CVL Care and Maintenance for Nursing Instructors/Faculty

To assure a standardized knowledge base related to CVL Care and CLABSI prevention, ProMedica requires all Instructors/Faculty on adult and pediatric units to complete this educational module. This content is also required for every nurse hired to ProMedica.

All Instructors/Faculty will complete this content in 2018 and going forward the module will be required as part of orientation. Completion Validation is required on the last slide.

POLICY REMINDERS related to Nursing Student Privilege and Limitations with CVLs

- See Policy #1302 (Nursing Student Privileges and Limitations) for full details.
  - Central Line dressing care, declotting and discontinuation may ONLY occur under the direct supervision of a PRECEPTOR.
  - All other aspects of IV care and use (Peripheral and Central) may occur with the direct supervision of the INSTRUCTOR or PRECEPTOR.
    - For all Pediatric patient, the Primary RN has direct oversight of all CVL Care in addition to the instructor.
    - In Neonatal ICU, Nursing Students may only OBSERVE IV Therapy of any type.

ProMedica
Care & Maintenance of
Central Venous Catheter/Line (CVL)
Education Module

***For Adults and Pediatrics** (less than or equal to 17 years)*

***This education does NOT include Neonates in the Newborn Nursery or Neonatal Intensive Care Unit*

PROMEDICA
CENTER OF NURSING EXCELLENCE

Central Venous Catheter/Line Education Module Includes:

- Central Venous Catheters
  - Indications for Use
  - Types of Central Venous Catheters
- Central Line-Associated Blood Stream Infection (CLABSI)
  - Prevention Measures
- Patient Education: Central Line Infection Prevention
- Central Venous Line Care and Maintenance
  - Dressing Change
  - Flushing
  - Blood Sampling
- Removal

ProMedica Health System CVL Policy

Background:

- As part of the **System-Wide Standardization** focus, staff members from across ProMedica review various policies
- As a result, all Hospital specific CVL policies were:
  - **Researched** to make sure ProMedica is using Evidence Based, Best Practices
  - Rewritten to create one standardized policy that is consistent throughout ProMedica
- Please review the actual policy in the online policy manual prior to care

Central Venous Catheters/Lines (CVC/CVL)

Indications for Use
Types of Catheters

- Short Term Catheters
- Peripherally Inserted Central Catheter
- Implanted Vascular Access Port
- Hemodialysis Catheters

Central Line Indications for Use:

Definition

- Any catheter placed percutaneously through the vein extending to the Superior Vena Cava

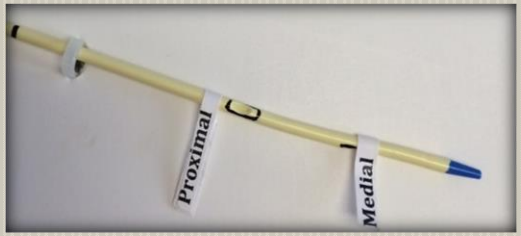
Indications for Use:

- Administration of blood products or drug infusions
- Simultaneous infusion of incompatible drugs
- Chemotherapy
- Total Parental Nutrition (TPN)
- Administration of medications inappropriate for peripheral line
- CVP monitoring
- Dialysis
- Lack of short term peripheral access

Short Term Catheters: Multi-lumen

Cross-sectional view:

Picture where lumens exit:



