Maintenance of Central Venous Catheters

Reduce the Risk of Infection
2015
Objectives

• Demonstrate an understanding of complications, potential problems and corrective actions regarding central lines.

• Identify the equipment necessary for maintaining central line therapy.

• Demonstrate the dressing procedure for all central line catheters.
Institute for Healthcare Improvement (IHI) recommends five components of care to reduce risk of catheter-related bloodstream infection:

1. Performing proper hand hygiene: Before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter

2. Using maximal barrier precautions during catheter insertion:
   - Hand hygiene
   - Inserting MD and hands on Assistants: Cap, mask, sterile gown and sterile gloves
   - Assistant in the room for patient monitoring and supply support: Cap and mask
   - Patient: Covered head to toe with a sterile drape
     - Mask if not ventilated and tolerated. Turn head if pt is unable to tolerate mask.
     - Cap if jugular or subclavian insertion
   - A sterile dressing must be applied to the insertion site before the sterile barriers are removed
How to Reduce the Risk of Infection (cont.)

3. Providing antisepsis with chlorhexidine:
   *unless allergic*

4. Choosing an appropriate insertion site:
   *(subclavian vein is the preferred site for nontunneled catheters)*.

5. Daily review of line necessity with prompt removal of unnecessary lines.

   *Avoiding routine central venous catheter (CVC) replacement.*
How Organisms Invade

ALL IDENTIFIED AREAS MUST BE PROPERLY CLEANSED PRIOR TO INSERTION AND WITH EACH DRESSING CHANGE! REMEMBER GOOD HAND WASHING, SCRUB the HUB and CUROS.
What you can do:

- Hand hygiene
- Line site assessment and care
- Manage lines, connectors and infusates aseptically and within policy
- SCRUB the HUB, 15 second for each access
- Alcohol impregnated port protector for hub antisepsis, use once and throw away

* Good for 7 days if left in place (except NICU)
Use of alcohol-impregnated port protectors

- Cap contains a 70% Isopropyl Alcohol sponge and is used for passive disinfection.
- Always place a NEW cap on luer lock needleless connectors on Central lines/PICC lines. **Do not use** on dialysis catheter end ports or open stopcock ports.
- Port protectors are single use only and must be discarded if removed.
- The cap must remain in place for 3 minutes for the valve to be disinfected and may remain in place for 7 days if not removed.
- If the cap has been in place for 3 minutes, it is not necessary to scrub the port before the first access.
- For sequential medication administration, flushes or drawing from the line, scrub the hub for 15 seconds for all access.
- If there is visible soil (blood) on the needleless connector, scrub the hub before placing a new cap on.
- Hang the strip on the IV pole for quick access, do not hold or fold them in a pocket. The strip may be cut in half if fewer are needed. Suggest placing 24 hours worth or less at the patient bedside.
- Discard any strips left over after patient discharge-do not save for the next patient.
- See Pedi and NICU specifics posted on the BMC nursing website.
Transparent Dressings

- Enables easy observability of site and palpation for soreness etc. between dressing changes.

- Allows water evaporation from skin at site reducing potential for growth of microorganisms.

- Increases staff satisfaction/use of time
Dressing Change Kit for Central Venous Catheters

- Transparent Dressing
- Chloraprep** (if no known sensitivity)
- 2 Masks
- Sterile Gloves
- Sterile Drape
- Non Sterile Gloves
- Label
- Protective Barrier Wipe (skin prep)

**Securement device (i.e. stat lock, not included in kit if needed)

If sensitivity to chlorhexidine gluconate is known or strongly suspected, suggested use of duraprep. If patient is < 2 months old use betadine and alcohol.
STEPS FOR CENTRAL LINE DRESSING CHANGE

Dressing removal:

1) Wash hands
2) Position patient flat in bed.
3) Instruct patient to turn head away from insertion site
4) Mask patient and self
5) Put on non-sterile gloves
6) Carefully remove & discard old dressing

Note: IV Team changes PICC dressings for patients > 2 years of age. Pedi RN will change dressing.
DRESSING CHANGE (cont.)

