Nurse Link

BY CAREPATHRX

VASCULAR ACCESS DEVICE MANAGEMENT 2023

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Learning Goals

By the end of this module, learners will be able to:

Apply knowledge of Vascular Access Device Management to daily nursing practice.

- Identify appropriate NurseLink resources (nurse education, patient education, annual updates, infusion and enteral videos, infusion and enteral teaching guides, pump administration brochure, FAQs, administration of emergency medications video, policies and procedures),for home infusion patients to promote effective learning to safely administer home infusion therapy.
- Describe the various Vascular Access Devices (VADs).
- Monitor patients for vascular access line related complications.
- Detail the SASH Method for flushing vascular access.
- Describe how to prevent Catheter Associated Blood Stream Infections (CABSI).
- Detail the process for administration of Cathflo Activase.

Access to Nurse Link

To login, follow the link below and click "*Login to Nurse Link*."

https://carepathrxllc.com/nurselink-welcome/

Password: email nursingsupport@homeinfusion.com

Be sure to bookmark this URL and save your password for future use.

NL Patient Site:
https://carepathrxllc.com/nurselink-patient/

Patient teaching Videos	Patient Written Instructions	Nursing P & P	Links to RN virtual training	Nurse Videos	Home Infusion Society links	CarepathRX in the News

CarepathRx On Call

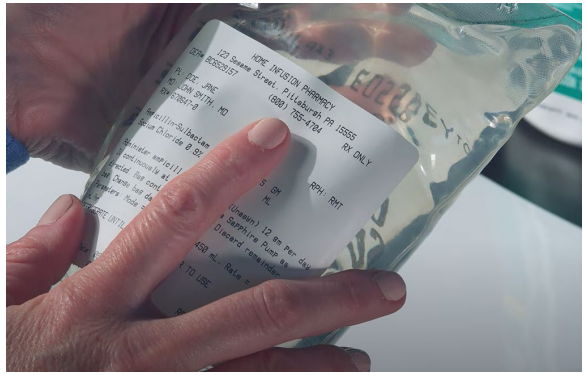
24 / 7 Access to the Clinical Pharmacy team

For after-hours, weekend and holiday support, troubleshooting, and delivery needs:

- CarepathRx Pharmacist
- Local pharmacy support varies by pharmacy.
- Dietitians

  1-877-ENTERAL
- Nurses
- Delivery

Contact the pharmacy by calling the phone number at the top of the medication label.



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Therapy Education

- Flushing and Vascular Access Device (VAD) use.
- Supply reordering
  - Patients must speak to a pharmacy assistant to reorder supplies and schedule delivery
- Will need for re-deliveries:
  - List of supplies, medications and formula needed.
  - Complete inventory of supplies, medications and formula in the home.
  - Patient's response to therapy.
  - Script for order changes & when next doctor appointment is.

Access Devices

Subcutaneous Needles

Peripheral Catheter

Midline Catheter

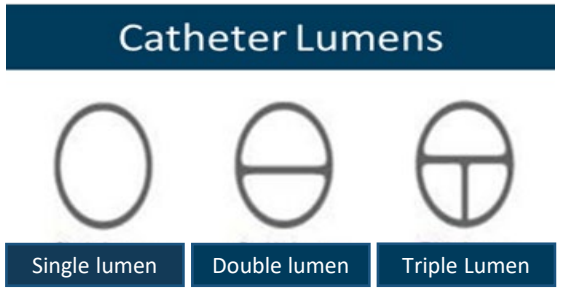
PICC (Peripherally Inserted Central Catheter)

Non-tunneled Central Venous Catheter

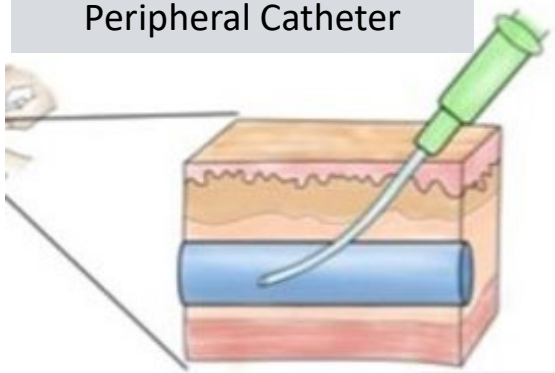
(CVC – Central Venous Catheter)

Tunneled Central Venous Catheter

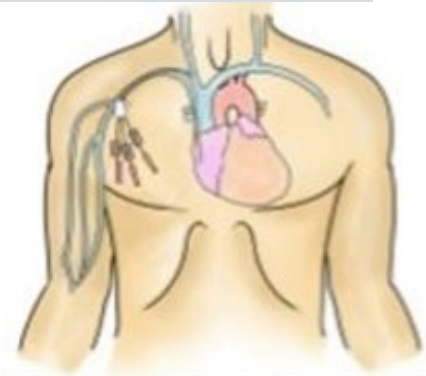
Implanted Port

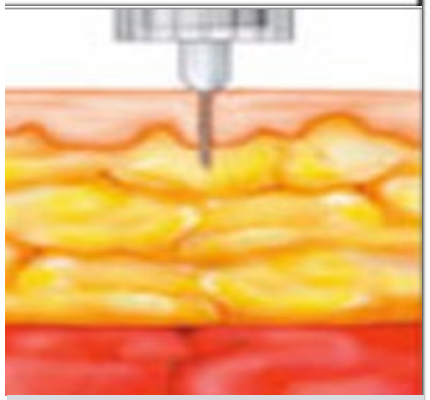


Peripheral Catheter

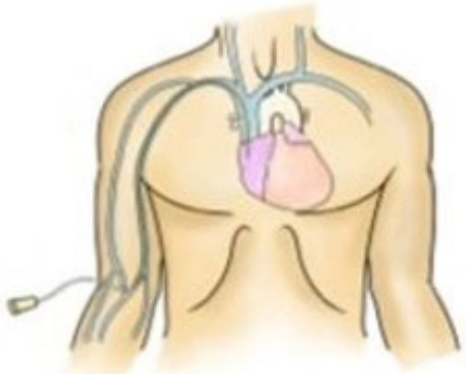


Non-tunneled Central Venous Catheter

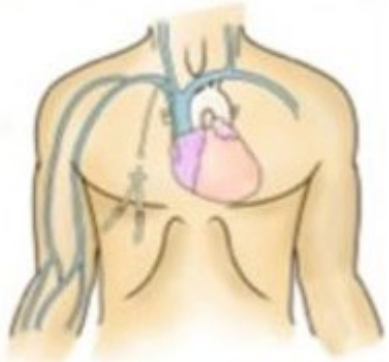




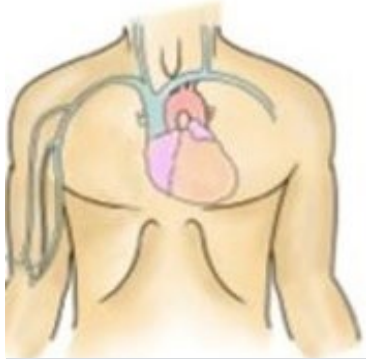
Subcutaneous Needles



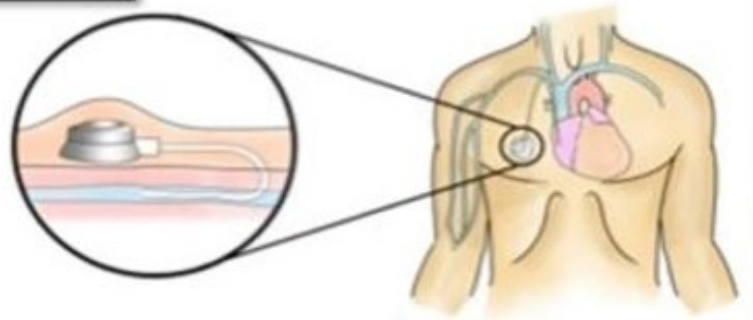
PICC (Peripherally Inserted Central Catheter)



Tunneled Central Venous Catheter



Midline Catheter



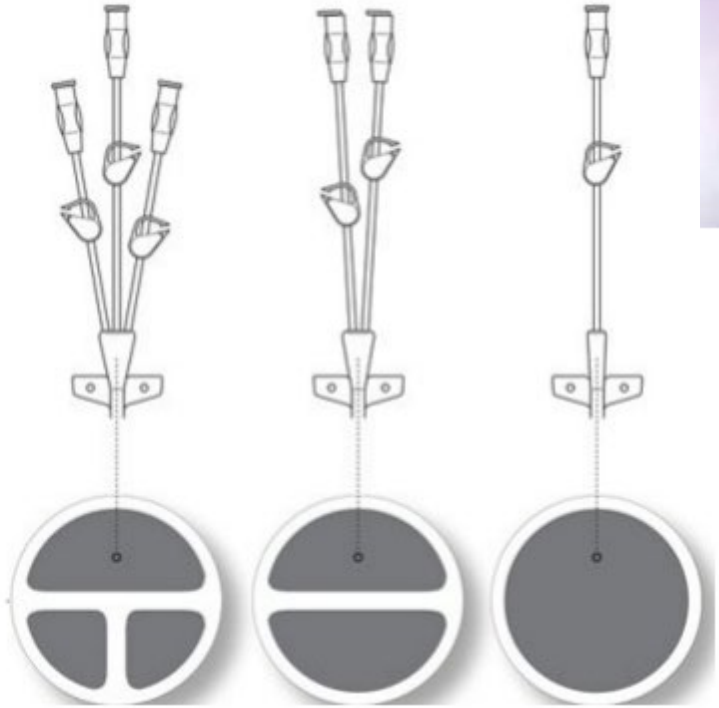
Implanted Port

Catheter Lumens

Each lumen is separate from access point to the opening in the vein.

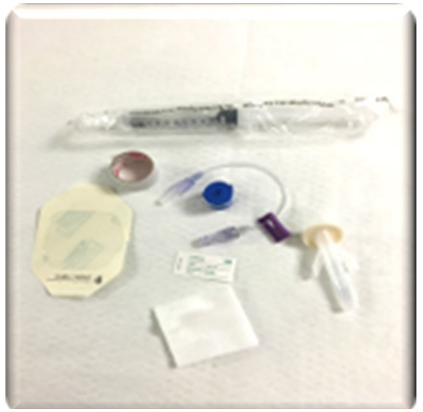
Catheter lumens are individual access points for IV administration in the same catheter.

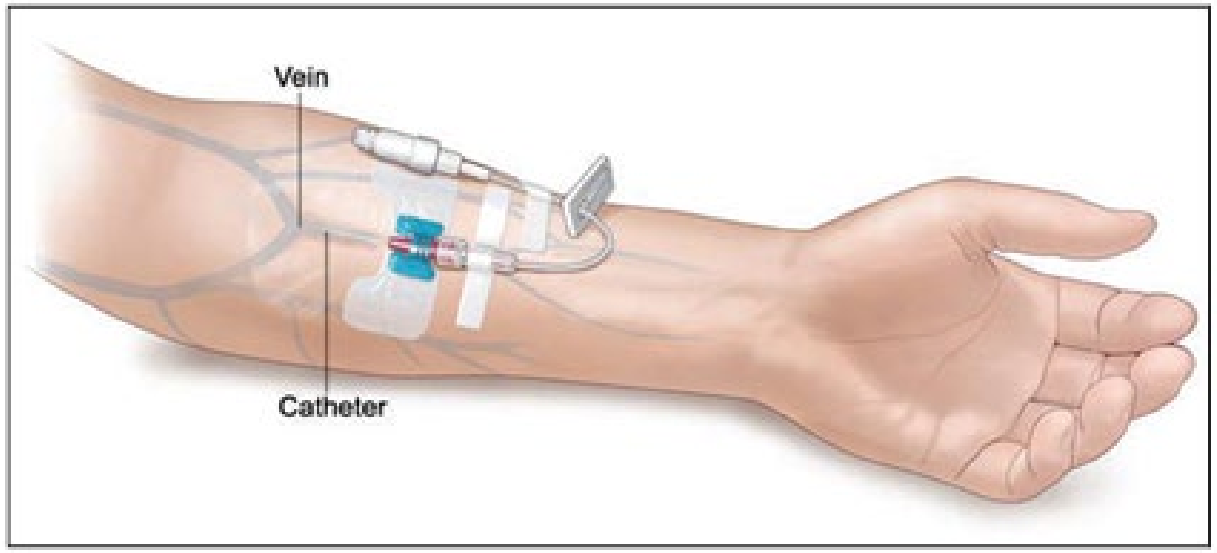
- From access point to the tip of the catheter, each lumen is separate from the other lumen(s).
- Infused medication does not mix with medications infused in another lumen until it enters the blood stream.
- Medication compatibility for infusion is not required when infused in separate lumens.