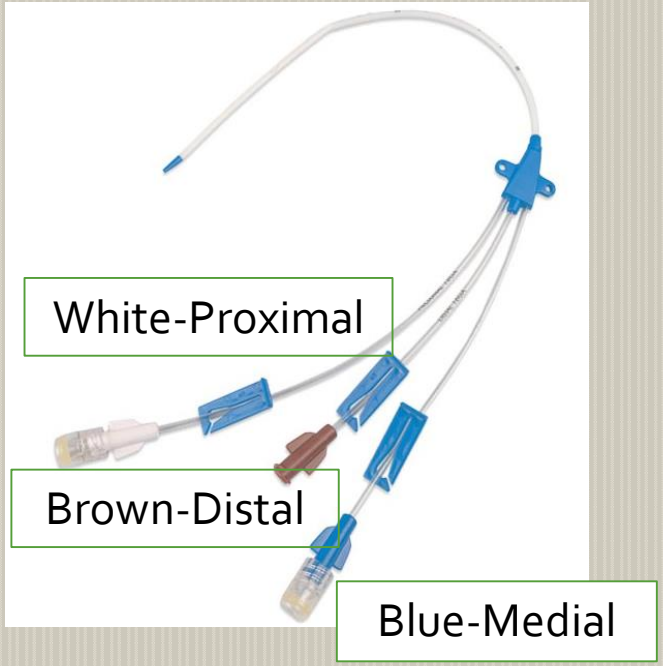
Distal End

- The proximal, medial and distal lumens vary in length and have different internal size lumens
- Each lumen is its own separate line
  - These lumens exit the catheter at different intervals, which allows for the infusion of incompatible agents without the danger of reaction
  - All the lumens may be used at one time for continuous or intermittent infusion

Use of Lumens:

ProMedica commonly uses the Arrow Triple Lumen Catheter

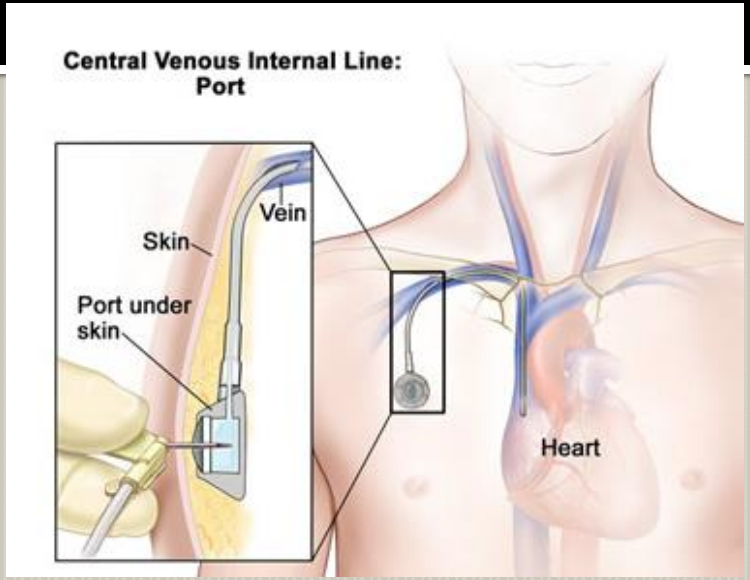
- **Proximal Lumen (white, 18 gauge)**
  - Medications
  - Blood Products (use if other lumens are unavailable)
  - IV Solutions
- **Medial Lumen (blue, 18 gauge)**
  - TPN
  - IV Solutions
  - Medications
  - Blood Products (use if distal lumen unavailable)
  - Lipids, colloids
- **Distal Lumen (brown, 16 gauge)**
  - Blood sampling
  - IV Solutions (high volume)
  - Medications
  - Blood Products (use this lumen first)
  - Lipids, colloids
  - CVP monitoring



Peripherally Inserted Central Catheter (PICC)

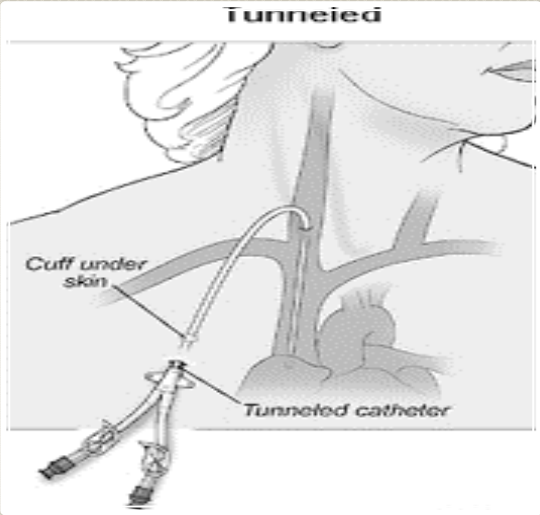
- A peripherally inserted central catheter (PICC) is inserted percutaneously into a peripheral vein
- The catheter tip resides in the lower one-third of the superior vena cava (SVC), at the junction of the SVC and right atrium
- PICCs are made of silicone or polyurethane and vary in diameter and length. They're available in single- and multi-lumen versions
- The type and size of the PICC depends on the patient's size and anatomic measurements and the required therapy
- Power injection–capable PICCs are also available for patients who require injection of contrast media for computed tomography and other studies

