Nursing Vascular Access Education

Riverside Health System

Presented by RHS CLABSI Team & Vascular Access Infusion Team

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Infusion Nurses Society (INS)

- Professional Organization that sets the standards of care for clinicians practicing in the field of infusion therapy and applicable in all patient settings.
- Standards set by INS are reflected in our policies and procedures related to infusion therapy for health care providers.
- In a court of law, the standards set by the INS are used to assess the infusion clinician's performance

VASCULAR ACCESS and INFUSION THERAPY NURSING EDUCATION

- Goals:
  1. To update current nursing employees to RHS infusion therapy policy and procedures, infusion policy and procedure best practice, INS Standards of Practice, vascular access assessment, and documentation
  2. To maintain or improve basic Vascular Access and infusion therapy competency

Vascular Access and Infusion Therapy Education Objectives

- Access policies on the RHS intranet.
- Basic vascular access, care, maintenance, assessment, troubleshooting and documentation
- Review IV push administration

Vascular Access and Infusion Therapy Education Objectives

- Access policies on the RHS intranet.
- Basic central vascular access, care, maintenance, assessment, troubleshooting and documentation
- How to prevent CLABSIs to achieve our goal of zero

Accessing Policies-

- RHS Intranet
- Under Login on right side of home page, select Policies
- At the top left, under 'Quick Search', type in 'Central Line'
- Policy, Procedures, and Job Aides will be listed

- Policy- Defines how the separate departments function to achieve objectives. Objectives are defined in a series of Policy statements.

- Procedures- Document the methods employed to achieve the policy

- Work instructions (Job Aides)- Document specific tasks performed to meet the procedural requirement.

Agenda- Vascular Access

- Part 1: Peripheral Therapy
- Part 2: Central Venous Therapy
- Part 3: Blood Administration

Vascular Access

- Part 1: Peripheral Therapy

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Part 1: Peripheral IV Sites

Advantages

- Short term use
- Can be easy to insert and maintain
- Used in all patient care settings

Disadvantages

- Multiple punctures for some patients, leading to patient dissatisfaction
- Risk for infiltration, phlebitis and infections
- Can be costly if used long term, and continuing to find suitable venous access becomes difficult

Peripheral Catheter Section

- *Always use the smallest and shortest Angiocath possible to meet the needs of the patient.*
- RATIONALE:
  - LESS TRAUMATIC TO VEIN
  - LAST LONGER: ESPECIALLY WHEN USING VEIN IRRITATING MEDICATIONS (PHENERGAN, VANCOMYCIN)
  - ALLOWS BLOOD FLOW THROUGH THE VESSEL AND AROUND THE CATHETER

Choosing the Appropriate Catheter

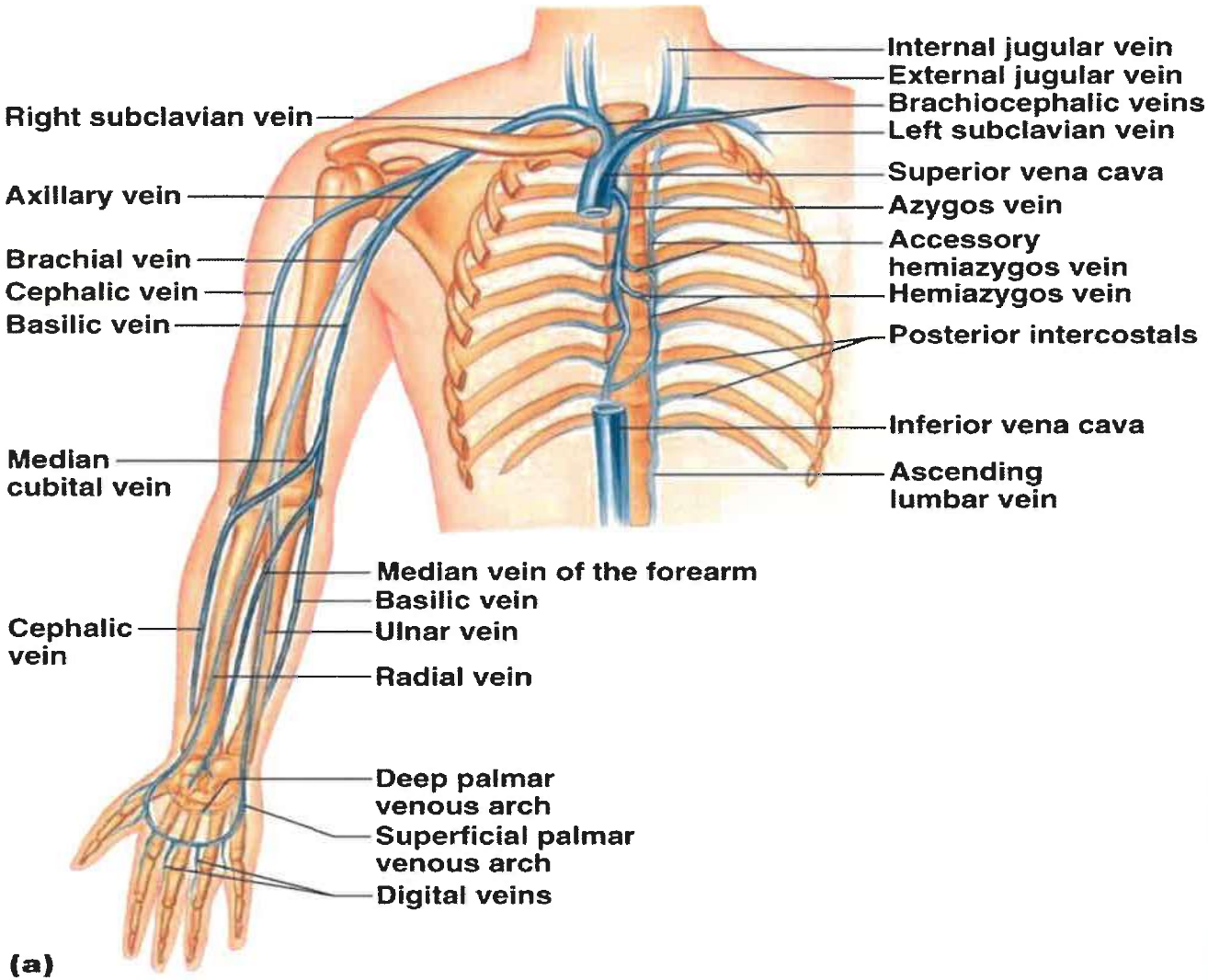
- 24 Gauge (YELLOW CATHETER): SMALLEST PERIPHERAL CATHETER OPTION AND BEST FOR PREVENTION OF ADVERSE OUTCOMES
- 22 GAUGE(BLUE CATHETER): CAN DELIVER BLOOD PRODUCTS
- 20 GAUGE(PINK CATHETER) : APPROPRIATE FOR SURGERY AND BLOOD PRODUCTS.
- 18 GAUGE(GREEN CATHETER) : 1ST CHOICE FOR TRAUMA, AND OPEN HEART SURGERY REQUIRES THIS.