Peripheral Catheters

- Easily inserted into veins of the forearm or hand.
- May be inserted by an RN in the home who has completed IV training and agency competencies. LPNs must refer to their State Board of Nursing Scope of Practice
- Used for short term therapy.
- Used to administer fluids, medications and blood products.
- DO NOT use peripheral IV catheters for continuous vesicant therapy or parenteral nutrition.
- Removed/changed when there are unresolved complications or no longer necessary for therapy.
- Safely removed in the home by an RN, LPN and, in some cases, by the patient or caregiver with a medical background who has completed IV training.
- With each visit, document site condition, dressing condition, patency of catheter and ongoing need.





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PIV Catheter Placement Supplies

Gloves

Single-use tourniquet

Short peripheral catheter with safety device

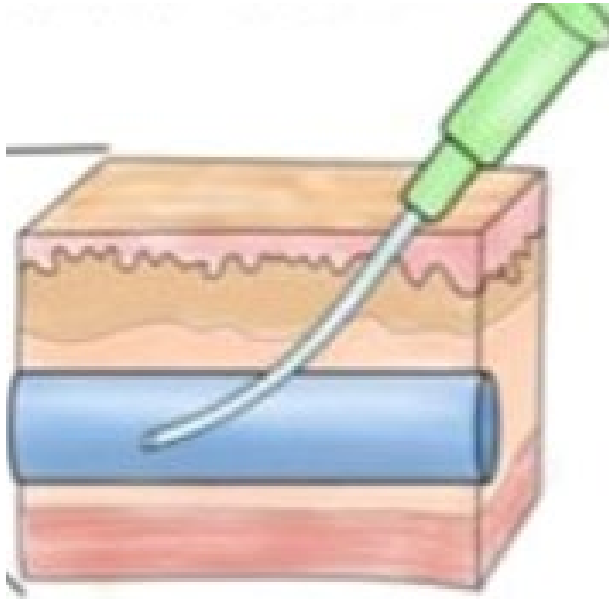
Antiseptic pads (chlorhexidine-based, povidone-iodine, or alcohol)

Sterile 10-mL prefilled syringe

Transparent semipermeable dressing

Short extension set (7- 8 inches)

Commercial IV insertion kits come with or without an IV access device.

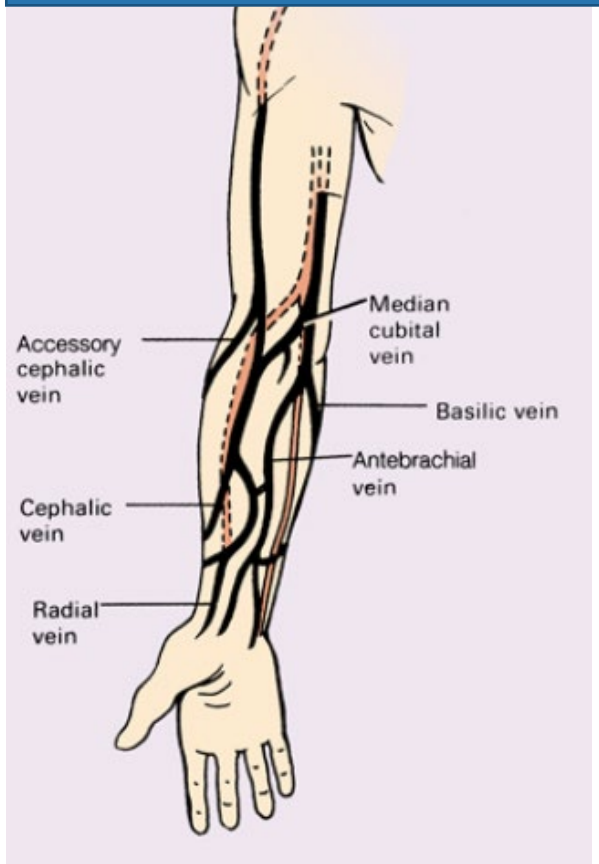


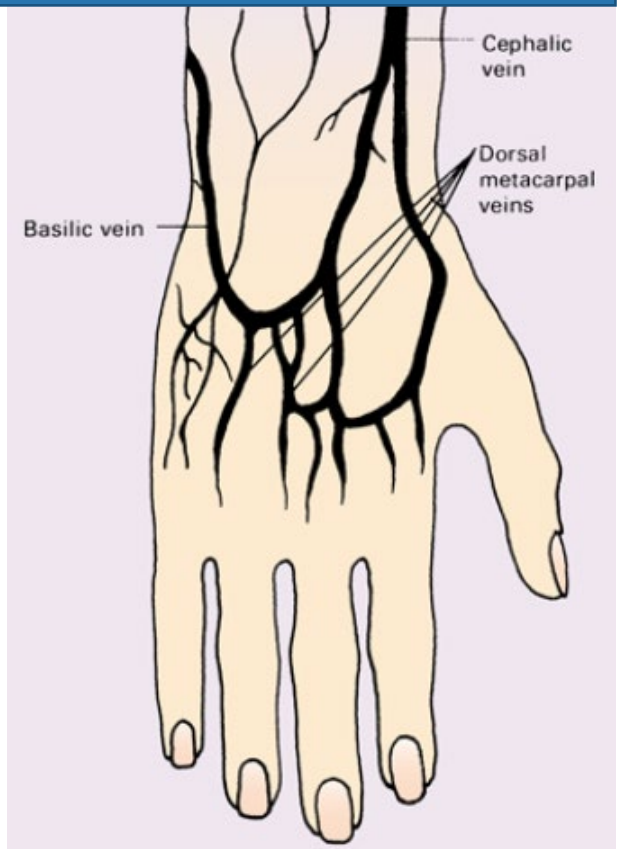
Catheter Selection

- Use the smallest gauge short peripheral catheter as possible because peripheral catheters larger than 20G are more likely to cause phlebitis.
  - The pharmacy will send 22G and 24G needles.
- Use the shortest catheter length that will fully canulate the vein.
  - The pharmacy will send ¾ inch catheters.

Select Insertion Site

Use veins on the dorsal and ventral surfaces of the upper extremities, including the metacarpal, cephalic, basilic, and median veins.





Preferred site selection:

- Use non-dominant arm/hand when possible.
- Each successive cannulation proximal to previous attempt.
- Choose site with more subcutaneous and skeletal support for better device stabilization.
- Allow patient input for site selection.
- Use non-affected extremity (i.e., no lymph node dissection, flacidity, edema or wound).
- Avoid ventral side of wrist (painful).

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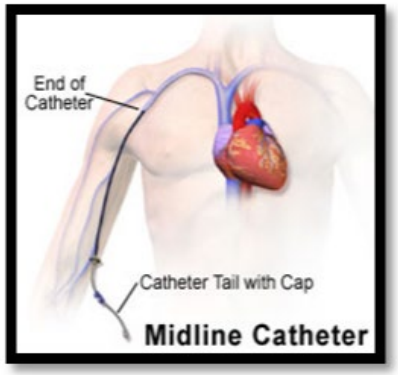
Documentation

Document in the EHR:

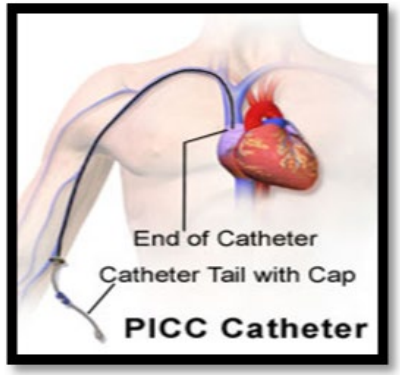
- Date & time
- Gauge and length on catheter
- Number of attempts
- Insertion site
- Preparation of skin and ANTT technique followed.
- Device functionality (patent)
- Patient's tolerance of procedure
- Teaching provided to patient and family and their understanding.
- Provider order and reason for PIV insertion (IV medication administration).

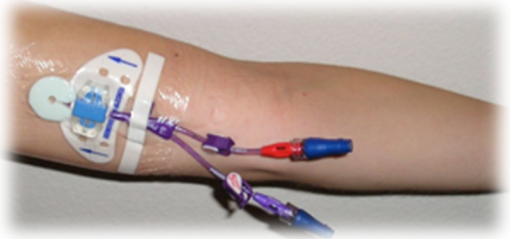
MIDLINE



- A long peripheral catheter (typically 3-11 inches in length) inserted via antecubital fossa into a peripheral vein in the upper arm; basilic, cephalic, or one of the two brachial veins, with the internal tip located level at or near the level of the axilla and distal to the shoulder.
- Typically used for infusion and short-term intravenous therapies.
- Used for medications and solutions such as antimicrobials, fluid replacement, and analgesics with characteristics that are well-tolerated by peripheral veins.
- Do not use midline catheters for continuous vesicant therapy or parenteral nutrition.

PICC LINE





- Inserted into basilic, cephalic, brachial veins and enters superior vena cava.
- Can stay in place for weeks or months.
- Can feature more than one lumen.
- Can be used to administer IV fluids or medications which may irritate peripheral veins (chemotherapy, TPN).

REMOVAL OF MIDLINE OR PICC LINE: CONSISTENT WITH ORGANIZATIONAL POLICY, TRAINING AND STATE BOARD OF NURSING SCOPE OF PRACTICE.

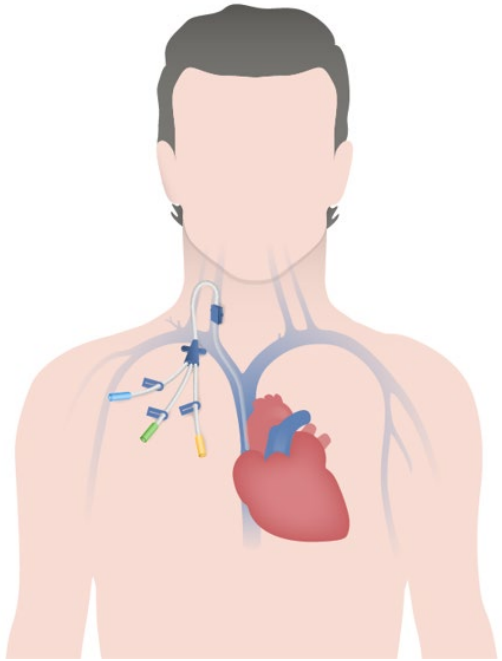
Midline & PICC Removal

- The clinical need for each VAD is assessed daily for acute inpatient settings and during regular assessment visits in other settings, such as the home, outpatient facility, or skilled nursing facility.
- VADs are removed when clinically indicated (e.g., unresolved complication, discontinuation of infusion therapy, or when no longer necessary for the plan of care)
- VADs are not removed based solely on length of dwell time, because there is no known optimal dwell time.
- Remove if no longer included in the plan of care or if not used for 24 hours or more.
- Remove PIVCs and midline catheters in pediatric and adult patients when clinically indicated, based on findings from site assessment and/or clinical signs and symptoms of systemic complications

- Implement precautions to prevent air embolism during removal of CVADs including, but not limited to
- Place the patient in a supine flat or Trendelenburg position
- Instruct the patient to perform a Valsalva maneuver at the appropriate point during catheter withdrawal.
- After removal, apply digital pressure with a sterile dry gauze pad at and just above the insertion site until hemostasis is achieved by using manual compression
- Apply an air-occlusive dressing to the access site for at least 24 hours for the purpose of occluding the skin-to-vein tract and decreasing the risk of retrograde air emboli.
- Assess the removed catheter to ensure it is fully intact, after planned or inadvertent CVAD removal. If a retained fragment is suspected, notify the provider immediately.