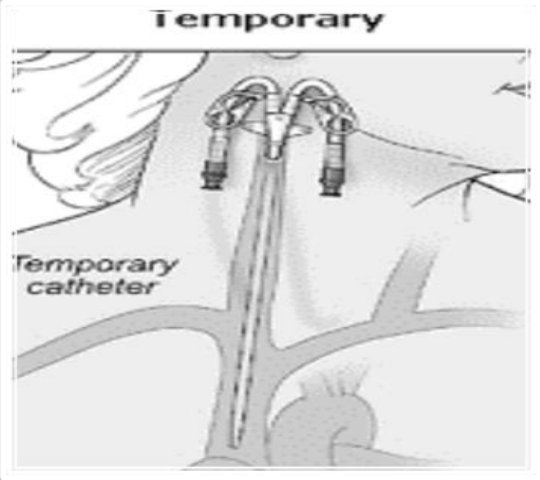
Implanted Vascular Access Port



- An implanted port is a surgically inserted central venous access device that is placed under the skin for long term IV access
- The port is accessed by placing a non-coring needle through the skin into the self-sealing injection port

Hemodialysis Catheter





Tunneled (cuffed)

- **Long term** therapy, can remain in place months to years
- Example: Ash Split Cath (chronic hemodialysis)
- Placed in chest, "tunneled" under skin to the internal jugular to right atrium
- Only removed by MD or providers privileged to remove

Non-tunneled (noncuffed)

- **Short term** therapy
- Example: Quinton (temporary access)
- Placed in neck (internal jugular)
- Can be removed by trained and competent clinician

Hemodialysis Catheters

Brief Policy Pointers (two slides)

*__***At ProMedica Monroe Regional Hospital***__, *Dialysis Nurses provide* ***all*** *care or maintenance of* ***ALL*** *hemodialysis catheters (including the pigtail)*

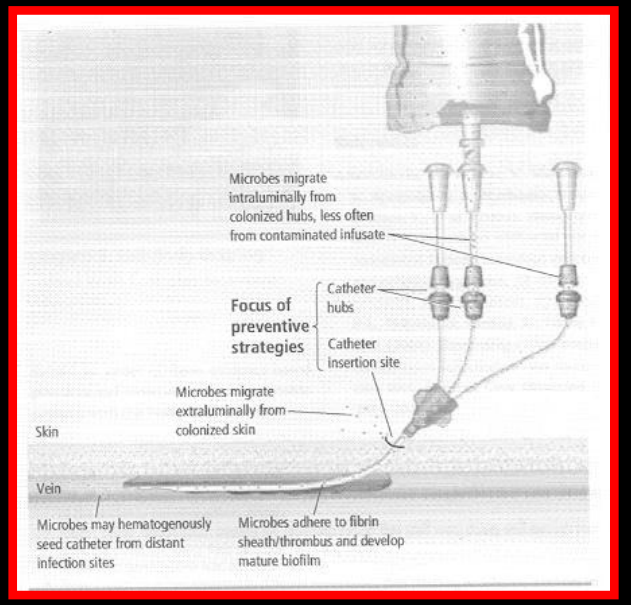
- The "pigtail" lumen is a CVL that is maintained by the bedside nurse and used for infusions and blood draws
- The dialysis catheter (arterial/ venous lumens) must have an order from nephrologist to use
- Dressing change requires the 7mm CHG sponge
- Pediatric Hemodialysis Catheters do NOT typically have a pigtail

Hemodialysis Catheters

Brief Policy Pointers

- **Arterial/Venous Lumens:**
  - Dead end cap changes and flushes are completed by:
    - dialysis nurse with each dialysis treatment OR
    - bedside nurse every 96 hours when not receiving dialysis
- **Pigtail:**
  - Flushed every 8 hours per physician order by bedside RN
    - Standard flush is Sodium Citrate 4% as prescribed
  - Needleless connectors on the pigtail lumen will be changed every 96 hours by the bedside nurse