REMEMBER THE SMALLER THE BETTER AND LESS TRAUMATIC TO VEIN.

Rule of Thumb Start Distally and Work Up
Veins of the Hand/Arm

- **Hand:** Dorsal Metacarpal. The most obvious vein. Most patients prefer that the hand not be used.
- **Arm:**
  - Cephalic vein: most commonly used veins. Easily palpated, starts in the wrist and goes up the entire arm. May constrict mobility if placed too close to wrist.
  - Basilic vein: largest vein, but difficult to obtain access in lower arm; often utilized in upper arm for PICC placement.
  - Median vein: easily palpated in the inner aspect of forearm.
  - Antecubital area. Most prominent vein; should only be used in emergency situations.

AVOID AREAS OF FLEXION OR LATERAL ASPECTS OF THE ARM, IF POSSIBLE


Internal jugular vein
External jugular vein
Brachiocephalic veins
Left subclavian vein
Right subclavian vein
Superior vena cava
Axillary vein
Azygos vein
Accessory hemiazygos vein
Brachial vein
Cephalic vein
Hemiazygos vein
Basilic vein
Posterior intercostals
Inferior vena cava
Median cubital vein
Ascending lumbar vein
Median vein of the forearm
Basilic vein
Cephalic vein
Ulnar vein
Radial vein
Deep palmar venous arch
Superficial palmar venous arch
Digital veins
(a)

"Before the Stick"

Initiation of IV therapy

- Determination of existing venous access
- Midline catheters or PICC lines should be considered if length of therapy is 7-10 days or greater.
- Equipment and medication/fluids delivered to patient
- Clear understanding of ordered therapy, equipment, policy & meds/fluids

Starting a Peripheral IV

Assessment & Planning

Important Considerations:

- Purpose of therapy
- Length of therapy
- Patient allergies
- Patient consent
- Location and condition of venous access
- Age, dominant extremity, past IV access

Remember ~~Five~~ **Eight** Rights

1. **Right patient** (2 identifiers)
2. **Right medication** (label and med)
3. **Right dose** (check order)
4. **Right route** (confirm appropriate)
5. **Right time** (check time of last dose)
6. **Right documentation** (AFTER giving med)
7. **Right reason** (patient history)
8. **Right response** (to medication)

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Selecting A Site

Areas to Avoid

Flexed areas

Lower extremities

At or below bruised areas

Below site of infiltration or phlebitis

Hands and joints of patients using assistive devices

Areas of inflammation, skin disease or skin tears

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Starting a Peripheral IV

Implementation

- **Infection Prevention Measures**
  - Hand washing
  - Gloves
  - No Artificial Nails
  - Site prep –
    - If site is visibly soiled, cleanse with antiseptic soap and water first, followed by chlorhexidine gluconate
    - Using a gentle back and forth motion, apply chlorhexidine gluconate for at least 30 seconds and allow to dry completely. Do not follow with alcohol. Do not repalpate or touch site.

*Is the patient allergic to chlorhexidine? – cleanse area vigorously for at least one minute with 70% alcohol, followed by PVP.

Starting a Peripheral IV

Implementation

- **Finding the vein**
  - **Palpation**
  - **Vein distension –measures to help:**
    - Tourniquet
    - Open and close fist
    - Gravity
    - Gentle stroking
    - Warm compress/shower
    - BP cuff
    - No tourniquet
    - Hydration with warm liquids

Starting a Peripheral IV
Implementation

- **Cannula Insertion**
  - Before inserting cannula, prime extension set to prepare to attach to cannula
  - Stabilize skin, bevel up, 10-30 degree angle
  - Observe for flashback, advance catheter into vein until hub rests at venipuncture site
  - Release tourniquet, apply pressure with finger, attach primed extension tubing
  - Stabilize cannula, apply dressing – transparent semi-permeable dressing, changed with IV site.
  - **DOCUMENTATION – date, type of device and manufacturer, gauge and length, initials of person inserting device**

CAUTION!!

- Per INS Standards of Practice, no more than 2 attempts at IV access should be made by any one nurse; always chart number of attempts
- Never reinsert needle into stylet once removed completely
- Discard sharps in proper container
- Avoid touching insertion site with tape or hand to prevent contamination
- Avoid encircling arm or hand with tape

Cannula insertion with 10-30 degree angle and stabilizing vein.

Observe for flashback, advance catheter into vein until hub rests at venipuncture site.

Stabilize cannula and apply dressing.

Peripheral IV Maintenance

- **Peripheral IV:**
  - **NS flush:** 10 ml pre/post IV med, 10 ml q 24 hours when not in use
  - **Dressing:** Plain transparent dressing change prn. Gauze dressing change q 48 hours and prn
  - **Caps:** change with each new site
  - **Site rotation is based upon current IV site assessment and when clinically indicated. If any IV site complications observed, old IV site must be removed and a new site placed.**

    ***Always document in Soarian the site assessment and reason for discontinuation.**

About Intravenous Push

- IV push means to administer a medication via a syringe directly into an IV line or INT.
- The medicine is injected over a short period of time, usually less than 10 minutes.