Centrally inserted catheters must be removed in a controlled setting (clinic)

NON-TUNNELED



- **NO CUFF**
- Short term
- Typically used for day to - weeks for all types of IV therapy and blood draws
- Percutaneously inserted into central veins (subclavian, internal jugular (IJ), femoral)

- This type of catheter is inserted by direct stick into the subclavian vein and is then threaded into the SVC by a physician
- **SUTURED IN PLACE**
- **NO CUFF**
- The primary use of this type of catheter is in the acute care setting.
- **NOT RECOMMENDED FOR IN HOME USE**
- **HIGHEST INFECTION RATE OF ALL CENTRAL LINES**
- **NOT REMOVED IN THE HOME**

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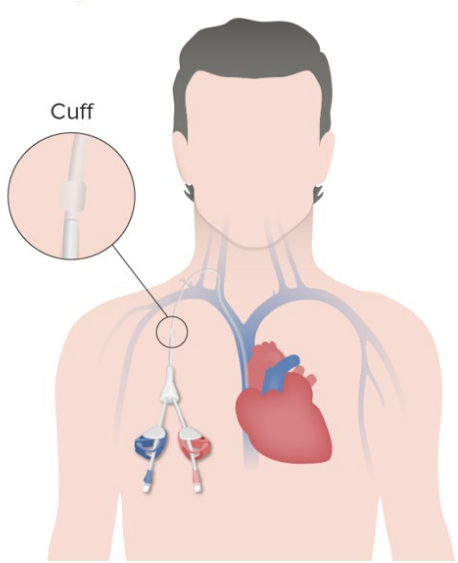
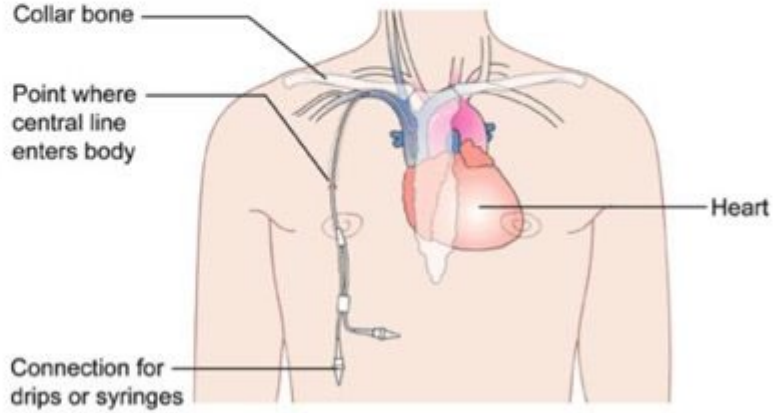
TUNNELED CATHETERS (CVC)



- Dacron cuff encourages tissue growth to provide catheter stability and serves as a barrier to prevent infection
- Long term therapies: TPN, chemo
- Examples: aPheresis catheter, Hickman, Broviac, Groshong
- Percutaneously inserted into central veins (subclavian, internal jugular (IJ), femoral)

Tunneling

- Hickman®
- Broviac®
- Groshong®



Surgically inserted into the subclavian vein, then advanced to the SVC. The distal portion of the catheter is then threaded through a subcutaneous tunnel to an exit site.

MUST BE SURGICALLY REMOVED.

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VALVED CATHETERS

Negative pressure opens valve inward, permitting blood aspiration.

At neutral pressure, valve remains closed, reducing risk of air embolism, blood reflux and clotting.

Positive pressure opens the valve outward, permitting infusion.

Valved catheters (i.e., PICC, Groshong) do not require the use of Heparin to lock the catheter lumen(s).

DO NOT HAVE CLAMPS

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Implanted Ports

Surgically implanted & removed

- Attached to a catheter that is threaded into the superior vena cava, subclavian or internal jugular vein

Removed surgically.

Long-term use

Usually placed in the chest

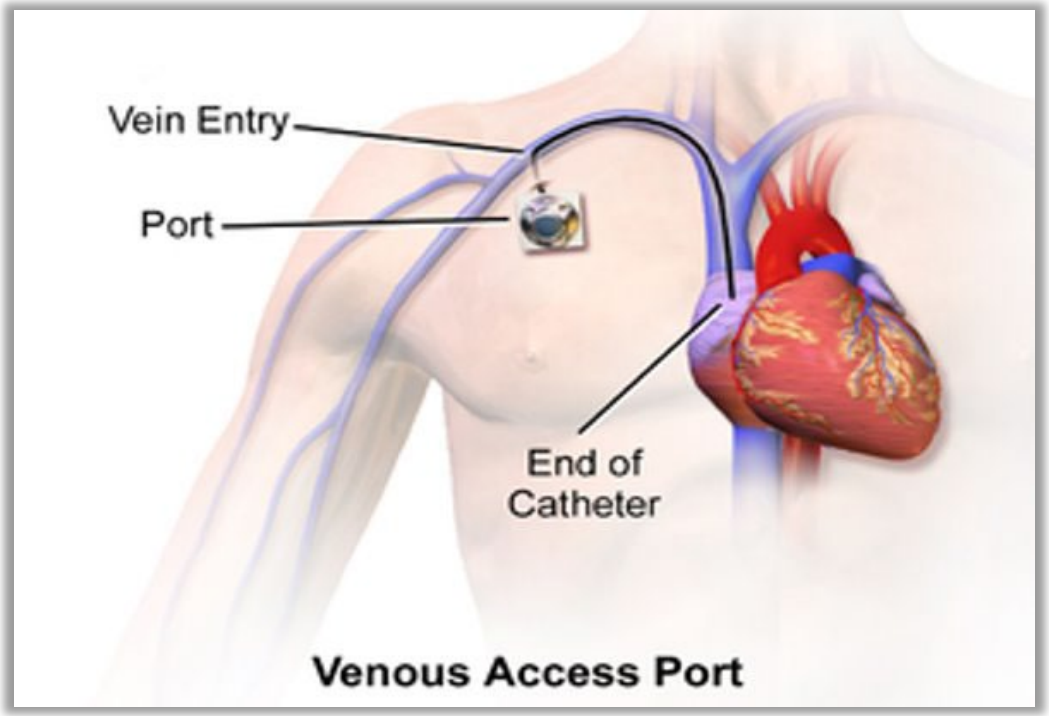
- Other locations: Arm, Thigh, Abdomen, ribs/side

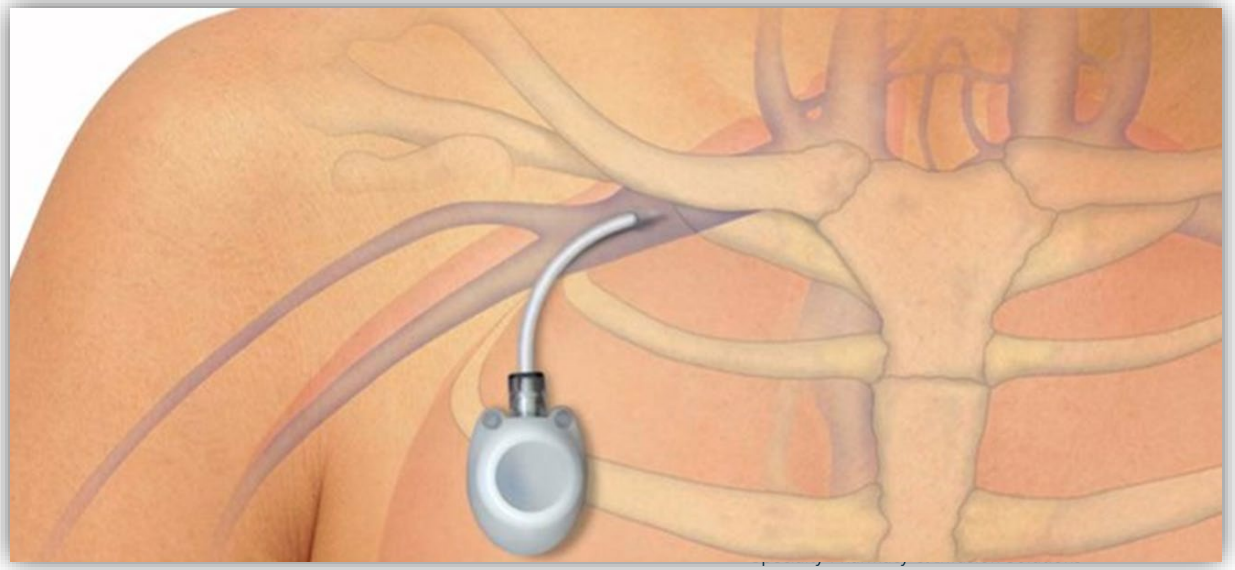
Usually, Single Injection Ports

- Double injection ports are available

Must use non-coring Huber Needle

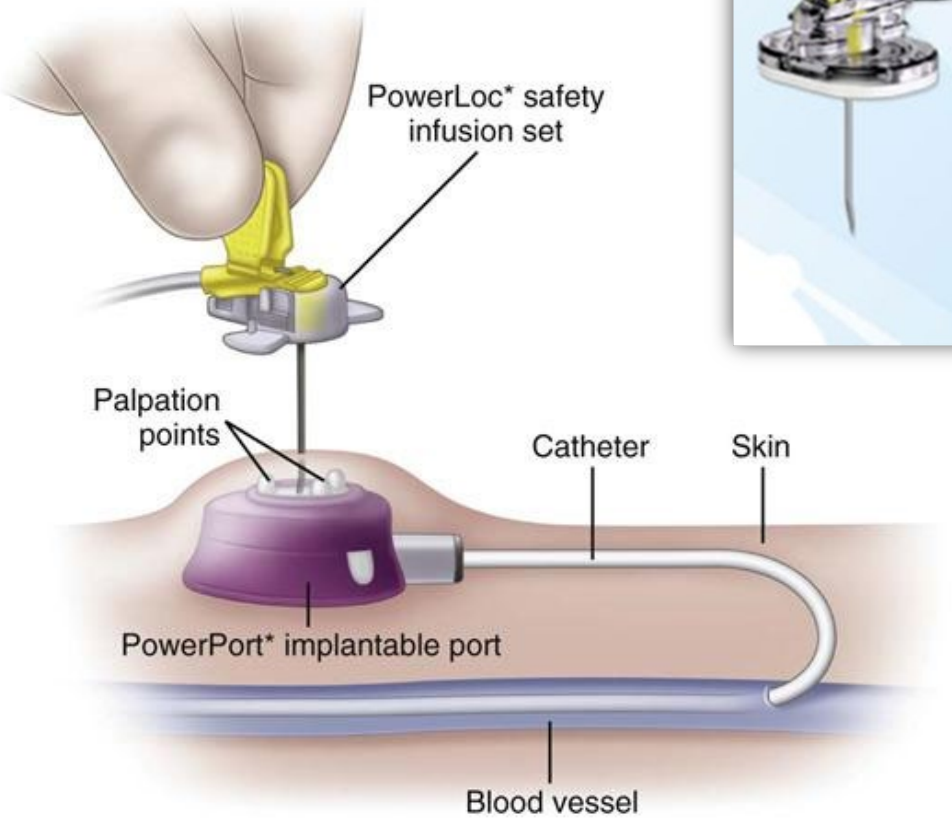
- To prevent coring (hole punching) port silicone
- Self-sealing





IMPLANTED PORTS

NON-CORING needles must be used to access the self-sealing implanted injection port.



