



# Central Line Best Practices

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NURSING PRACTICE LEADER-PEDS  
VASCULAR ACCESS

# Objectives

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REVIEW BEST PRACTICES  
AS WE KNOW THEM



REVIEW BEST WAYS TO  
PREVENT INFECTION

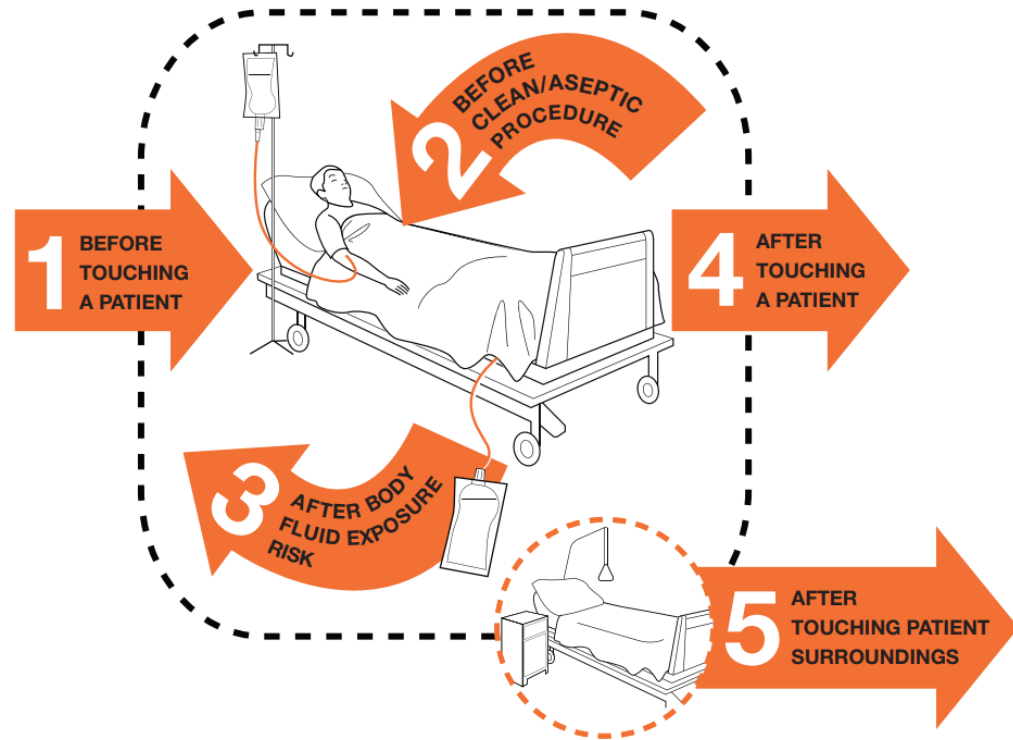


RECOGNIZE WHEN  
SOMETHING IS WRONG

## **CLABSI “Back to Basics” Bundle**

- **Hand Hygiene**
- **Line Insertion**
- **Evaluate need for line daily**
- **Line care and maintenance**
  - IV tubing dated: continuous IV tubing change q.96hr, Intermittent q.24hrs
  - Passive disinfection caps on all unused ports
  - Dressing is clean, dry, intact and DATED
  - Needleless connector change done q.96hrs, with dressing changes, and prior to cultures!
  - Daily Cleaning

# Your 5 Moments for Hand Hygiene



# Hand Hygiene

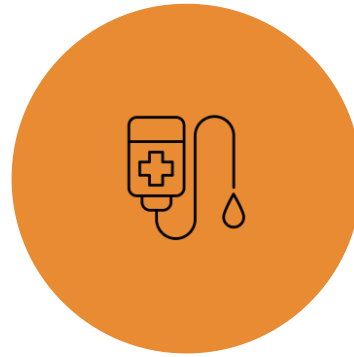
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# Central Line Bundles

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**Line Insertion**



**Line Access**



**Dressing Change**

# Insertion Bundle

## Location

- Operating Room
- Procedure Suite
- Patient Bedside

## “Stop the Line”

- Second person in place to observe for breaks in sterile technique

## Sterile Field and Sterile Products

- Patients covered head to toe
- Masks, caps, and gowns

# Access Bundle



## HAND HYGIENE:

- Perform hand hygiene for 30 seconds and don non-sterile gloves prior to accessing any portion of central line tubing