About Intravenous Push

- Before administering medications, the nurse is responsible for fully understanding:
  - *the medication*
  - *expected therapeutic effects*
  - *recommended dose*
  - *recommended route*
  - *potential side effects*
  - *antidote availability*

About Intravenous Push

An IV Push Med may be given;

- When a quick response to the medication is required.
- When a loading dose of medications is necessary.
- To deliver medications to patients who can not take them by mouth or IM.

About Intravenous Push

An IV Push med may also be given;

- To reduce patient discomfort by limiting IM injections.
- To avoid incompatibility problems when delivering several medications

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About Intravenous Push

- Because IV push medications start working almost immediately and with greater effect, even relatively safe drugs can cause problems.

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About Intravenous Push

- *A good IV site is one that flushes without difficulty. It also has no redness, edema, leaking, pain at the site or other problems.*

About Intravenous Push

- Most medications are given slowly over at least 2 minutes.
- Administering IV push meds too fast will increase the concentration in the plasma, which can cause levels to reach toxic proportions resulting in shock or cardiac arrest.

Steps to Administer IV Push

- Review order.
- Check for any allergies.
- Calculate the correct amount of drug to be given.
- Wash hands.
- Prepare a pre and post-flush of saline.
- Prepare medication according to dosage and administration section of drug reference. Label medication.

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Steps to Administer IV Push

- Gather supplies:
  - ✓ vial or ampule of ordered medication
  - ✓ watch with second hand
  - ✓ clean gloves
  - ✓ alcohol swabs
  - ✓ saline flush: 2 prefilled luer lock syringes (use only 10ml syringes with PICC lines)
  - ✓ appropriate size syringe to withdraw medication.

Steps to Administer IV Push

- Identify client by using two identifiers, name and date of birth. Check five rights using MAK or MAR.
- Apply clean gloves.

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Steps to Administer IV Push

- Cleanse INT with alcohol swab and slowly flush with normal saline solution. Assess INT patency by noting if any discomfort or resistance while flushing
- Remove flush, cleanse site with alcohol and connect medication syringe.
- Using second hand on watch administer medication at recommended rate. May need calculate before starting. For example, if you have to push 4 ML of medication over 3 minute, than 2 ML or half, should go in over 90 seconds. Continuously OBSERVE SITE during IV push administration for adverse effects.

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Steps to Administer IV Push Continued

- Remove medication syringe, cleanse site with alcohol and administer post-saline flush at the same rate at which medication was administered.
- Clamp INT site if necessary.
- Dispose of syringe in sharps container and remove gloves.
- Wash hands and document administration date, time, medication, dosage, route, patient response, and any adverse effects.

ASSESSMENT

- **Listen to patient**
- Inspect palpate site through dressing
  - **Discoloration (blanching, redness)**
  - **Disruption of sensation (pain, tenderness, numbness)**
  - **Edema**
  - **Drainage**

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Peripheral IV Therapy

Possible Complications

- **Local Complications**
  - Hematoma – blood leaking into superficial space around device
    - S/S: tenderness or bruising at puncture site
    - Treatment: stop infusion; remove IV; apply pressure dsg; attempt IV restart in another location; consider no tourniquet; document

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Peripheral IV Therapy

Possible Complications

- **Local (cont.)**
  - Infiltration – non-vesicant solutions leaking into tissue
    - S/S: swelling, discomfort, burning, tightness, cool skin, blanching, slow flow rate
    - Treatment: stop infusion; remove device; apply ice or heat to reduce inflammation and promote reabsorbtion; elevate limb, restart IV in another location; document

Peripheral IV Therapy
Possible Complications

- **Local (cont.)**
  - Extravasation – vesicant solution leaking into tissue
    - S/S: swelling, pain, discoloration, necrotic tissue damage
    - treatment: stop infusion; leave device in place for possible infusion of antidote; call MD; **do not flush device**; document (site, estimated amount of fluid, treatment); heat or ice as indicated
    - Prevention: infuse through a CVC

Infiltration/Extravasation Scale

Rating	S/S
0	no symptoms
1	skin blanched; edema <1 inch in any direction; cool to touch
2	skin blanched; edema 1-6 inches in any direction; cool to touch; with or without pain
3	skin blanched, translucent; gross edema >6 inches in any direction; cool to touch; mild-moderate pain; possible numbness per patient
4	skin blanched, translucent; skin tight, leaking; skin discolored, bruised, swollen; gross edema >6 inches any direction; deep pitting tissue edema; circulatory impairment; moderate-severe pain; infiltration of any amount of blood products, irritants or vesicants

Documenting Infiltration

- **Infiltration Interventions(non-vesicant solutions):**
- Discontinue infusion immediately and remove catheter (apply pressure to site to prevent bleeding and achieve hemostasis)
- Institute appropriate supportive treatments as needed (i.e. elevation of extremity or hot/cold applications
- Teach patient to report changes in extremity mobility, sensation, elevated temp, and signs of infection
- Notify Healthcare Provider regarding degree of infiltration of non-vesicant solution if greater than grade 2
- Complete R Care report of event under IV/Vascular Access Device for grades 2-4

Documenting Extravasation

- **Extravasation Interventions(vesicant solutions):**
- Discontinue infusion immediately
- Prior to catheter removal
  - Aspirate for infused medication
  - Apply gentle pressure at site to prevent bleeding and further tissue damage
- Notify Healthcare Provider and obtain specific orders to treat the extravasation(treatment depends upon type of medication and severity)
- Reassess vascular access needs
- Replace short peripheral catheter in opposite extremity
- Continue to monitor site
- Observe site for signs and symptoms of compartment syndrome, nerve injury, blisters, skin sloughing, tissue necrosis, functional and sensory loss
- Photograph affected area of exravasation at these intervals:
  - At time of injury
  - 24 hours after injury
  - 48 hours after injury
  - 1 week after injury
- Complete R Care report of event under IV/Vascular Access Device