SUBCUTANEOUS INFUSION THERAPY

Subcutaneous infusion therapy is a technique whereby fluids or medications are infused into the subcutaneous tissue via small gauge needles inserted into the abdomen, arms, back or thighs.

The subcutaneous route may be used to infuse isotonic solutions for treatment of dehydration, continuous opioid infusions for pain management, non-vesicant neoplastic agents, certain antibiotics, diuretics, antiemetics, immunoglobins, endocrine medications, gastrointestinal medications, monoclonal antibodies, and other therapies/medications as prescribed.

Subcutaneous infusion offers several advantages over intravenous infusion, including ease of administration, lower cost, and lack of potential serious complications.

Subcutaneous Needle Selection

Length

- 4mm
- 6mm
- 9mm
- 12mm
- 14mm

A longer needle may be needed if there is leakage at the puncture site.

Needle must be long enough to be seated in the subcutaneous tissue, but not long enough to reach the muscle.

Infusion into the muscle or skin tissue will cause pain and irritation.

Bifurcations

- 1 needle
- 2 needles
- 3 needles
- 4 needles
- 5 needles
- 6 needles
- 8 needles

The volume of medication/solution to be infused determines the number of infusion sites required.

Volume per site is based on patient weight and product. Pediatric and low BMI patients have lower volume limits.

SUBCUTANEOUS SITE SELECTION

CONSIDER PATIENT'S MOBILITY, COMFORT AND SITE PREFERENCE

Select areas with intact skin and adequate subcutaneous tissue

Abdomen (at least 2 inches from umbilicus)

Deltoid

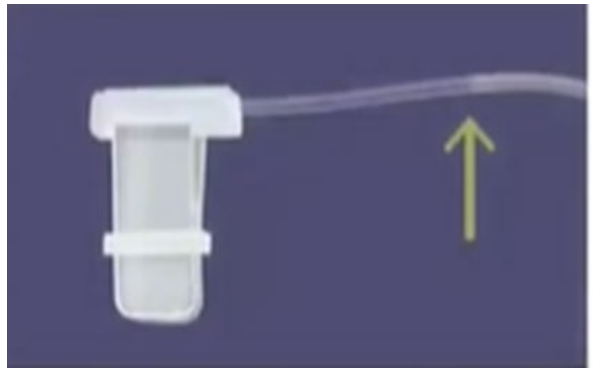
Flank

Hips

Thighs

SCIG Needle Placement & Site Selection

- 2-4 inches between sites (refer to package insert)
- 2 inches from umbilicus.
- Rotate sites with each infusion.
- Dry prime to prevent skin irritation and leakage (SCIG and Immune globulin and recombinant human hyaluronidase (Ig only).
- Prime with medication or solution to be administered.
- Check needle placement **if indicated** on the package insert by gently pulling back on the plunger of the attached syringe and monitor for any blood return in the tubing.
- If blood is seen in the tubing, remove and discard the needle if using a single needle administration set. Repeat needle insertion. If using a multi-needle administration set and blood is noted in one or more of the bifurcated tubing, clamp the tubing(s) where the blood is noted and contact the pharmacy to see if it is safe to proceed with remaining sites due to a decrease in the number of infusion sites and increase in volume to be infused into those remaining sites.



Adults:
INFUSION KEY POINTS

Each Pharmacy will have pharmacy specific standing orders that vary by pharmacy.

Adult Line Care Standing Orders

Peripheral Line Care	
Catheter change as needed for signs/symptoms of complications or malfunction. Not to exceed 7 days without change.	Flush with 3-10ml Saline before and after each medication administration and PRN to ensure patency.
PICC / Midline Care	
Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush each lumen with 5-10ml Saline before and after each medication administration and PRN to ensure patency and follow with 5ml Heparin 10units/ml flush.
	Flush each lumen with 10-20ml Saline before and after each lab draw and PRN to ensure patency and follow with 5ml Heparin 10units/ml flush.
	Flush unused lumen(s) only with 5ml Heparin 10units/ml daily.
Implanted Venous Access Device Care (Port)	
Huber needle re-access weekly and PRN for signs/symptoms of complications or malfunction. Sterile dressing change with each re-access and PRN for compromised dressing integrity.	Flush with 5-10ml Saline before and after each medication administration and PRN to ensure patency, and follow with 5ml Heparin 100units/ml.
	Flush with 10-20ml Saline before and after each lab draw and PRN to ensure patency and follow with 5ml Heparin 100units/ml flush.
	Cath Care: Re-access and flush with 5-10ml saline followed by 5ml Heparin 100units/ml monthly and prn for venous access.
Central Line Care (tunneled and non-tunneled)	
Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush each lumen with 5-10ml Saline before and after each medication administration and PRN to ensure patency and follow with 5ml Heparin 10units/ml flush.
	Flush each lumen with 10-20ml Saline before and after each lab draw and PRN to ensure patency and follow with 5ml Heparin (10units/ml) flush.
	Flush unused lumen(s) only with 5ml Heparin (10units/ml) daily.
Valved Catheter Care (Groshong/PASV)	
Sterile dressing changes weekly and PRN for compromised dressing integrity.	Flush each lumen with 5-10ml Saline before and after each medication administration and PRN to ensure patency.
	Flush unused lumen(s) only with 5-10ml Saline weekly and PRN to ensure patency.
	Flush with 10-20ml Saline before and after each lab draw and RPN to ensure patency.
	Flush with 5ml Heparin (10units/ml) PRN to for sluggish flushing to ensure patency.

**All specific patient orders will supersede standing orders.*

*** All disposable supplies must be changed with every dressing change (dressing, securement device, extension sets, injection caps, chlorhexidine disc and/or other antimicrobial disc.*

Pediatrics:
INFUSION KEY POINTS

Each Pharmacy will have pharmacy specific standing orders that vary by pharmacy.

Pediatric Line Care Standing Orders

Peripheral Line Care	
Catheter change as needed for signs/symptoms of complications or malfunction. Not to exceed 7 days without change.	Flush with 1-5ml Saline before and after each medication administration and PRN to ensure patency
	Flush with 1ml Heparin 10units/ml after each medication administration and PRN to ensure patency.
PICC / Midline Care	
Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush with 1-5ml Saline before and after each medication administration and PRN to ensure patency
	Patients with 2.6F or smaller: Flush with 1ml Heparin 10units/ml after each medication administration and PRN to ensure patency. Cath Care: Flush each lumen with 1ml Heparin 100units/ml Monday, Wednesday & Friday.
	Patients with 2.7F or larger: Flush with 2ml Heparin 10units/ml after each medication administration and PRN to ensure patency. Cath Care: Flush each lumen with 2ml Heparin 100/units/ml Monday, Wednesday & Friday.
Implanted Venous Access Device Care (Port)	
Huber needle re-access weekly and PRN for s/sx of complications or malfunction. Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush with 3-5ml Saline before and after each medication administration, lab draw and PRN to ensure patency
	Patients requiring multiple infusions per day: Flush with 3ml Heparin 10units/1ml after each medication administration. Patients requiring 1 flush per day Flush with 3ml Heparin 100units/1ml daily and PRN ensure patency
	Cath Care Flush with 3ml Heparin 100units/ml monthly.
Central Line (tunneled and non-tunneled)	
Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush each lumen with 1-5ml Saline before and after each medication administration, lab draw and PRN to ensure patency.
	Patients less than 1 month of age: Daily Infusions: Flush each lumen with 1ml Heparin 10units/ml after each medication administration, lab draw and PRN to ensure patency Cath Care: Flush each lumen with 1ml Heparin 100units/ml on Monday, Wednesday and Friday.
	Patients 1 month of age or older with daily infusions Daily Infusions: Flush each lumen with 2ml Heparin 10units/ml after each medication administration, lab draw and PRN to ensure patency Cath Care: Flush each lumen with 2ml Heparin 100units/ml on Monday, Wednesday and Friday
Valved Catheter Care (Groshong)	
Sterile dressing change weekly and PRN for compromised dressing integrity.	Flush each lumen with 3-5ml Saline before and after each medication administration, lab draw and PRN to ensure patency.
	Cath Care: Flush each lumen with 5ml Saline weekly.

**Children under 6 months of age must use single dose, preservative free flushing solutions.*

***All specific patient orders will supersede standing orders.*

**** All disposable supplies must be changed with every dressing change (dressing, securement device, extension sets, injection caps, chlorhexidine disc and/or other antimicrobial disc.*

NEEDLELESS CONNECTOR

MICROCLAVE CONNECTOR

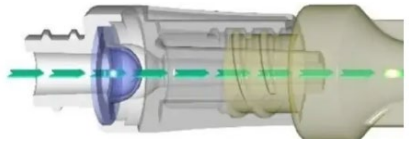
Follow needleless connector product recommendations for clamping sequence in order to prevent blood reflux and reduce the risk of thrombotic occlusion or biofilm formation

MicroClave connector is a neutral displacement connector: no specific clamping sequence

NEXUS TKO®

Nexus TKO Anti-Reflux connector: is a neutral displacement connector with no specific clamping sequence

- MUST be flushed within minutes of gravity infusions to lubricate the anti-reflux valve



In the absence of manufacturer's directions, consider the reflux volume for each type and use the following sequence:

i. Negative displacement–flush, clamp, disconnect
ii. Positive displacement–flush, disconnect, clamp
iii. Neutral and anti-reflux–flush, no specific sequence required

Hazardous Drugs:

Injection caps need to be neutral pressure to prevent leaking at the connection.

NEEDLELESS CONNECTOR

- Change the needleless connector at least every 7 days or according to the manufacturers' directions for use.

- The needleless connector should be changed in the following circumstances:

  - if the needleless connector is removed for any reason
  - if there is residual blood or debris within the needleless connector
  - prior to drawing a sample for blood culture from the VAD
  - upon contamination
  - per the manufacturers' directions for use

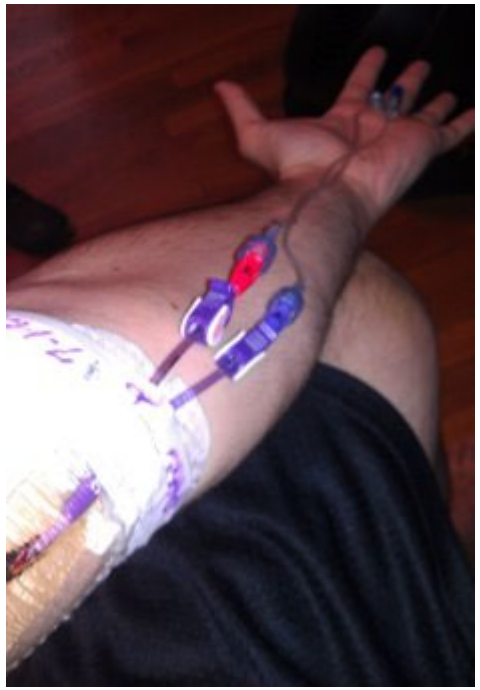
PICC Extension Sets

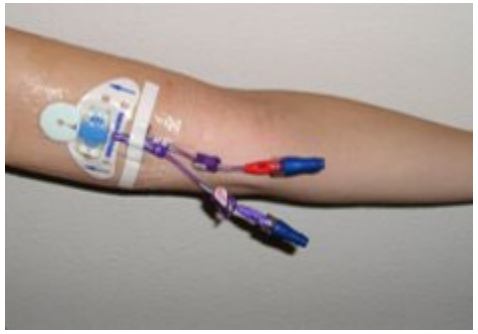
Extension sets must be placed on PICC lines