## Maintain a Closed System

- All tubing should be **labeled** with date, time, and initials when hung
- Place alcohol disinfection caps on all ports on the tubing
- If accessing the tubing without a cap present; scrub the end of the valve cap for 15 seconds using alcohol swab

## Minimize or Eliminate use of Stopcocks

## Minimize Entry into the line

- **Change** IV medications to PO medications as soon as indicated
- Change tubing, valve cap, and add-on devices
- **Immediately** change upon contamination or suspected contamination

## Protect tubing from contamination

Daily discuss readiness to discontinue the line or functioning of the line

# Products

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Alcohol Caps



Needleless Connectors

Alcohol versus CHG

Tubing and add on extensions





# Dressing Change Bundle



## Utilize standardized dressing change kit or cart with standardized supplies

- Prior to dressing changes, perform hand hygiene for 30 seconds.
- Those in contact with sterile field (e.g., practitioner(s) completing the dressing change) don sterile gloves and a mask.

## Cleanse skin, complete dressing change, and assess site per policy

- Chloraprep scrub is 30 second scrub with a 3 minute dry time
- Betadine-start at the insertion site and swipe outward in concentric circles (repeat with each swab stick), let dry for 3 minutes

## All dressings will be dated and initialed

## Routine Dressing Change Frequency

- Chloraprep with Tegaderm (>2 months adjusted gestational age) Weekly and PRN
- Betadine (< 2 months adjusted gestational age or allergy/intolerance to CHG) Weekly and PRN
- Dry dressing (patients unable to tolerate occlusive dressing such as BMT cleansed with CHG or betadine) Every 24 hr
- Sterile gauze under dressing Every 48 hr

## Non-Routine Dressing Change

- Dressing loose or loop no longer present: Complete dressing change.
- Dressing damp or bloody or soiled: Complete dressing change.

# Dressing Products and Securement

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- Ideal CVC dressing and securement
  - Provide a barrier from microbial colonization and infection
  - Provide adequate securement to prevent accidental removal or dislodgement
  - Be comfortable and non-irritating to patient
  - Be easy to use
  - Be cost effective

# Categories of Options

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## DRESSINGS

- Gauze and tape.
- Standard polyurethane (SPU) dressings: semi-permeable and highly permeable
- Highly adhesive polyurethane dressings
- Bordered polyurethane (BPU) dressings
- Chlorhexidine gluconate-impregnated (CGI) dressings
- Other medication-impregnated dressings
- Hydrocolloid dressings
- No dressing.

## SECUREMENT

- Sutureless securement devices (SSD)
- Sutures
- No securement.

# Lots of Options

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- One option may not fit all
  - Reach out when your needs have changed or an option isn't working
- Removal of Dressing is also important
  - Minimize skin irritation
  - MARSI-medical adhesive related skin injury



# Wraps and Covers

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- Lots of options based on age and needs of child
- Options range from adaptive clothing, vests, arm covers, etc.
- Some options include waterproof coverings



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# Cleaning the Environment

# CHG

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No Data for home use at this time

Why we do it

- CHG reduces bacteria for up to 24 hours and prevents infection
- Rapid drop in skin bacteria counts
- Kills almost all bacteria and viruses

Quality of treatment

# Environmental Hygiene

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Clean Space

New Clothes

High Touch Surfaces

- Phones, tablets

High touch surfaces include, but are not limited to:

- bed rails
- bed frames
- moveable lamps
- tray table
- bedside table
- handles
- IV poles
- blood-pressure cuff