Documenting Extravastion, cont'd

- For **infiltration or extravasation**: document in patient's permanent medical record:
  - Date and time of infiltration/extravasation
  - Catheter type and size
  - Whether insertion site is new or preexisting
  - Drug administered, method of administration, and estimated volume of fluid that escaped into the tissue
  - Patient complaints or experience during the infiltration/extravasation
  - Appearance of access site
  - Treatment measures taken
  - Outcome

Peripheral IV Therapy
Possible Complications

- Phlebitis – inflammation of a vein; thrombophlebitis – clot formation with inflammation

  *mechanical (device-related)
  *chemical (additive-related)
  *bacterial (technique-related)

  - S/S: redness, warm to touch, tenderness at site, red streaks up arm, swollen/hardened vein purulent drainage from site, sluggish flow rate
  - Treatment: stop infusion; remove device; apply heat; document (complete infection sheet if suspected infection); restart IV in another location

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Phlebitis Scale

Rating	S/S
0	No symptoms
1	Erythema at access site with or without pain
2	Pain at access site with erythema or edema
3	Pain at access site with erythema or edema; streak formation; palpable venous cord
4	Pain at access site with erythema or edema; streak formation; palpable venous cord >1 inch in length; purulent drainage

Peripheral IV Therapy

Possible Complications

- **Local (cont.)**
  - Occlusion – blockage of inner lumen or tip of IV catheter
    - S/S: blood back up in line, sluggish or no IV flow
    - Treatment: use mild pressure when attempting to flush; if unable to clear, remove IV and restart elsewhere
  - Venous spasm – involuntary contraction of the vessel in response to stimuli
    - S/S: pain along vein as solution is infused, sluggish flow rate, blanched skin over vein
    - Treatment: slow IV rate, apply warm compress to site
    - Prevention: Avoid infusing cold solutions

Documenting Phlebitis

- **Phlebitis Interventions:**
- Discontinue infusion
- Remove catheter
- Assess severity of phlebitis using standardized scale
- Determine the potential cause of the phlebitis
  - Chemical
  - Mechanical
  - Bacterial
- Notify Healthcare Provider regarding degree of phlebitis
- Apply thermal compress to phlebitis area for 20-minute periods, 3-4 times per day,
- **with Healthcare Provider's order**
- Reassess vascular access needs
- Replace short peripheral catheter in opposite extremity
- Consider CVAD if irritating fluids is probable cause
- Observe site for signs of post infusion phlebitis, such as inflammation, erythema, edema, and drainage; palpate site for warmth and induration
- Document in patient's permanent medical record degree of phlebitis based upon scale, interventions implemented, and patient response to treatment
- Complete R Care report of event under IV/Vascular Access Device

Part 2: Central Venous Therapy

- Types of Central Venous Access Devices
  - Nontunneled catheters
  - Tunneled catheters
  - Peripherally inserted central catheters (PICCs)
  - Implanted Ports

Central Venous Therapy

Complications

- Catheter-related infections
  - **C**entral **L**ine **A**ssociated **B**lood **S**tream **I**nfections
  - **CLABSI**'s are monitored and tracked by infection reports
  - **PREVENTION!!**
    - for clinicians and patient education

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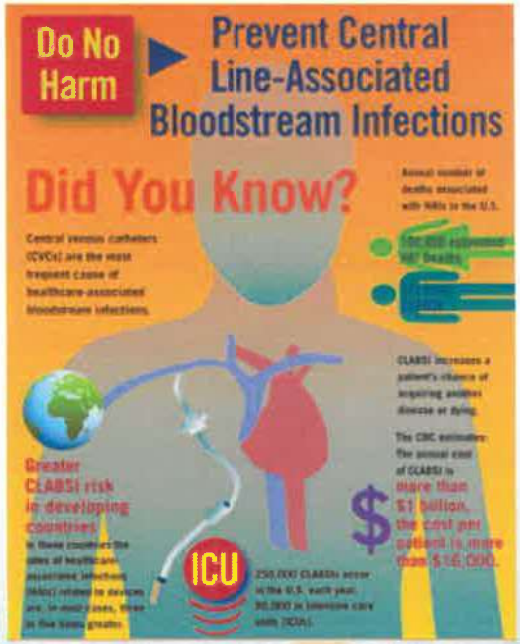
Central Line Associated Bloodstream Infections

Organisms can contaminate the Vascular Catheter through several routes:

- Invasion of the percutaneous tract (during insertion or during subsequent days)
- Contamination of catheter hub during guide wire insertion or at access during infusions and flushes
- The seeding from another source of infection



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How do we prevent these infections?

- Implement evidence based practice known to reduce the risk of Central Line Associated Blood Stream Infections (CLABSIs)

" The Central Line Bundle" is a group of evidence based interventions that when implemented together result in better outcomes for our patients

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Teamwork Prevents Errors

- ✓ **Use Team Up for Safety behaviors to help prevent infections.**

Pay Attention To Details

We take the time to carefully attend to important details.

- Self-check using STAR

(STAR = Stop, Think, Act, Review)

When assisting with central line insertion: Make sure you have all needed supplies. Ensure central line insertion bundle components met.

Be Accountable

We look out for each other by being accountable to ourselves, our teammates and our patients.

- Cross check each other
- Encourage safe behavior using 5:1
- Speak up for Safety using CUS

(CUS = Concerned, Uncomfortable, Stop!)

If you feel sterile technique is not being followed use **CUS**. Speak up and "stop the line." Reinforce importance of bundle components.

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Bundle Components

- Optimal Site/Line Selection
- Hand Hygiene
- Chlorhexidine Skin Antisepsis
- Maximal Barrier Precautions at insertion site
- Aseptic Technique at Line Access and Dressing Changes
- Daily Review of Line Necessity and Prompt Removal
- Patient information sheet
- Checklist
- Masks
- Hats
- Gown
- Full Body Drape
- Dressing
- Sterile gloves

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What to monitor during Central Line Insertion

Site Marked
Patient positioned correctly

Perform Procedural Time Out

- **Perform patient ID by 2 patient identifiers** not room number
- **Verify Allergies**
- **Confirm procedure**

Hand hygiene performed
Prep procedure site with Chlorhexidine
- **For minimum of 30 seconds and allow to dry completely**

Hat, mask, sterile gown and sterile gloves worn by inserter
Hat and mask worn by all other attendees in room
Full max barrier drape used
Sterile field maintained

IF NOT DONE

THE PROCEDURE!