- To enable patients to flush or administer medications with both hands

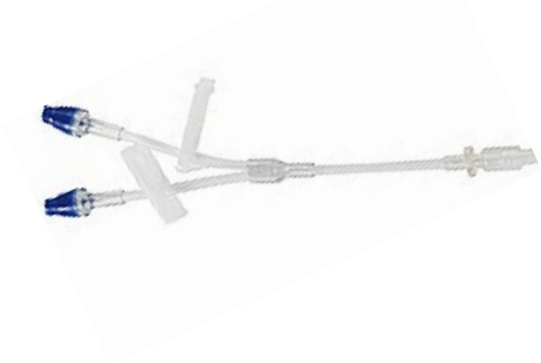
Instructions:

- Maintain sterile technique
- Prime extension set with needleless connector
- Prior to removing needleless connector from vascular access device cleanse connection with antiseptic wipe for 30 seconds and allow to dry for 60 seconds
- Attach extension set with needleless connector.
- Flush line





Y-sites



STOP

Y-sites & Lumens are different

Lumens

IV-line extension to provide a second access point to the IV catheter lumen

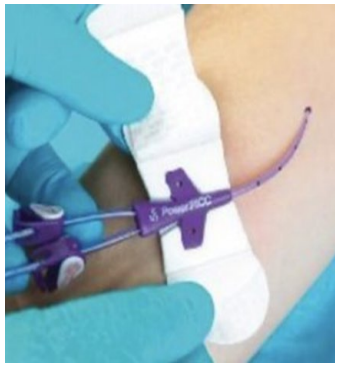
- Always confirm medication compatibility before use
- Pharmacist will verbally or in writing communicate y-site compatible medications
- Document pharmacist y-site recommendations with name of pharmacist

Catheter lumens are individual access points for IV administration in the same catheter

- From access point to tip of the catheter, each lumen is separate from the other lumen(s)
- Infused medication does not mix until it enters the blood stream
- Medication compatibility for infusion is not required when infused in separate lumens

Securement Devices.

Stabilizes the catheter, eliminates the chance of any pull and increases dwell time.
Sometimes double securement is appropriate (StatLock + Sorbaview dressing).
To be changed with each dressing change – at least 1 time per week

3M PICC/CVC SECUREMENT	GRIPLOCK	UNIVERSAL SECUREMENT	STATLOCK	WINGUARD	SORBA VIEW SHIELD	SECUREPORTIV
						
https://youtu.be/-KmppMxkmJY	https://youtu.be/lo4_o6x7UTE	https://youtu.be/3HbvNJRwOk0	Application: https://youtu.be/5XUpQLOtM9M Removal: https://youtu.be/Sdsd9N4jMNg	https://youtu.be/-IV7OS7yGJU	https://youtu.be/dURvIi9OwE0	https://youtu.be/V4Cpag0hgaQ

INS STANDARDS RECOMMEND USE OF A MANUFACTURED SECUREMENT DEVICE

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Alcohol Caps

Alcohol kills microorganisms by the *friction* of scrubbing the hub and *drying*. *Increased scrubbing and drying time reduces infection risk.*

Facility Hub Scrub P&P

- Scrub for 5 seconds
- Allow to dry for 15 seconds
- Scrub once for flushes and medication

→ Need Alcohol Caps

Home Infusion Hub Scrub P&P

- Scrub hub for 30 seconds
- Allow to dry for 60 seconds
- Scrub with new alcohol wipe for each line access (4 alcohol wipes for SASH)

→ Does NOT Need Alcohol Caps

- Cap with alcohol-soaked sponge to cleans hub and covers injection port
  - Alcohol dries and cap becomes a simple cover
- **Must continue to scrub the hub!**
  - Must scrub the hub for 30 seconds before EVERY IV hub access
  - Failure to scrub the hub will result in increased risk of infection
- Single use only

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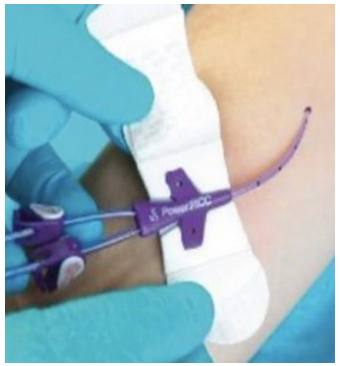
Securement Devices.

Stabilizes the catheter, eliminates the chance of any pull and increases dwell time.
Sometimes double securement is appropriate (StatLock + Sorbaview dressing).
To be changed with each dressing change – at least 1 time per week

3M PICC/CVC SECUREMENT

https://youtu.be/-KmppMxkmJY

GRIPLOCK



https://youtu.be/lo4_o6x7UTE

UNIVERSAL SECUREMENT

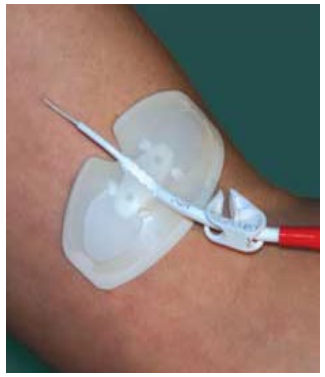
https://youtu.be/3HbvNJRwOk0

STATLOCK

Application:
https://youtu.be/5XUpQLOtM9M

Removal:
https://youtu.be/Sdsd9N4jMNg

WINGUARD



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SORBA VIEW SHIELD

https://youtu.be/Tq9llpZTTrA

SECUREPORTIV

https://youtu.be/V4Cpag0hgaQ

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SorbaView Shield

SorbaView® SHIELD
APPLICATION
Prep dressing site according to facility protocol.
Remove larger liner without touching adhesive.
Center the insertion site in the large window.
Smooth down to adhere, then remove remaining liner.
Guide the tubing through the notch.
Overlap the edges to form a tight seal and smooth down to adhere.
Slip closure piece under tubing and over the edge of the dressing.
Remove the liner on one side and smooth down to adhere and remove the liner on remaining side and smooth down to adhere.
REMOVAL:
Locate the v-notch on the outer edge of the closure piece and pull apart to break center perforations.
Holding the catheter in place, peel back the closure piece and dressing together as one piece.
Peel back slowly, keeping dressing close to skin and following catheter toward insertion site.

https://youtu.be/Tq9llpZTTrA

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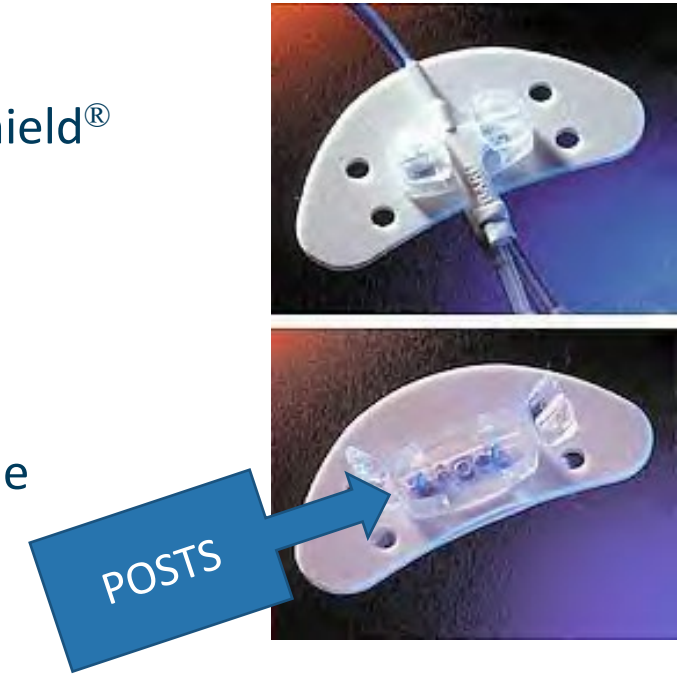
SECUREMENT DEVICES

- Securement device for PICC and Midline
  - Statlock has posts for common PICC lines
- Used as a double securement with Sorba View Shield® Securement dressing:
  - Pediatric patients
  - Patients at risk for line removal
  - As prescribed by physician
- Securement for patients that CANNOT tolerate the Sorba View Shield® Securement dressing
- Changed with each dressing change
  - Under the occlusive dressing



Application: https://youtu.be/5XUpQLOtM9M

Removal: https://youtu.be/Sdsd9N4jMNg

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Chlorhexidine Gluconate Disc

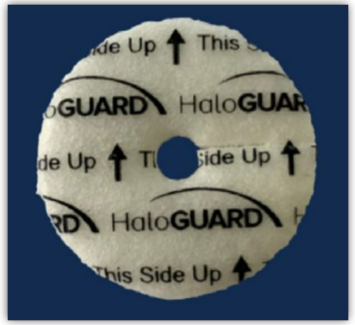
- Chlorhexidine impregnated disc to be placed around the catheter.
  - Line the slit up under the catheter for easy of removal
- Reduces site infections, CABSI, and skin colonization of microorganisms
- Change with each dressing change

BioPatch

- BLUE grid side upward
- WHITE foam side next to the patient's skin

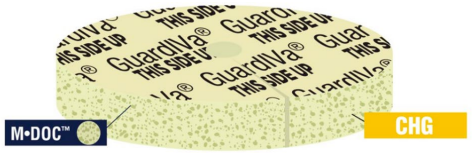
HaloGUARD

- Black writing side up
- White foam side next to the patient's skin



GuardIV

- CHG + hemostatic IV site dressing that combines
- Black writing side up
- White foam side next to the patient's skin



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DRESSING AND VASCULAR ACCESS DEVICE SECUREMENT MANAGEMENT

- ❖ **Change transparent semipermeable membrane (TSM) dressings and securement device at least every 7 days or immediately if dressing integrity is disrupted (e.g., lifted/detached on any border edge or within transparent portion of dressing; visibly soiled; presence of moisture, drainage, or blood) or compromised skin integrity is present under the dressing.**

** **In neonatal patients, perform dressing change as needed per patient or clinical indications due to risk of catheter dislodgement, patient discomfort, or skin injury.**

- ❖ **Refer to manufacturers' directions for use**

- **All supplies must be changed with every dressing change**
  - ✓**Securement device**
  - ✓**Extension sets**
  - ✓**Injection caps**
  - ✓**Biopatch or other CHG disc**

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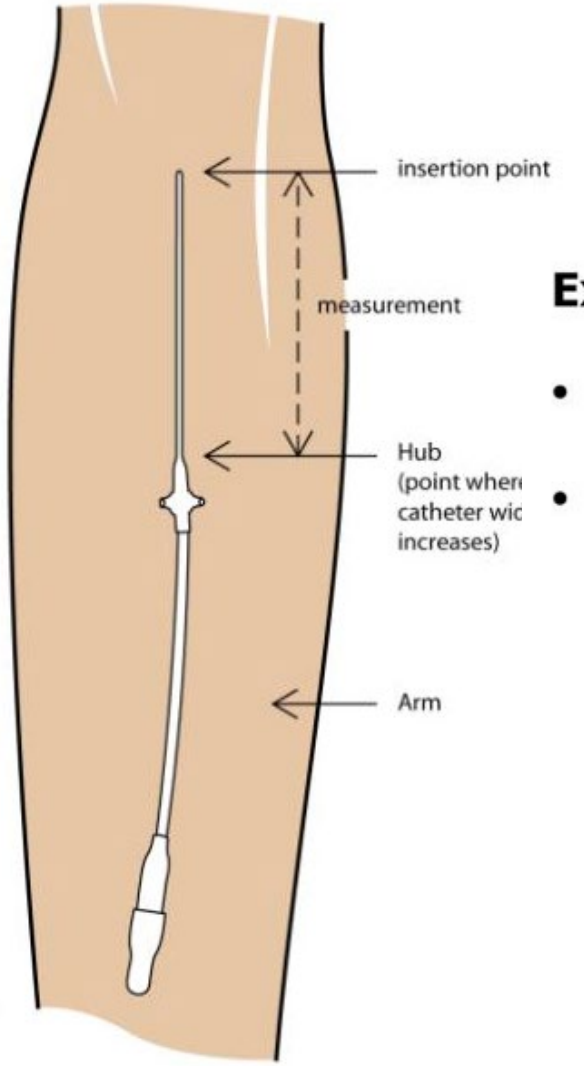
ASSESSMENT:

