTENANCE
BEST PRACTICE
Maintenance Best Practice

Maintenance care of a central line is as important as the insertion.
The longer a central line is in, the more chance of infection.
Skin Organisms
- Endogenous
  - Skin flora
- Extrinsic
  - HCW hands
  - Contaminated disinfectant
  - Invading wound

Contaminated Catheter Hub
- Endogenous
  - Skin flora
- Extrinsic
  - HCW hands

Contaminated Infusate
- Fluid
- Medication
- Extrinsic
- Manufacturer

• Biofilm begins forming shortly after insertion resulting in colonization of the catheter\textsuperscript{3,18-19}

Maintenance Best Practice
Maintenance Best Practice

• Assess the need for the central line daily\(^3,8\)
  – Have a list of reasons to leave CVC in such as:
    ▪ Infusion of harsh medications, hemodynamic instability, long term medication administration
  – Do not use for routine blood draws\(^6,8\)
    ▪ If the patient has veins, poke them
• Disinfect ANY point of connection on the catheter, tubing, or attachment before accessing\textsuperscript{10}
  – Use a new disinfectant pad before EACH entry
  – Apply mechanical friction for at least 5 seconds

• Needleless connectors/positive pressure caps
  – Consider: disinfecting the junction of the needleless connectors BEFORE disconnecting
• Change transparent dressing and perform site care with CHG-based antiseptic every 7 days or immediately if the dressing is soiled, loose, or damp.\textsuperscript{3,8}

• Use CHG sponge or impregnated dressing at insertion site.\textsuperscript{5,11}

• Have a dressing change supply kit.

• Change gauze dressing every 2 days or earlier if soiled, loose, or damp.\textsuperscript{3,8}
Maintenance Best Practice

- Use a securement device\textsuperscript{12,13}
- Skin remains intact to prevent introduction of bacteria under skin surface
- Fewer unplanned removals
Maintenance Best Practice

- Replace administration sets not used for blood products, lipid, or TPN no more than every 96 hours.³

- Use sterile cap to cover the end of a disconnected IV tubing.¹⁴

- If any administration set is disconnected, change it every 24 hours.⁸
Maintenance Best Practice

- CHG bathing every day when a central line is present\textsuperscript{15,16}
- ICU and non-ICU patients
- Skin is a reservoir for pathogens associated with CLABSI.
- Several studies have shown daily CHG bathing reduces CLABSI or infections.
Maintenance Best Practice

• Assess line patency every 8 hours.
  – Insure blood return as well as flush ability
  – This is a catheter function issue as well as an infection risk issue

• If unable to get blood return, treat line.\textsuperscript{17}

• Blood clot and fibrin on end of catheter can be growing ground for bacteria.\textsuperscript{18,19}
Supplemental Strategies When Best Practices are Not Enough to Eliminate CLABSI$^{8,20}$

- There are some populations of patients that may benefit from supplemental strategies.
  - Alcohol caps
  - Silver, antibiotic, CHG-coated catheters

- But first, you must ensure compliance with best practice.
Ensuring Compliance

• Ensure compliance with care expectations

• Leadership engagement
  – Verbalize expectations

• Audits

• One-on-one feedback

• Support transparency
Ensuring Compliance

• Engaged frontline staff (ICU and non-ICU) to perform audits to ensure proper CVC maintenance.

• Empowered the auditors to speak peer-to-peer regarding deficits found.

• Shared the data from the audits and CVC use with frontline staff.
Maintenance Best Practice

• Audit: Gather data regarding CVC use
  – Include documentation of care and necessity of CVC
  – Add site specific maintenance care items to intervention lists to ensure proper care
  – Observe compliance with cleaning of hubs/access points
  – Observe condition of dressing and associated components (tubing, securement device, caps)
Maintenance Best Practice

- Have an interdisciplinary team review the data, set goals, assist with development and implementation of processes to improve CVC care.
- Look for ‘workarounds’ and use them to identify solutions.
- Develop order sets or nurse-driven protocols that include care elements.
Safety Journey

• Expect zero CLABSI

• Ensure you have adopted all best practice.

• Examine factors if a CLABSI occurs

• Encourage nurses to speak up when best practice is not followed

• Enable bedside nurses to audit and speak to peers to praise their great care or to re-educate the expectations when there are OFIs
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