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SAVE that line!!

S CRUPULOUS HAND HYGIENE (before and after contact with vascular access device and prior to insertion)

A SEPTIC TECHNIQUE (during catheter insertion and care)

V IGOROUS FRICTION TO HUBS (vigorous friction with alcohol wherever you "make or break and connection" to give meds, flush or change tubing and injection port or add on device)

E NSURE PATENCY (flush all lumens with saline and heparin per policy, initiate thrombolytic protocol per policy if lack of blood return or sluggish flow is encountered)

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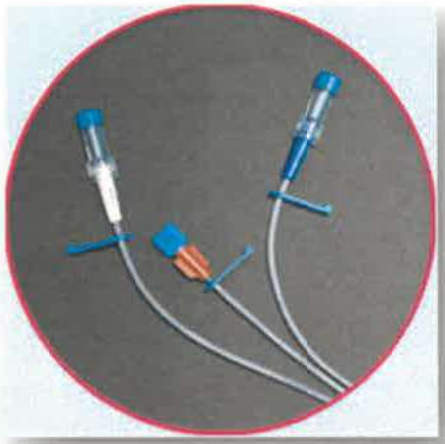
Central Venous Therapy

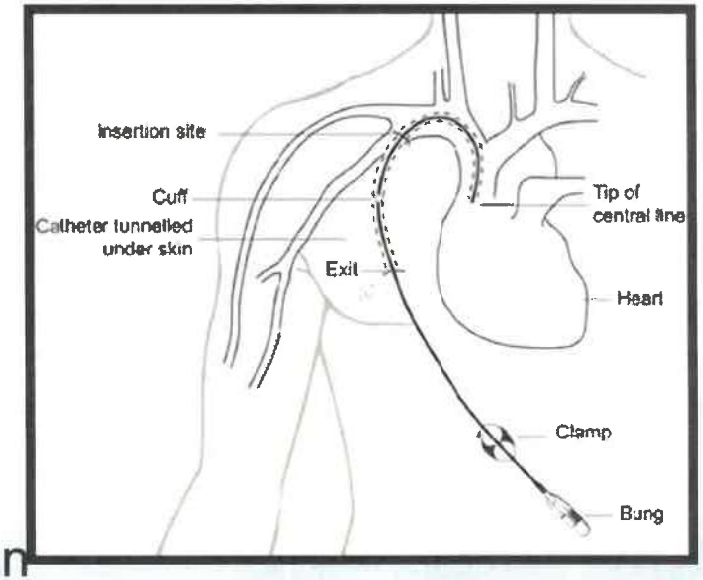
- **Nontunneled catheter**
  - Also called subclavian, percutaneous, acute-care, or short-term catheters
  - Baxter, Cordis
    - Can remain in place for 8 to 30 days
    - Insertion can take place at bedside
    - Emergency situations
    - No Dacron cuff
    - Sutures remain until catheter removed
    - Easily removed by MD or nurse at bedside



- **Short – term, temporary access**

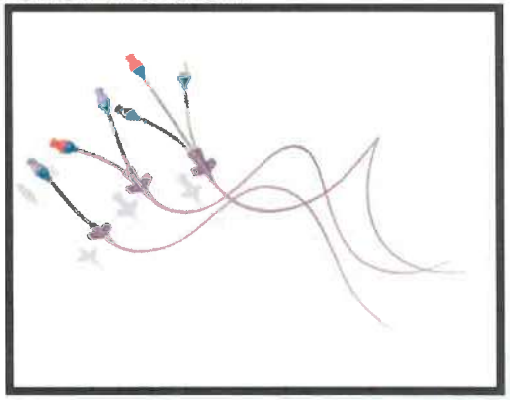
Central Venous Therapy

- **Tunneled Catheters**
  - Hickman, Broviac, Hohn, Arrow
    - Long-term or permanent use
    - Used for frequent venous access
    - Surgically inserted
    - Dacron cuff
    - Typically used for abx, chemo, tpn
    - Tunneled under skin before inserted into subclavian vein
    - Sutured at site until granulated
    - Removed by MD



Central Venous Therapy

- **Peripherally Inserted Central Catheters (PICCs)**



  - Often used less than 6 months
  - Non-tunneled
  - Insertion can be at bedside
  - Can be removed by nurse at bedside
  - Catheters are either open-ended or closed-ended (BARD Power PICC Solo, Groshong valve)
  - Inserted into the brachial, basilic or cephalic veins
  - Catheter tip is located in the lower third of the SVC