- **External length of the PICC/Midline must be measured and documented with each dressing change**
  - ✓ **If the external length of the catheter has increased by 2cm or more since start of care, the MD and the Infusion Pharmacist must be notified.**
  - ✓ **Compare to baseline measurement at insertion if available.**
- **Palpate the insertion site to assess for swelling and pain.**
- **Changes in color may include redness and/or blanching.**
- **Measure and document mid-upper-arm circumference. Location of measurement must be noted for comparison. MUAC is measured at the mid-point between the tips of the shoulder and elbow. To measure: find the midpoint between the elbow and the shoulder. Mark the mid-point between these two marks. With the arm hanging straight down, wrap a MUAC tape around the arm at the midpoint mark.**
  - ✓**Compare the circumference of both extremities, if unilateral edema is noted.**
  - ✓ **A 3cm increase in midarm circumference in adults is associated with CA-DVT.**



External Measurement

- Measure from insertion site of PICC to catheter hub
- Measure and record the exposed catheter length at each dressing change to ensure migration has not occurred

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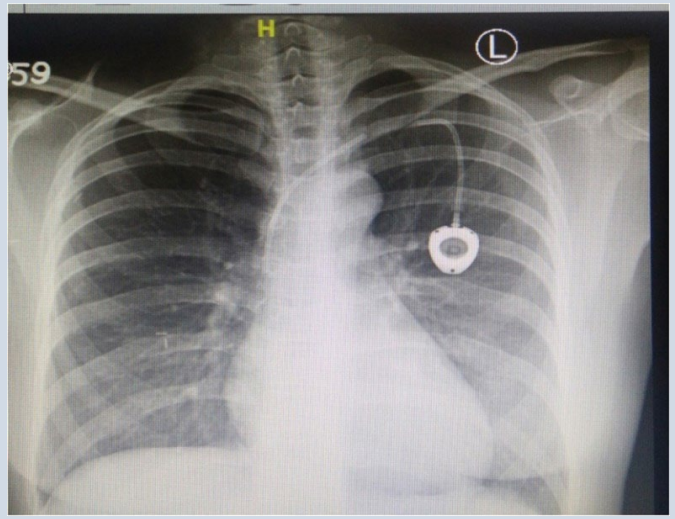
Vascular Access Line Related Complications

Catheter malposition / migration

- Intravascular malposition
- Extravascular malposition
  - Infiltration – medication goes into the surrounding tissue
  - Extravasation – infiltration of vesicants

Line related

- Catheter fracture/damage
- Catheter occlusion by clot, residue or kink



Vascular

- Thrombosis – blood clot in the vein
- Thrombophlebitis – inflammation and damage of the vessel
- Superior vena Cava syndrome occlusion of SVC (sx: edema, coughing up blood, CP)
- Air embolism

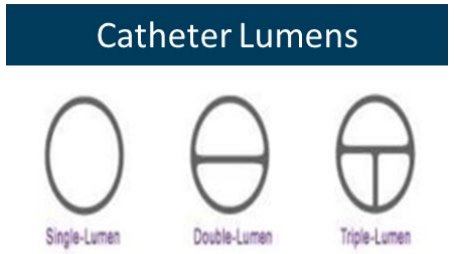
Vascular Access Line Related Complications	Signs and Symptoms	Nursing Interventions
PHLEBITIS	Pain/tenderness, erythema, swelling, purulence, or palpable venous cord	Notify provider, remove PIVC, Midline or PICC line if clinically indicated, apply warm compress, elevate limb; if infectious phlebitis is suspected or purulence present, remove catheter, obtain order to culture the purulent exudate and catheter tip, and monitor for signs of systemic infection
NERVE INJURY	Paresthesia-type pain during peripheral venipuncture and during catheter dwell time, radiating electrical pain, tingling, burning, prickly feeling, or numbness	Immediately remove peripheral VAD for report of paresthesia-type pain during peripheral venipuncture or during catheter dwell time, notify provider
INFECTION	Erythema, edema, pain, tenderness or drainage, fluid in the subcutaneous pocket and/or tunnel of a totally implanted intravascular device or tunneled catheter, induration at the exit site or over the pocket, drainage, or skin breakdown at the VAD insertion site, and/or body temperature elevation	Notify provider, remove a PIVC, obtain order to collect and culture a specimen of purulent exudate from a peripheral or CVAD exit site, initiate antibiotic therapy if ordered by the provider
CATHETER-ASSOCIATED SKIN INJURY	Color (e.g., pink, red, purple, tan, white), skin stripping, skin tears, and tension blisters, weeping, oozing, drainage	Notify provider, employ strategies to promote skin regeneration and site protection, apply a hypoallergenic, sterile dressing to manage exudate, promote wound healing, and protect

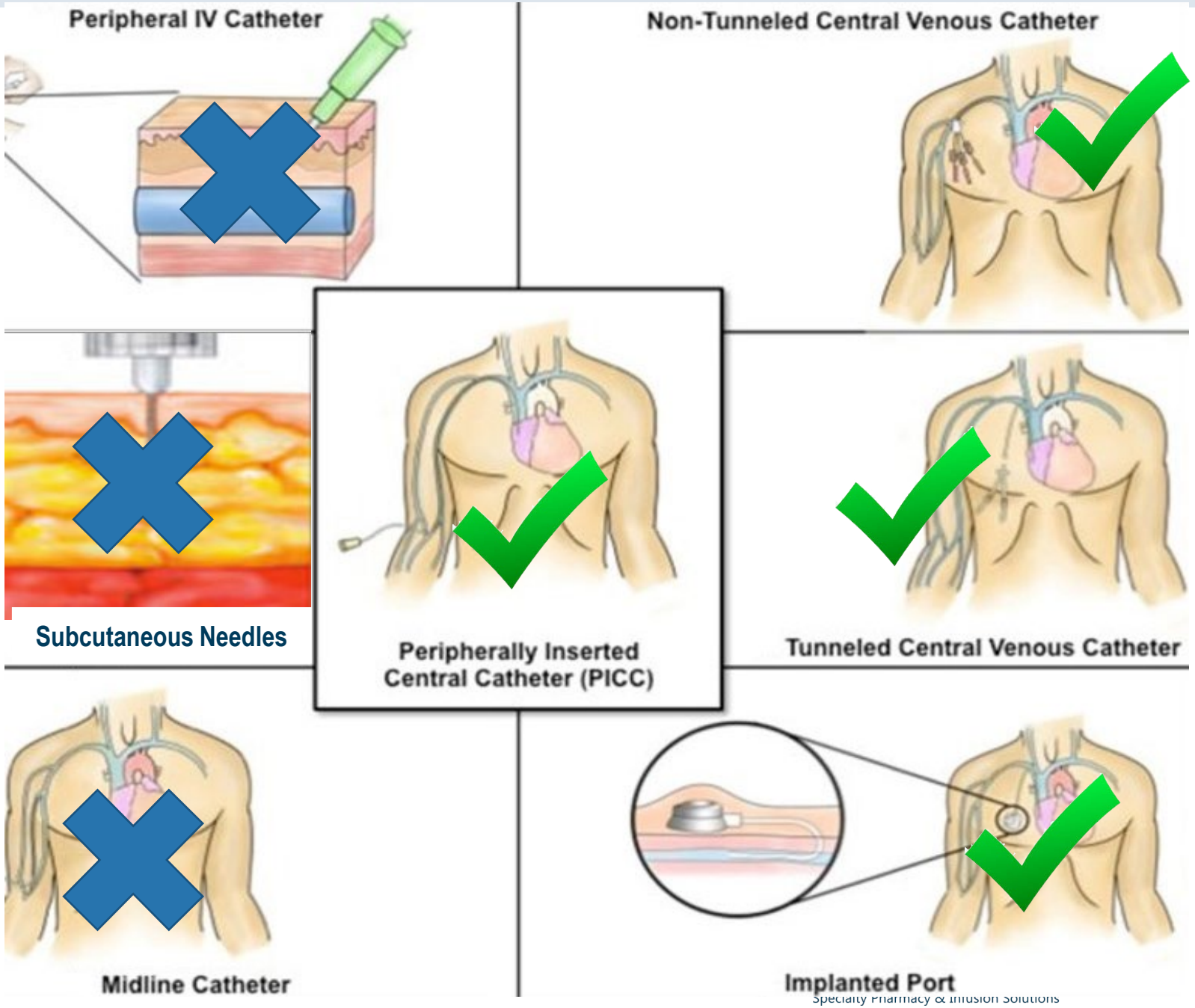
Vascular Access Line Related Complications	Signs and Symptoms	Nursing Interventions
AIR EMBOLISM	Sudden onset of dyspnea, gasping, continued coughing, breathlessness, chest pain, hypotension, tachyarrhythmias, wheezing, tachypnea, altered mental status, altered speech, changes in facial appearance, numbness, or paralysis as clinical events from air emboli produce cardiopulmonary and neurological signs and symptoms	Take the necessary action to prevent more air from entering the bloodstream, immediately place the patient on the left side in the Trendelenburg position, initiate 911, notify provider
INFILTRATION AND EXTRAVASATION	Pain, swelling/edema under the skin near the peripheral VAD site, edema from a CVAD may appear as a raised area on the neck, chest, or groin, unilateral edema of extremity, fluid leakage from the puncture site, subcutaneous tunnel, or port pocket,	Immediately stop the infusion, appropriate intervention(s) are implemented immediately upon recognition of infiltration/extravasation as determined by the characteristics of the solution or medication escaping from the vein, remove the peripheral catheter or implanted vascular access port access needle, elevate the extremity, administer the appropriate antidote
CATHETER-ASSOCIATED DEEP VEIN THROMBOSIS	Pain/edema/erythema in the extremity, shoulder, neck, or chest and engorged peripheral veins of the extremity, a 3-cm increase in midarm circumference in adults with PICCs was associated with CA-DVT	Withhold infusion, notify provider