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# Preparing the Family

**What does the evidence say**

Author	General Components	Details of Training	Duration	Training Provided By	Training Modalities
Drews, B. et. al	Day 1 Central line basics, flushing Day 2 Dressing Change, Daily Care Day3 Cap Change, TPN preparation Day4 Emergency Care, Bath time Additional Concepts Hand washing, scrub the hub, saline and heparin, tubing securement, working with home care nurses	<ul style="list-style-type: none"> <li>1 designated caregiver</li> <li>Follow up review after infection</li> </ul>	<ul style="list-style-type: none"> <li>4 days of caregiver competency training</li> <li>24-hour apartment experience</li> </ul>	<ul style="list-style-type: none"> <li>Nurse educator</li> </ul>	<ul style="list-style-type: none"> <li>Didactic teaching</li> <li>Hands on practice with simulation manikin</li> <li>Perform skills on child</li> </ul>
Galotto et. al	Session 1: Orientation to HPN Session 2: Needleless connector change Session 3: CVC dressing change Session 4: HPN bag and tubing set up Session 5: Handling HPN urgencies	<ul style="list-style-type: none"> <li>1-2 caregivers trained</li> </ul>	<ul style="list-style-type: none"> <li>Each sessions takes approx. 1 hour</li> <li>2 weeks overall for complete training</li> </ul>	<ul style="list-style-type: none"> <li>HPN nurses</li> </ul>	<ul style="list-style-type: none"> <li>Didactic</li> <li>Demonstration with return demonstration on low-fidelity sim</li> <li>Written materials</li> <li>Teach-back</li> </ul>
Hicks et. al	General Information for CVC Emergency care/when to call the Dr. Showering and bathing Flushing the CVC Changing the Cap Changing the Dressing	<ul style="list-style-type: none"> <li>No children allowed</li> <li>Class not at bedside</li> <li>Limited 2 caregivers per patient</li> </ul>	<ul style="list-style-type: none"> <li>2-hour group class</li> </ul>	<ul style="list-style-type: none"> <li>12 register nurses specially trained in adult learning principles</li> </ul>	<ul style="list-style-type: none"> <li>Short videos</li> <li>Didactic</li> <li>Teach-back</li> <li>Demonstration</li> <li>Handouts</li> <li>Hands-on practice</li> <li>verbal explanation</li> </ul>
Norman and Cril	CVAD care Infusion Pump technology HPN preparation: sterile technique, adds Monitoring for complications: adverse events Emergency care plan	<ul style="list-style-type: none"> <li>2 caregivers minimum</li> </ul>	<ul style="list-style-type: none"> <li>Start teaching several weeks prior to discharge date</li> </ul>	<ul style="list-style-type: none"> <li>No mentioned</li> </ul>	<ul style="list-style-type: none"> <li>Recommends face to face training</li> </ul>
(Pierik et al., 2021)et. al	Handwashing Dressing changes Hooking up PN Unhooking PN Flushing the CVC	<ul style="list-style-type: none"> <li>Families were sent an email to the you tube link and asked if they had watched the videos</li> </ul>	<ul style="list-style-type: none"> <li>Not mentioned</li> </ul>	<ul style="list-style-type: none"> <li>Nursing staff</li> </ul>	<ul style="list-style-type: none"> <li>Printed hand outs</li> <li>1:1 training</li> <li>Intervention: added short videos</li> </ul>
Raphael et. al	Intervention added HPN with infusion pumps for 24 hours in hospital prior to discharge	<ul style="list-style-type: none"> <li>No known time for teaching</li> </ul>	<ul style="list-style-type: none"> <li>unknown</li> </ul>	<ul style="list-style-type: none"> <li>Floor Nurses</li> <li>HPN nurses</li> <li>Home infusion nurses</li> </ul>	<ul style="list-style-type: none"> <li>Video series</li> <li>HPN didactic training</li> <li>Intervention: trained on home infusion pump prior to discharge</li> </ul>
Witowski et. al	Hand washing Wash hands Disinfect hands Sequence for washing hands Infusion pump Handle pump Program pump Detect alarms Connect infusion to pump Verify pump battery CVC Identify CVC channels Handle CVC with aseptic technique Identify abnormalities Identify date to change dressing Administer flush PN Identify abnormalities in PN solution Connect infusion set to PN solution Fill infusion set with PN infusion Connect PN set with CVC	<ul style="list-style-type: none"> <li>initial teaching in hospital setting prior to discharge</li> <li>After being checked off competent, a minimum of 2 days at a nearby home with direct nursing supervision</li> <li>2 months of daily nurse visits before the family could be tested for competency to be autonomous</li> </ul>	<ul style="list-style-type: none"> <li>15 days for each family caregiver</li> <li>2-4 hours for each home nurse</li> </ul>	<ul style="list-style-type: none"> <li>Program nurses</li> </ul>	Theoretical and practical training

# Training

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- Make sure everyone who will interact with the line understand how to prevent infections
- What are signs of what can go wrong
- Fever management
- Who to reach out to/resources



# Thank You!

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**References available upon request**