Central Venous Therapy

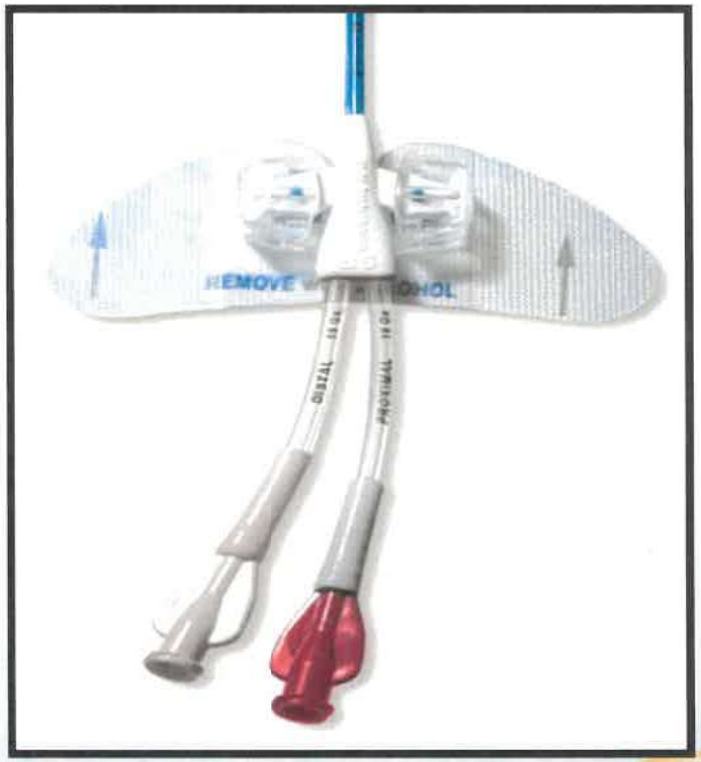
Securement Devices

- Many different Securement Devices
- Per INS and CDC: catheter stabilization devices should be considered the preferred alternative to tape or sutures to reduce risk of infection
- Securement Devices most commonly seen at RHS:
  - **Central line sutured directly to skin** – sutures remain in place until central line is removed
  - **Stat-lock** – device is changed with each dressing change
  - **SecurAcath** – remains in place until line is removed

Central Venous Therapy

Securement Devices

- Statlock
  - Change entire device with each dressing change q 7 days and prn
  - Sterile and latex free
  - "wings" of catheter are secured on posts
  - Anchor pad adheres to skin



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Central Venous Therapy

Securement Devices

- SecurAcath
  - Remains in place until PICC line is removed
  - Anchors under skin
  - RN can remove with PICC line
  - Follow handout for removal procedure

Central Venous Therapy

Dressing Changes

- CDC recommends changing CVAD dressing q 7 days.
- RHS policy is dressing change q 7 days and PRN
  - Gauze or opaque dressings need to be changed every 48 hours and PRN .

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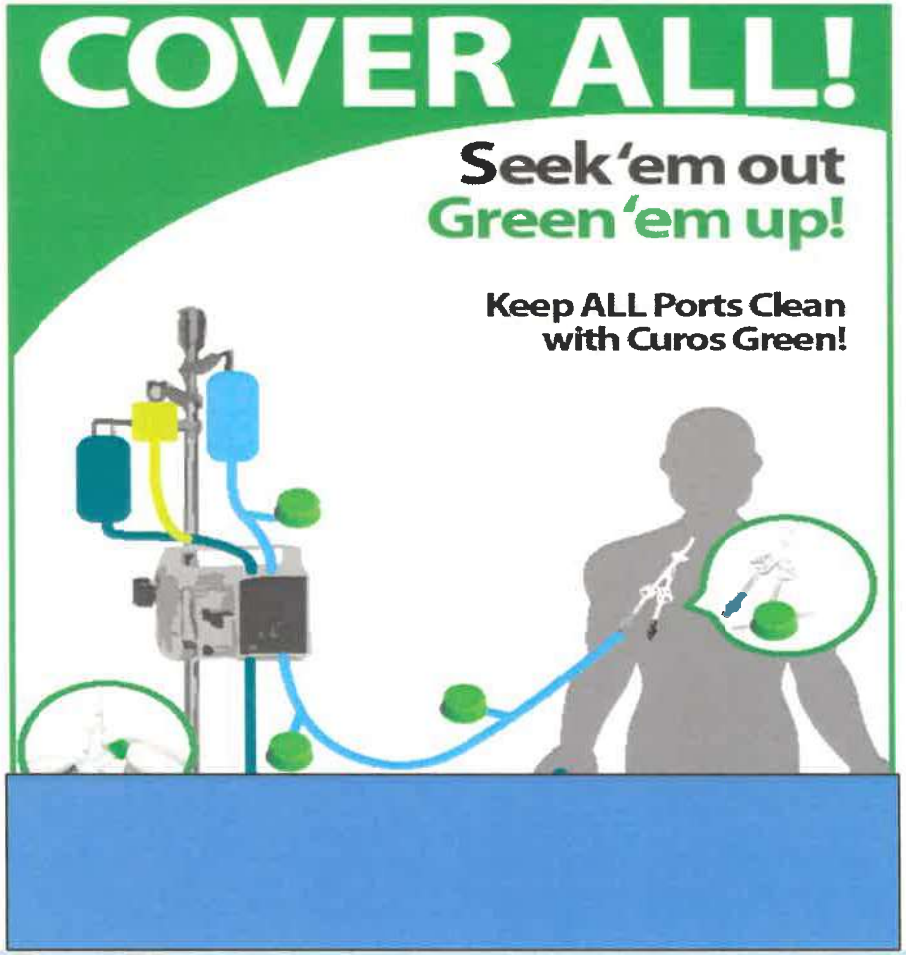
FOR *ALL* CENTRAL LINES



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When Should I Scrub?

If Curos® has been on for 3 minutes or longer?

No need to scrub if Curos has been in place for at least 3 minutes.

Between sequential accesses?

Yes! per hospital protocol

Scrub the hub...