*_**At ProMedica Monroe Regional Hospital**_, *Dialysis Nurses provide **all** care or maintenance of **ALL** hemodialysis catheters (including the pigtail)*



Central Line-Associated Blood Stream Infection (CLABSI) Prevention Measures

ProMedica
CENTER OF NURSING EXCELLENCE

Faces *representing* potential CLABSI's

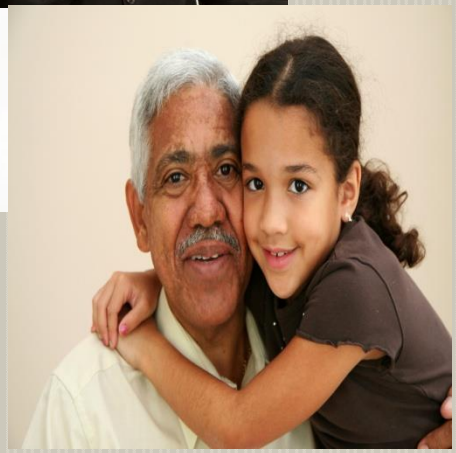
Could the next CLABSI be your grandfather, your best friend, your mother, or your child?

SB 54 yr. old

MB 30 yr. old

JD 61 yr. old

AT 75 yr. old



JH 8 yr. old

MC 88 yr. old

What is MY ROLE in preventing CLABSI?

- Assess the need for the CVL **daily**
- **Strict aseptic technique** is used for all CVL care
- Use EXCELLENT **hand hygiene** **whenever** handling CVL
- Limit traffic in the room during all CVL care
- Scrub the hub for 15 seconds in between each entry into the line (such as during medication administration)
- Unused lumens are flushed as ordered, clamped, and capped with an alcohol infused disinfection cap

CLABSI Prevention

STOP!

Procedure in Progress

HAT AND MASK

Required for Entry

ProMedica Toledo/Toledo Children's and Monroe Hospitals place a **Stop Sign** on the door outside of the room anytime the site or catheter hub is exposed. In addition, the patient and anyone remaining in the room during care of a CVL don bouffant cap and mask.

Assisting with CVL Insertion

Policy Pointers

- Mask, sterile gown, sterile gloves, and bouffant cap is required for anyone **reaching over the sterile field**
- **Patient should wear a mask** during CVL insertion
  - At ProMedica Toledo/Toledo Children's and Monroe Hospitals:
    - Patient will wear a cap
    - All others remaining in the room wear a mask and cap
- Monitor patient's heart rate, respiratory rate, and oxygen saturation during procedure
- If patient is under sedation, follow sedation policy for monitoring

Assisting with CVL Insertion

Policy Pointers (continued)

- After the insertion procedure:
  - Tip location placement must be confirmed
  - Obtain flush orders
- Document in the medical record:
  - Universal Protocol (Time-Out)
  - Patient education provided
  - Procedure and patient's tolerance

Prevent CLABSI
by Preventing CVL Occlusion

- Obtain flush orders!
- Flushing technique:
  - Push-pause
    - Creates turbulence to clear the line of blood and prevent fibrin build up
  - Clamp while instilling last 0.5mLs
    - This creates positive pressure to prevent reflux of blood into catheter tip
- Flush between meds to prevent precipitation of incompatible infusates
- Ensure all lumens that are not being infused remain flushed and clamped

For additional education: Refer to HealthStream Module: "Central Venous Line Declotting"

Patient Education: Central Line Infection Prevention

- **Joint Commission** requires patients to be educated on the risk of Central Line-Associated Blood Stream Infection (CLABSI)
  - *According to CVC Policy all patients are educated utilizing* educational material currently available through Medex or CDC:
  - Document education given and patient response