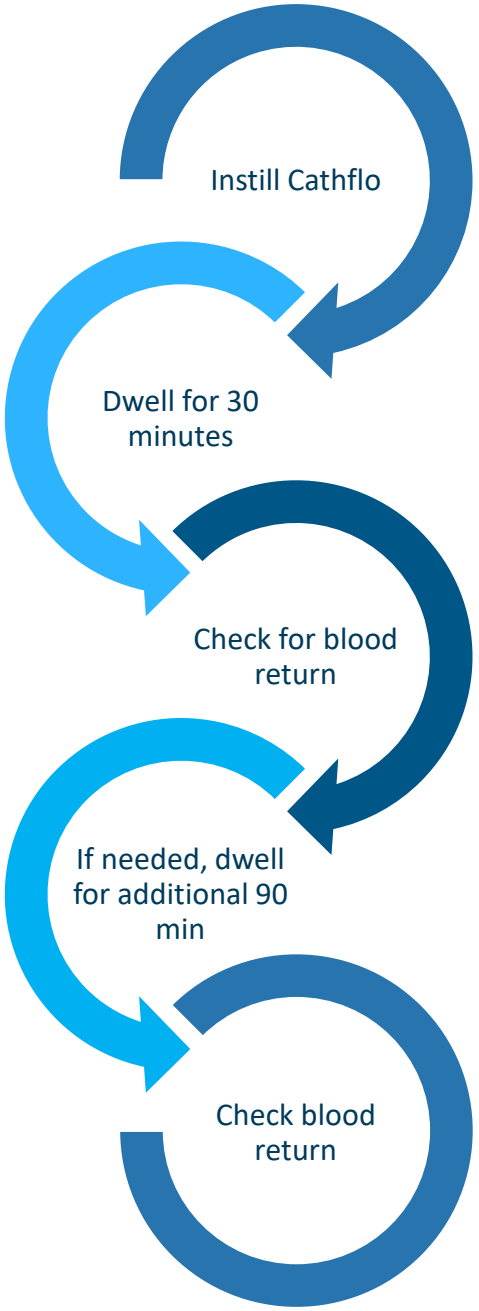
Vascular Access Line Related Complications	Signs and Symptoms	Nursing Interventions
CENTRAL VASCULAR ACCESS DEVICE OCCLUSION	Inability to withdraw blood or sluggish blood return, sluggish flow, resistance or inability to flush lumen, inability to infuse fluid, frequent occlusion alarms on electronic infusion pump, swelling/leaking at infusion site	Rule out/resolve external mechanical causes, assess for internal mechanical causes, notify provider and obtain order for Cathflo to treat all catheter lumens with partial, withdrawal, or complete occlusion
CATHETER DAMAGE	Visible catheter or fractured hub, leaking at the site, catheter dysfunction (e.g., inability to aspirate blood, frequent infusion pump alarms, resistance with flushing), localized pain and/or swelling along CVAD pathway during infusion, paresthesia in the arm, respiratory distress, or arrhythmias	Stop any infusions, clamp or seal a damaged catheter, notify provider
CENTRAL VASCULAR ACCESS DEVICE MALPOSITION	Absence of blood return from all catheter lumens, difficulty or inability to flush the CVAD, dysrhythmias, changes in blood pressure and/or heart rate, shoulder, chest, or back pain, edema in the neck or shoulder, changes in respiration, complaints of hearing gurgling or flow stream sounds on the ipsilateral side, paresthesia and neurological effects	Measure the external CVAD length and compare to the documented external length at insertion, never advance any external portion of the CVAD that has been in contact with skin into the insertion site, withhold infusion through a malpositioned catheter until proper tip position has been established, notify provider

Cathflo is appropriate for:

- PICC
- Non-tunneled central
- Tunneled central
- Implanted Ports







Cathflo Activase

Cathflo Activase is reconstituted immediately prior to administration by injecting 2.2ml of sterile water into the vial.

- Once reconstituted, pull up the ordered dose of the reconstituted Cathflo Activase into a 10ml syringe. The standard dose of Cathflo Activase is 2mg/2ml, but orders may vary based on the volume the CVAD can hold.
- Instill Cathflo Activase into the CVAD.
- Allow the Cathflo Activase to dwell in the catheter for 30 minutes.
- After 30 minutes, assess the CVAD for blood return.
- If there is no blood return, allow Cathflo Activase to dwell for an additional 90 minutes (120 minutes/2 hours total).
- Once a blood return has been restored, aspirate 3-5ml of blood to remove the Cathflo Activase and any residual clot, followed by a saline flush.
- The CVAD can now be used for medications and lab draws.

If there is no blood return after 2 hours, you may repeat with a second dose.

- If you are administering a second dose of Cathflo Activase, the first dose of Cathflo Activase in the line will be flushed systemically with the second dose. This is okay after two hours of dwell time due to the short half-life of the medication. After 120 minutes, Cathflo Activase efficacy is greatly reduced, resulting in minimal thrombolytic effect.

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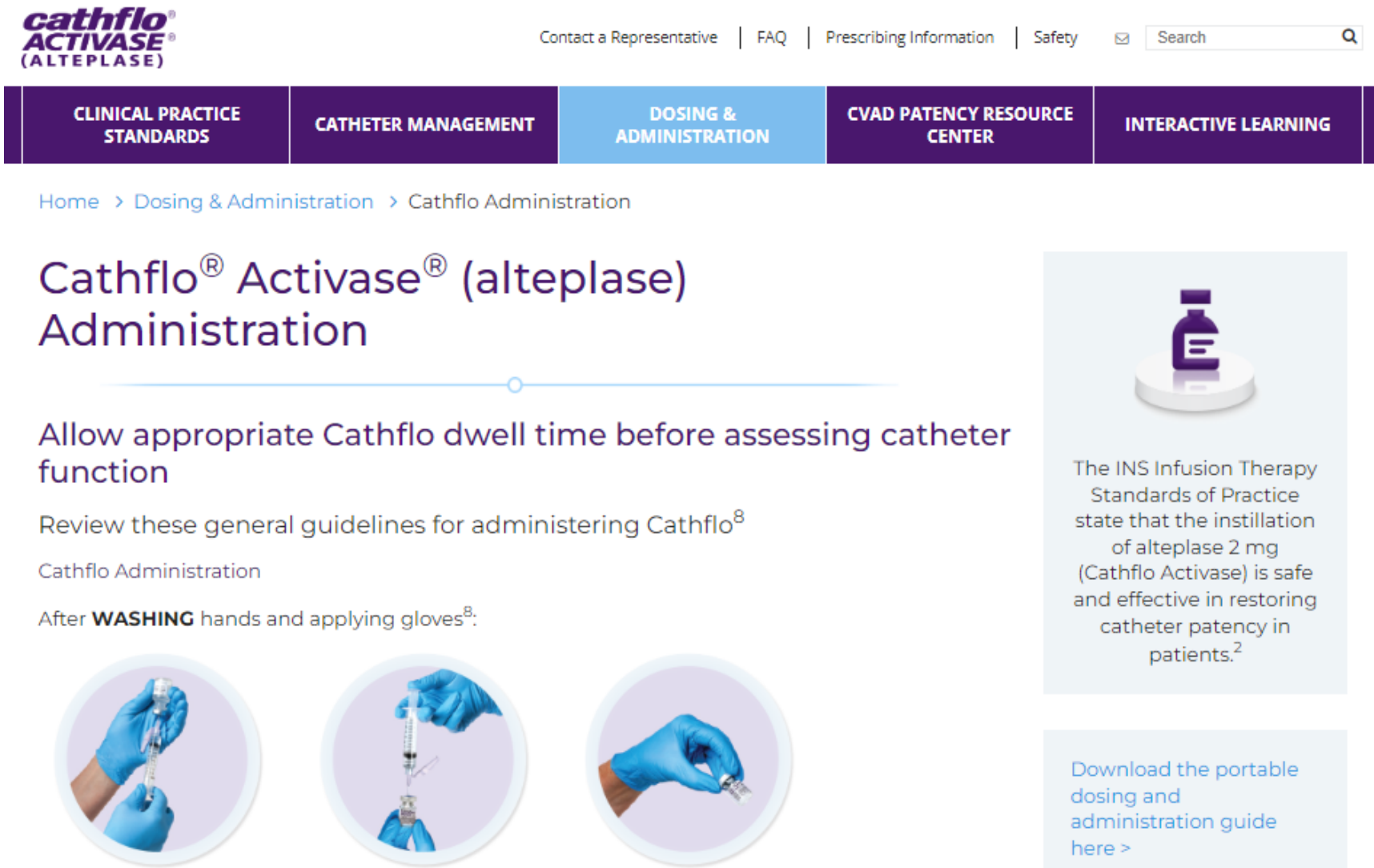
cathflo.com

Link to website:

Single-Use Vial Lytic Thrombolytic - Cathflo® Activase® (alteplase)

Dosing & Administration tab

- Reconstitution instructions
- Dwell/administration instructions
- Video instructions
- Link to downloadable documents



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Cathflo® Activase® (alteplase) Dosing and Administration

Cathflo 2 mg is the standard of care for treatment of thrombotically occluded catheters

Administration[1]

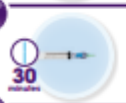
After WASHING hands and applying gloves:

1. 

   After performing hand hygiene and donning gloves, aseptically reconstitute using 2.2 mL Sterile Water for Injection and **INSPECT** solution for foreign matter and discoloration.

2. 

   INSTILL the appropriate dose of Cathflo into the occluded catheter using a 10-mL syringe (see dosing chart below).

3. 

   After 30 minutes of **DWELL** time, assess the catheter function by attempting to aspirate blood. If the catheter is functional, go to step 5; if not functional, go to step 4.

4. 

   ASSESS catheter function after a total of 120 minutes of dwell time by attempting to aspirate blood. If the catheter is functional, go to step 5. If the catheter is still occluded, a second dose of equal amount may be instilled. Repeat steps 1 through 3.

5. 

   If catheter function has been restored, **ASPIRATE** 4 mL to 5 mL of blood in patients ≥10 kg or 3 mL in patients <10 kg to remove Cathflo and residual clot. Then discard aspirate, and flush catheter with 0.9% Sodium Chloride, USP. **Any unused solution should be discarded.**

Single-use vial

Note: Store lyophilized Cathflo at refrigerated temperature (2°C–8°C/36°F–46°F). Cathflo should be reconstituted immediately before use. The solution may be used within 8 hours if stored at 2°C to 30°C (36°F–86°F). **No other medication should be added to solutions containing Cathflo.**

FDA-approved dosing with Cathflo Activase (alteplase) 2 mg[1]

Patient weight	Cathflo dose
≥30 kg (66 lb)	2 mg in 2 mL
<30 kg (66 lb)	110% of the internal lumen volume of CVAD, not to exceed 2 mg in 2 mL

CVAD=central venous access device.

Indication

Cathflo® Activase® (alteplase) is indicated for the restoration of function to central venous access devices as assessed by the ability to withdraw blood.

Important Safety Information

Contraindications

Cathflo Activase should not be administered to patients with known hypersensitivity to alteplase or any component of the formulation.

Please see additional Important Safety Information on next page.

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www.cathflo.com

Cathflo® Activase® (alteplase) Dosing and Administration

Cathflo 2 mg is the standard of care for treatment of thrombotically occluded catheters

Highest Level of Evidence in CVAD Guidelines

Cathflo is the only thrombolytic recommended by clinical practice standards, including the Infusion Nurses Society (INS), Association for Vascular Access (AVA), American Association of Critical Care Nurses (AACN), and Oncology Nursing Society (ONS).[2-7]

Use 2 mg alteplase (Cathflo Activase) to restore patency and maintain catheter function.[3]

— Class 1; Level of Evidence A, ONS Access Device Standards of Practice, 2017, page 10, section VI, practice standard B

Instill alteplase 2 mg (Cathflo Activase) in the catheter lumen in accordance with manufacturer's directions for use and repeat 1 time if first attempt is unsuccessful.[2]

— Practice Recommendation; Level of Evidence II, INS Infusion Therapy Standards of Practice, 2021, page S151, recommendation F-2b

Important Safety Information (cont'd)

Precautions

General

Certain causes of catheter dysfunction should be considered before treatment with Cathflo Activase (e.g. catheter malposition, mechanical failure, constriction by a suture and lipid deposits or drug precipitates within the catheter lumen). These types of conditions should be considered before treatment with Cathflo Activase.

Bleeding

The most frequent adverse reaction associated with all thrombolytics in all approved indications is bleeding.

Should serious bleeding in a critical location (e.g., intracranial, gastrointestinal, retroperitoneal, pericardial) occur, treatment with Cathflo Activase should be stopped and the drug should be withdrawn from the catheter.

Infections

Cathflo Activase should be used with caution in the presence of known or suspected infection in the catheter.

Hypersensitivity

Hypersensitivity, including urticaria, angioedema and anaphylaxis, has been reported in association with use of Cathflo Activase. Monitor patients treated with Cathflo Activase for signs of hypersensitivity and treat appropriately if necessary.

Adverse Reactions

In clinical trials, the most serious adverse events reported after treatment were sepsis, gastrointestinal bleeding, and venous thrombosis.

Please see Indication and Important Safety Information on first page. Please see full Prescribing Information below for additional Important Safety Information.