- when soil is visible on the port

- if port is left exposed over time

- when Curos has been on for less than 3 minutes

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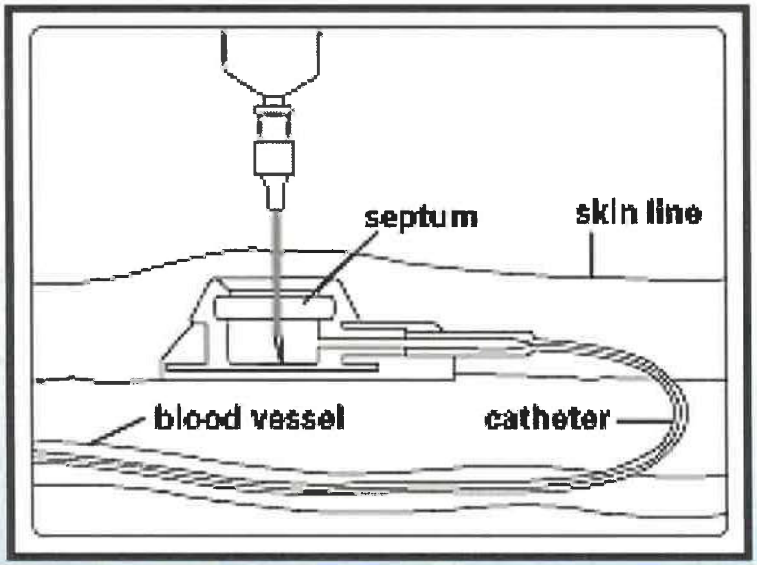
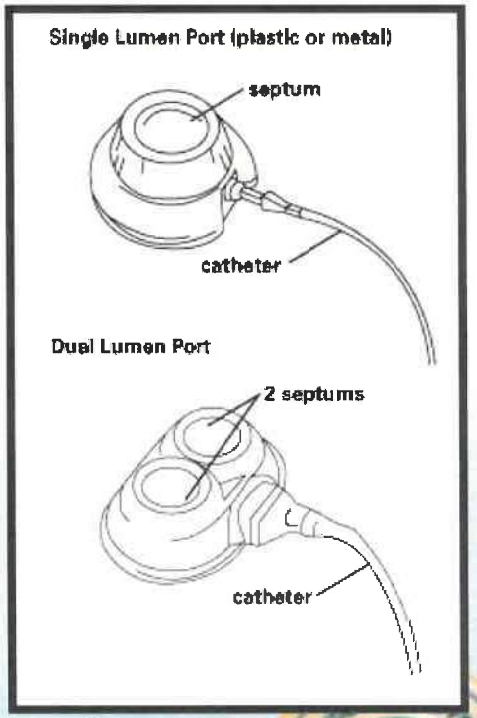
Central Venous Therapy

- **Implanted Ports**
  - Port-a-cath
    - For permanent or long term use
    - Insertion in OR
    - 2-part device implanted under skin
    - Requires little maintenance when not in use
    - Accessed by non-coring needle
    - Blood draws done through port
    - Less activity restriction/alteration in body image
    - Change dressing and needle every 7 days if accessed.

Central Venous Therapy

- **Implanted Port Diagram**





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Central Venous Therapy

Possible Complications

- Infiltration
- Hematoma
- Phlebitis (mechanical/chemical/bacterial)
- Localized insertion site infection
- Cellulitis
- Device/material allergic reaction
- Air embolism
- Catheter related sepsis
- Extravascular/intravascular catheter migration
- Cardiac tamponade
- Cardiac arrhythmias
- Pneumothorax
- Hydrothorax
- Hemothorax
- Arterial injury
- Catheter malposition
- Catheter embolism
- Catheter occlusion
- Catheter fracture
- Venous thrombosis
- Fibrin sheath formation
- Bleeding syndrome
- Twiddler's syndrome
- Pinch-off syndrome
- Nerve damage
- Catheter damage
- Compression injury
- Absence of blood return
- Extravasation

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Central Venous Therapy

Common Complications:

- Most common are catheter occlusions & catheter-related infections
- **Occlusions**
  - Thrombotic –results from formation of thrombus inside, surrounding or at the tip of the catheter
    - **Main goal** with thrombotic occlusions is to **restore catheter function**.
    - Thrombotic occlusions are associated with infection risk
  - Nonthrombotic –can result from drug precipitation, mechanical obstruction, lipid residue, venous thrombosis or catheter malpositioning or migration
    - Always rule out mechanical obstructions first
  - Characterized by inability to infuse or withdraw fluid, or "sluggish" flow

Central Venous Therapy

When do we assess for occlusion?

"The nurse should aspirate for a positive blood return from the vascular access device (VAD) to confirm device patency prior to the administration of parenteral medications and solutions."

-Infusion Nurses Society (INS) Standards of Practice, 2011

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Central Venous Therapy

Patient Education

- Role of the patient in infection prevention
  - Patients need to share responsibility for keeping their central access device free from infection
    - Patient teaching should include: explanation of therapy, adverse effects, side effects, who to contact should need arise.
    - Ensure patient has understanding of their role in caring for access device.

Central Venous Therapy

Central Catheter Placement

- Catheter placement **must** be verified and documented before any infusion can be done.
  - Placement is verified when catheter is placed
  - PICC tip location can be verified by Sherlock 3CG technology or chest x-ray
  - Must verify catheter tip location by x-ray prior to use if patient is admitted with an existing central line of any type

Central Venous Therapy

Placement

- Correct placement of PICC
  - Ends in the **lower third** of the Superior Vena Cava **(SVC)** or the Cavo-atrial Junction **(CAJ)**
- If end of PICC rests outside of the SVC (i.e. subclavian, innominate, axillary veins), it is a **Midline** catheter.
- **Midline catheters are considered peripheral lines** with a **potential dwell** time of up to **29 days** and can be used for infusions of IV fluids, electrolytes and isomotic or near-isomotic medications, as well as for drawing blood. **Do not infuse hypertonic solutions through Midlines.**
- ***NOT appropriate for patients receiving –Vesicants, TPN, <5 or >9 pH, >600 mOsm/L***

Comparison view of a central venous catheter and a dialysis catheter.

Triple Lumen Standard Central Line Catheter

Dialysis Catheter

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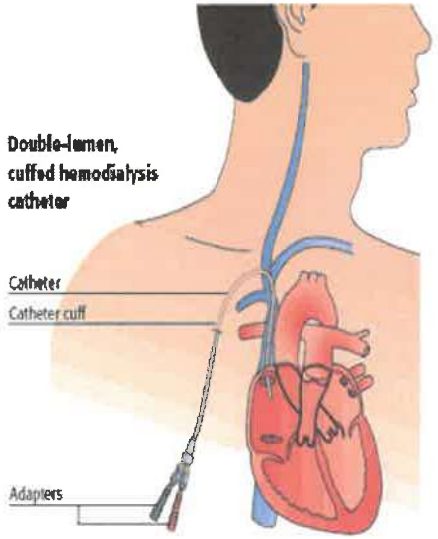
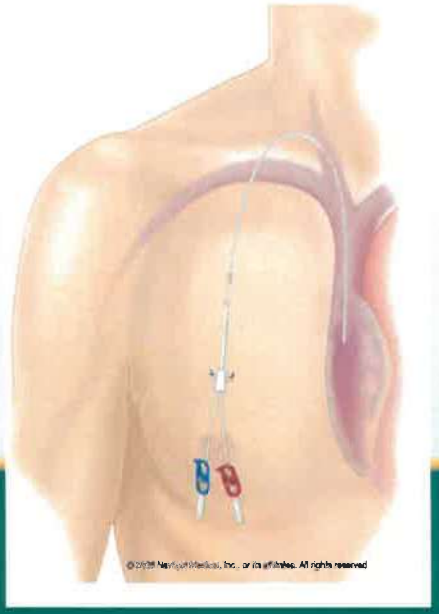
Commonly used dialysis catheters