MEDEX

ProMedica

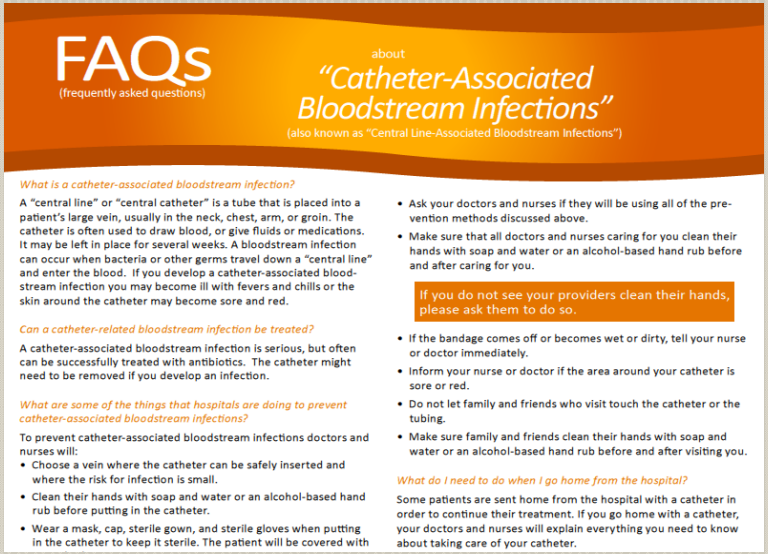
Fact Sheet for patients and families

Central Line Infection Prevention

What is a central line and a central line-related blood infection?
A "central line" or "PICC line" is a tube that is placed into a large vein in the neck, arm, chest, groin, leg, or scalp. It is often used to draw blood, give fluids, medicine or nutrition. It may be left in place for weeks or months. A blood infection can happen when germs travel down the central line and enter the blood. If you get a blood infection from the central line, you may become sick with fevers and chills and the skin around the central line may become sore or red.

Can a central line infection be treated?
The doctor will order antibiotics to fight the infection. The central line may need to be taken out to treat the infection.

CDC- Fremont ONLY



FAQs
(frequently asked questions)
about
"Catheter-Associated Bloodstream Infections"
(also known as "Central Line-Associated Bloodstream Infections")

What is a catheter-associated bloodstream infection?

A "central line" or "central catheter" is a tube that is placed into a patient's large vein, usually in the neck, chest, arm, or groin. The catheter is often used to draw blood, or give fluids or medications. It may be left in place for several weeks. A bloodstream infection can occur when bacteria or other germs travel down a "central line" and enter the blood. If you develop a catheter-associated blood-stream infection you may become ill with fevers and chills or the skin around the catheter may become sore and red.

Can a catheter-related bloodstream infection be treated?

A catheter-associated bloodstream infection is serious, but often can be successfully treated with antibiotics. The catheter might need to be removed if you develop an infection.

What are some of the things that hospitals are doing to prevent catheter-associated bloodstream infections?

To prevent catheter-associated bloodstream infections doctors and nurses will:

- Choose a vein where the catheter can be safely inserted and where the risk for infection is small.
- Clean their hands with soap and water or an alcohol-based hand rub before putting in the catheter.
- Wear a mask, cap, sterile gown, and sterile gloves when putting in the catheter to keep it sterile. The patient will be covered with
- Ask your doctors and nurses if they will be using all of the pre-vention methods discussed above.
- Make sure that all doctors and nurses caring for you clean their hands with soap and water or an alcohol-based hand rub before and after caring for you.

If you do not see your providers clean their hands, please ask them to do so.

- If the bandage comes off or becomes wet or dirty, tell your nurse or doctor immediately.
- Inform your nurse or doctor if the area around your catheter is sore or red.
- Do not let family and friends who visit touch the catheter or the tubing.
- Make sure family and friends clean their hands with soap and water or an alcohol-based hand rub before and after visiting you.

What do I need to do when I go home from the hospital?

Some patients are sent home from the hospital with a catheter in order to continue their treatment. If you go home with a catheter, your doctors and nurses will explain everything you need to know about taking care of your catheter.