References: 1. Cathflo [prescribing information]. Genentech USA, Inc. **2.** Infusion Nurses Society. Infusion therapy standards of practice. *J Infus Nurs.* 2021;44 (suppl 1):S1-S224. **3.** Camp-Sorrell D, ed. *Access Device Standards of Practice for Oncology Nursing.* 4th ed. Oncology Nursing Society; 2017. **4.** McKnight S. Nurse's guide to understanding and treating thrombotic occlusion of central venous access devices. *Medsurg Nurs.* 2004;13(6):377-382. **5.** Haire WD, Herbst SF. Consensus conference on the use of alteplase (t-PA) for the management of thrombotic catheter dysfunction. *J Vasc Access Devices.* 2000;1-8. **6.** Criddle LM. Ask the experts. *Crit Care Nurse.* 2007;27(3):78-81. **7.** Cummings-Winfield C, Mushoni-Kanji T. Restoring patency to central venous access devices. *Clin J Oncol Nurs.* 2008;12(6):925-934.

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www.cathflo.com

Downloadable Instructions:
Cathflo.com

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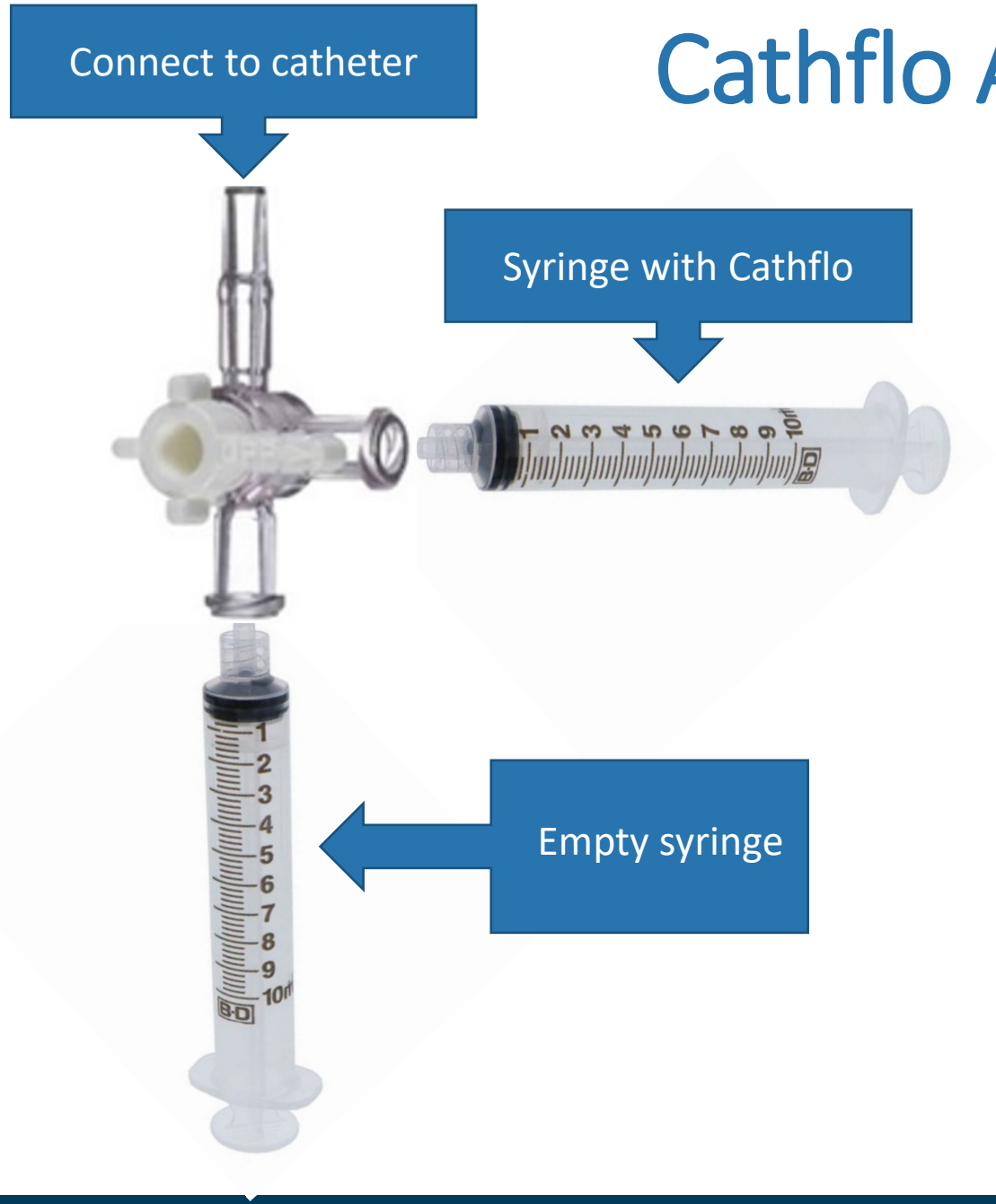
Cathflo Activase



Use of a stopcock is indicated for **total occlusion**, inability to instill or flush the catheter lumen.

An empty syringe is used to create negative pressure by pulling back on the plunger, then turning the stopcock to allow the Cathflo to enter the catheter lumen with the assistance of negative pressure.

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Supplies:

1. Cathflo Activase 2mg vial
2. Vial of preservative-free Sterile Water for injection, USP. **Do not use Bacteriostatic Water**
3. Stopcock (withdraw or complete occlusion)
4. 10 ml syringe (withdraw or complete occlusion)
5. 10 ml syringe with 20g 1” needle
6. Prefilled 0.9% sodium chloride syringe(s)
7. Antiseptic cleanser
8. Non-sterile gloves
9. Sharps container

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Patients are **NOT** taught to check for a blood return

Teach flushing with the **Push Pause Method**

Flush all lumens with adequate amount of saline or heparin to **ensure patency.**

SASH Method

1 . Follow physician orders on POT for flushing volumes.

2. Flush before AND after every dose of medication.

S – Flush the device with sterile Saline
A – Administer the medication / draw blood work
S – Flush the device with sterile Saline
H – Flush the device with Heparin

3. Heparin only-Flush once daily, if no medication is ordered (no saline) and to lumens not used for medication

WHEN IT IS TIME TO FLUSH YOUR LINE:

1. Clean work area and placemat with a disinfectant wipe.

2. Gather equipment on placemat.

3. Wash hands for 20 seconds with soap and water.

4. Prepare flushes, syringes, and have several alcohol wipes nearby per your teaching sheet.

5. Follow the patient teaching sheet and plan of treatment, located in your patient handbook, to flush your IV catheter.

S - SALINE

A - ADMINISTER MEDICATION

S - SALINE

H - HEPARIN

IMPORTANT

Not all patients will complete every step when flushing the catheter.
Your nurse will let you know which steps to complete based on your specific therapy orders.

NEVER TOUCH THE TIP OF ANY SYRINGE.
If touched, discard syringe.

S	A	S	H
SALINE	ADMINISTER MEDICATION	SALINE	HEPARIN
 	 Administer Medication (if prescribed)	 	 

Blood Sampling Tips

- Always stop the infusion prior to lab draw
- Flush line before and after lab draw
    - 5-10ml flush before
    - 10-20ml flush after
- Waste 10ml of blood prior to collecting specimen
- Trough results should be drawn immediately prior to next dose
    - Should the patient administer dose, do not draw trough and re-schedule lab draw
    - Do not draw from the same line the medication is infusing
- Hub to hub for best results
    - Always remove extension sets when drawing labs
    - Attach new sterile caps/extension sets after lab draws
- Helpful with sluggish or no blood return
    - Positioning of line and limb
    - Syringe draw by pulling back 1-2 ml increments and allow to fill
    - Use the other line lumen
    - Ensure catheter is not kinked under the dressing (may need dressing change)
    - Flush briskly with 10mls using the push pause method to create turbulent flow

SAVE THAT LINE!

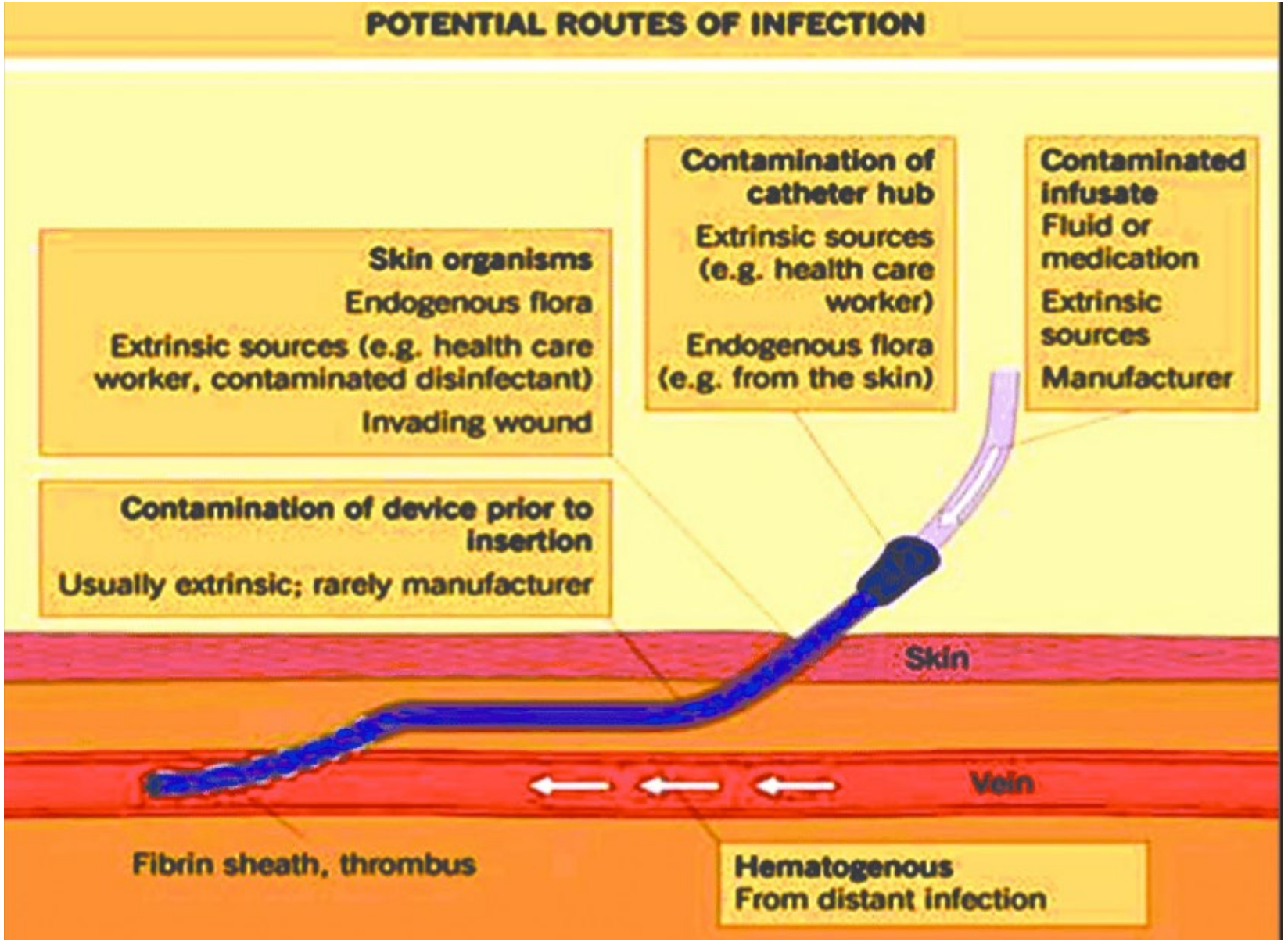
Scrupulous Hand Hygiene – before and after contact with vascular access devices and prior to insertion

Aseptic Technique – during catheter insertion and care

Vigorous Friction to Hubs – vigorous friction with alcohol/antiseptic wipe for 30 seconds wherever you “make or break a connection” to give medications, flush, or change tubing and injection port or add on device

Ensure Patency – flush all lumens with adequate amount of saline or heparin to maintain patency.

Preventing CABSI



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Thank you for participating!

Please reach out with questions or for information on additional training opportunities.