Notice the colors of the access adapters-

Red and **Blue**

2 lumens clearly marked for venous and arterial blood



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Basic Care Guidelines

- If a patient has an intravenous access device, assess the site and dressing carefully, doing aseptic dressing changes as needed and as ordered, assess for patency, and always question if the patient needs the access at this time.
- Remember, this is a possible entry point for infection, it is best to remove the device when no longer needed and as soon as possible.
- Always follow your facility policies with regard to use and care.
- If you don't know what the device is or how it is to be properly cared for, **ASK and KEEP ASKING** until you get the information you need to take care of your patient safely.
- THERE IS NO SHAME IN NOT KNOWING, JUST IN NOT ASKING.

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Infusion Therapy Documentation

- Documentation regarding the patient's infusion therapy and vascular access will contain accurate, factual, and complete information in the patient's permanent record.
- Documentation is to be legible, timely, accessible to qualified personnel, and readily retrievable.
- Reflects continuity, quality, and safety of patient care.

Reminders:

- Primary tubing changes q96hrs
- Intermittent tubing changes q24hrs
- All tubing must be labeled with time, date, and nurses initials at time of change made(NOT FUTURE TIME)
- Use distal end caps AT ALL TIMES when tubing not connected
- NEVER, EVER loop tubing or use saline flush syringe caps
- Use Passive Port Protectors on ***all*** central line access ports, including access ports on administration tubing

Vascular Access

- Part 3: Blood Administration

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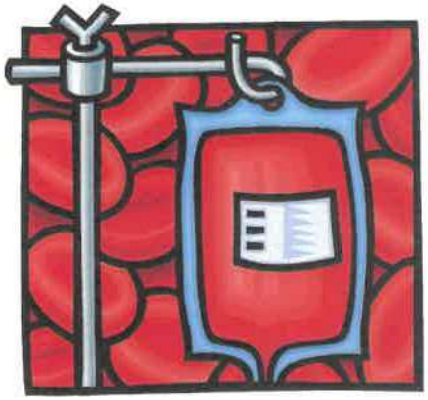
Transfusion of Blood and Blood Products



- **Objectives:**
  - At the conclusion of this part, the participant will be able to:
    - Identify the different blood products.
    - Identify the steps of the blood transfusion administration process and equipment needed
    - Perform patient assessment during blood transfusion administration.
    - Recognize symptoms of a blood transfusion reaction.

Types of Blood-
Red Blood Cells and Whole Blood

- **Packed Red Blood Cells (RBC)** - The red cells are separated from the plasma in whole blood. This product increases the oxygen carrying capacity of the blood.

- **Whole Blood** - Contains red cells and plasma.
  - Indications: Given only for patients with symptomatic oxygen carrying deficits or severe hypovolemia. Not routinely available.

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Types of Blood Products

- **Fresh Frozen Plasma or FFP** consists of the clear portion of the blood that is separated and frozen. FFP contains all the clotting factors of whole blood.
- **Indications**: require replacement It is used to control bleeding in patients who of several clotting factors.
- Plasma requires typing and must be ABO compatible. It contains no red blood cells - cross matching is not necessary.
- **Infusion guidelines:** Plasma may be infused in as quickly as the patient can tolerate.

Blood Products

- **Platelets** and plasma are separated from red blood cells.
  - **Indications**: They are used for patients with bleeding issues associated with low platelet counts.
- **Infusion guidelines:** Platelets must be infused immediately or returned to the blood bank. They can be infused as quickly as the patient will tolerate.
- Only 0.9 Normal Saline (NS) may be run with blood or blood products.

Blood Products
Cryoprecipitated AHF – Albumin – Antihemolytic Factor (Factor VIII)

- **Cryoprecipitated AHF** – is the insoluble portion of Fresh Frozen Plasma used to control bleeding in Factor VIII, Von Willebrand's factor or Factor XIII deficiencies. Expires four hours after pooling.

- **Albumin** is a volume expander used for patients with shock, burns ,liver failure and hemolytic disease.

- **Antihemolytic Factor (Factor VIII)-** is used to stop bleeding in the treatment of hemophilia A.
  - **Infusion guidelines:** Given IV push through a 170 micron filter needle or by drip using a component recipient set.

Alert:
Blood Administration and Tubing

- All blood products should be administered through a standard filter (170 to 260 microns) to remove clots and debris from blood components. Blood products may be filtered before release from the blood bank or may be released from the blood bank accompanied by the appropriate filter
- Filter tubing is to be replaced if more than 1 hour elapses between transfusions *or* after 6 hours to reduce the risk of bacterial exposure.

Y Tubing Filter _____

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Special Tubing for Blood Administration

Y Tubing

Y Tubing

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Questions

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References/Resources

- Refer to Infusion Nursing Standards (INS) of Practice 2011
- CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011
- SHEA/IDSA Practice Recommendation: Strategies to Prevent Central Line-Associated BSIs in Acute Care Hospitals: 2014 Update
- RHS Policy C9.1 Central Line, RHS Procedure Central Line C9.1 A-J, RHS Central Line Job Aides C9.1 JA 1-7.

CBL Created by RHS CLABSI Team and Vascular Access Infusion Team

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