CVL Care & Maintenance Practice Pointers

- Dressing Changes
- Needleless Cap & Tubing Changes
- Flushing
- Blood Sampling

Dressing Change

Reminders for practice:

- CVL dressings are changed **every 7 days or more frequently if damp, loose or soiled**
- Change dressing in **24°** if there is a gauze dressing **under** the transparent dressing for drainage management
- Change dressing every **48°** **if a gauze dressing is used** instead of a transparent dressing (due to transparent dressing intolerance)
- Chlorhexidine (CHG) impregnated disks are utilized unless contraindicated or an allergy is documented, then providine-iodine or 70% alcohol agent may be used

CHG Impregnated Disc

CHG inhibits bacterial growth under the dressing and in the immediate surrounding area for 7 days

Proper Placement for BioPatch:

- The edges of the slit should touch each other
- Rest the catheter on top of the BioPatch **just next to the slit** to facilitate dressing removal
- BioPatch needs to go under the catheter, touching the skin directly, **360 degree coverage**

Dressing Adherence

- If adherence is expected to be problematic, use **Mastisol**, a liquid medical adhesive used to improve dressing adherence
- Apply a half-inch strip of **Mastisol** to the border that will be covered by the dressing.
  Allow to dry for 20-30 seconds.
- **If Mastisol is used** during CVC dressing changes, **add a circled "M" to the dressing label**

- **Detachol,** an adhesive remover, must be used if Mastisol was applied

Dressing Change Kits

- The following kits are available:
  - **Blue:** any CVL that is sutured
  - **Pink:** for unsutured **PICC**'s, includes securement device
  - **Purple:** for implanted **ports**. Dressing is larger to cover the non-coring needle
  - **Green**: this kit contains all supplies needed to **remove** a central line

Applying a CVL Dressing (Sutured)

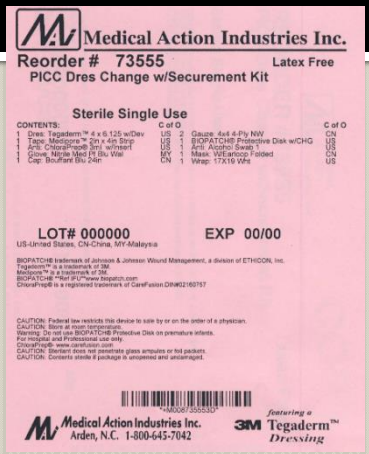
1. Dressing prior to application

2. Initial dressing placement

3. Additional Securement Dressing

4. Final Securement

PICC Dressing with Securement Device



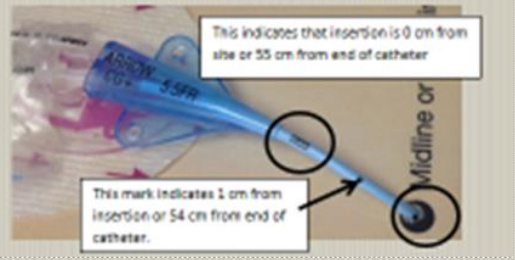
Peripherally Inserted Central Catheters *(PICC) Policy Pointers*

With each dressing change, measure and document

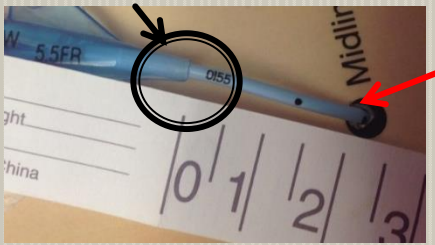
- **Arm circumference: Mid Upper Arm** (10 cm. above antecubital fossa)
  - Compare the current measurement to the baseline
    - If more than 2 cm difference from previous measurement, notify MD
- **Monitor and document the cm marking at the insertion site or the external length of the catheter** (exposed catheter from hub to insertion site)
  - *This assures that the catheter has not moved in or out at the insertion site*
    - If more than 2 cm difference from previous measurement, notify MD

The external length can be determined by using the sterile tape measure to record the distance of catheter to the insertion site at skin.

Document centimeter markings on catheter



External Length: 2cm



Tape measure found in PICC dressing change kit

Implantable Vascular Access Device (Implantable Port)

- **Port dressing and non-coring needle is changed every 7 days**
  - When performing dressing changes on implantable ports earlier than 7 days (i.e. loose or soiled dressings), do not change the non-coring needle
    - **Scrub** the non-coring needle with CHG/alcohol applicator
    - Add the needle insertion date AND the dressing change date to the dressing label
  - Obtain one **STERILE 0.9% Saline syringe**
    - open and drop directly onto sterile field when accessing the port

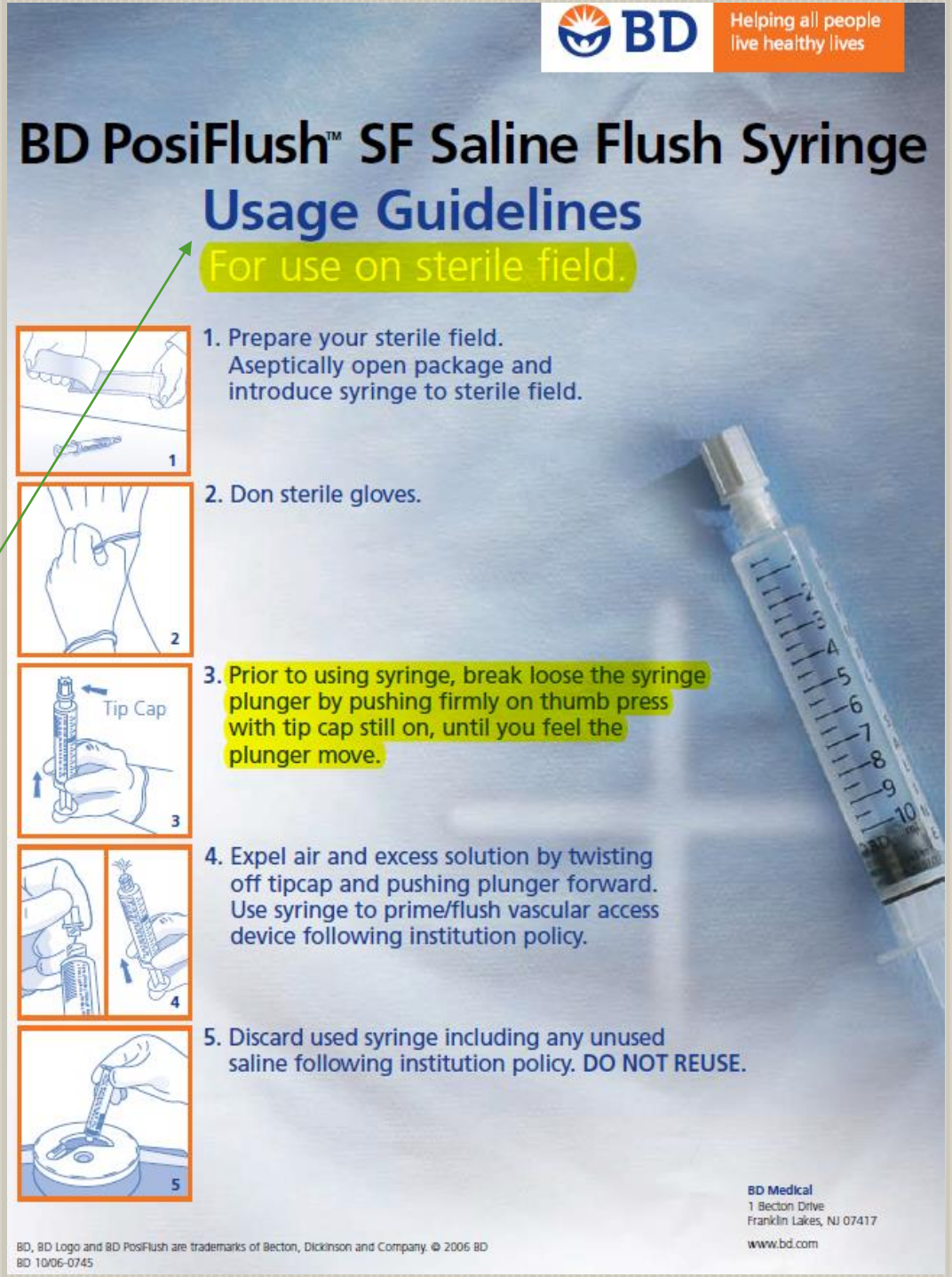
For additional education on how to access and deaccess a port: Refer to HealthStream module: "Implanted Vascular Access Port"

The **BD PosiFlush:**

- **STERILE** 0.9% saline syringe is available to place onto the sterile field during port access and CVC insertion

REMEMBER YOU MUST…

- Prime the syringe as described here to avoid loss of solution in the syringe



Needleless Cap & Tubing Change

- Needleless access caps are changed with Tubing **every 96 hours**, **OR** when:
  - residual blood or debris is noted
  - the cap is removed for any reason
  - prior to drawing a blood sample for blood culture
  - upon contamination, including cracked or leaking cap

- **IMPORTANT:** All add-ons (bridges, stop-cocks, etc.) must be replaced every 96 hours with the needleless caps

- **Intermittent Infusion**
  - Change any tubing that has been disconnected for intermittent infusions every 24 hours

Flushing

- **Syringes smaller than 10mL are NOT used to access or flush the CVL as a measure to prevent damage to the catheter.** *(Use of smaller syringes can create too much pressure within the catheter)*
- Aspirate and discard the anticoagulant (if used) prior to flushing
- Always aspirate to verify patency prior to flushing
- Desired amount of **0.9% saline flush** to be ordered is:
  - 10 mL with flushing or cap change of CVC
  - 20mL with implantable ports flushing or cap change
  - 20mL with blood sampling and when administering blood products or medications that are known to precipitate

Flushing

- **Use the push-pause technique when flushing**
  - This turbulent flow of solution helps in removing the fibrin that can adhere to the catheter which can help to prevent the very beginning of a partial occlusion
- Close clamp during instillation of the last 0.5mL of the final flush (saline or anticoagulant) and remove syringe to maintain positive pressure
- Unused lumens are flushed, clamped, and capped with a needleless access cap and an alcohol infused sponge cap

Blood Sampling

- Blood sampling is performed through a needleless access cap. Use a 10-12mL syringe for drawing blood from CVC.
- An order from the Nephrologist is required to use the dialysis catheter for IV access or blood draws, with the exception of the pigtail port of an uncuffed catheter.
- Attach empty syringe and withdraw anticoagulant, if applicable. Withdrawal 6 mL as waste; for pediatrics follow the weight based waste guidelines.
  - A 4.0 or larger size PICC is required for successful blood draw. Never forcefully draw from a PICC. This could cause catheter to collapse or rupture.
- Clamp catheter, remove waste syringe and discard in sharps container.
- "Scrub the Hub" for 15 sec with alcohol and allow to dry.
- Attach appropriate sized syringe to access cap , unclamp , and withdraw sample. "Scrub the Hub" for 15 sec with alcohol and allow to dry. Follow Lab Standardized Policy for filling, labeling and transferring specimen to lab per order.
- Flush with at least 20mL of 0.9% saline (as ordered) until cap is clear of visible blood; If cap does not clear of blood, change the cap.

Drawing Blood Culture
Policy Pointers

When drawing blood cultures:

- It is **highly** preferred to collect culture specimens via venipuncture, however a RN may draw from a central venous or arterial line ONLY if ordered by the prescriber.
- **CHANGE** the needleless access cap (per policy) and draw the culture through the **new needleless access cap**
  - For **Peds patients:** If this is the **first draw** off an existing line, **DO NOT DISCARD the first draw (usually the "waste")**, as this is the sample used for the blood culture.
  - if drawing multiple specimens, fill blood culture vials first
- When withdrawing blood, it is desirable to flush with at least 20mL (as ordered) of 0.9% saline until cap is clear of visible blood
  - If cap does not clear of blood, change the cap

CVL Removal

Policy Pointers

- Cuffed catheters are ONLY removed by physicians or providers privileged to do so, or by supervised residents
- Per physician order, uncuffed Central Venous Catheters/Lines may be removed by an RN or Interventional Radiology Technician who has had **additional training** that includes **documented education and demonstrated competency**

Authors

A designated team of Nursing Educators from across the system created this education in collaboration with the Center of Nursing Excellence in support of the ProMedica System-Wide Standardization Initiative

Policy References:

Policy #1007 Central Venous Catheter Care Policy

Specific Business Unit Hemodialysis Policy

Click this LINK to validate module completion.