- Observe exit site for swelling, redness, drainage or changes in skin condition

This is a sterile procedure:
- Wash hands and apply sterile gloves
- Clean site with chlorprep and allow to dry
- Apply dressing to insertion site with sterile technique. Remember, “blue to the sky and lay it on the line”. Or shiny points to the stars.
- Use securement device if there is no suture.
- Cover with transparent occlusive dressing, time date and initial on separate piece of tape, document in CIS.
- Change injection cap every 96 hrs, every 24 hrs if TPN or PPN.
Cleaning the Site

- Start at insertion site and rub back and forth for at least 30 seconds (groin, cleanse for 2 minutes!)
- Allow to air dry 30 seconds
- Do not blow on site or wave hand over it to dry.
How to:
Apply a CHG Transparent Dressing

- Blue side up (or shiny points to the stars)
- Position patch: Lay it on the line
- Edges of slit must touch
- Apply transparent film dressing.
CATHETER SITE CARE & SECUREMENT

- Any manipulation of a central line catheter can increase the risk of infection.

- Central lines should be secured at all times to prevent movement of the catheter at the insertion site.
Securement Device

- Will not adhere in the presence of betadine or any alcohol based product.
- Use skin prep to create better skin protection and a better adherence.
- Device is best secured when “cured” for 15 minutes.
- Use alcohol wipes to remove.

- Change with dressing or every 7 days to assure consistency.
Flushing of a Central line

- Always use 10 ml syringe

- Flush with enough pressure to ensure patency (up to 5cc/sec)
Drawing Blood off a Central Line

Guide to Intravascular Access Adults
Red blood transfer devices are utilized when using a syringe to draw blood off a vascular device such as a PICC.
Blood transfer devices *(Blue)* are used when drawing blood off vascular access such as triple lumen catheters.
Neutral Pressure Injection Cap

- ↓ Rate of infection
- Flow rate equal to 18 gauge needle Neutral pressure device
- Dead space - 0.04mL
  - Good for pedi
REFER TO POLICY : C.O. 8.256
Vascular Access & Intravenous (IV) Therapy Mgt & Clinical ops : Your guide to intravascular devices for Adults and Pedi

Document:
Dressing change: date, time, and size Specific vein
Condition of the site Patency of the catheter Signs of infection
Complications the therapy
Condition of CVAD when discontinued Patient education

IC 93 Getting to Zero has helpful information too!
Medication Administration

1. Wash/sanitize hands. Put gloves on
2. Remove alcohol impregnated cap
3. Flush catheter with 5 mls of NS in a 10ml syringe
4. Cleanse injection cap with alcohol wipe
5. Administer IV medication
6. REMOVE SYRINGE FROM INJECTION CAP, CLAMP CATHETER
7. Apply new alcohol impregnated cap.

• S aline
• Administration
• S aline
• Heparin
Central Line Removal

• Not all Nursing Units permit RN’s to discontinue central lines. -Annual RN competency must be demonstrated.

• PICC lines to be removed by IV Team.

• When central line is removed, look to be sure the whole tip of the catheter is intact.
SAVE That Line!

Follow these important principles when inserting or maintaining any vascular access device:

1. **Scrupulous Hand Hygiene**
   - Before and after contact with vascular access device and prior to insertion

2. **Septic Technique**
   - During catheter insertion and care

3. **Vigorous Friction to Hubs**
   - Vigorous friction with alcohol wherever you “make or break a connection” to give medications, flush, or change tubing and injection port or add on device

4. **Ensure Patency**
   - Flush all lumens with adequate amount of saline or heparinized saline to maintain patency, per institution policy. If lack of blood return or sluggish flow is encountered, initiate thrombolytic protocol per institution policy.

For more information, contact the Association for Vascular Access (AVA) at www.avainfo.org or call 1-801-792-9079 or 1-877-924-AVA1 (2821)
Central line maintenance

• Assess all central lines for patency every shift – this includes checking for blood return as well as ability to flush catheter

• Consider changing microclave if unable to flush after blood draws

• Sterile technique is required for all catheter flushes.

• This includes washing hands, wearing gloves, scrubbing hub for 15 seconds and allowing to air dry before attaching syringe to flush

• Contact MD if unable to flush, document in medical record
Central line maintenance

• If occlusion is suspected, check catheter and tubing for any mechanical obstruction (ie: catheter kinked)
• Consider drug precipitate formation (ie: dilantin & dextrose)
• If other causes of catheter occlusion have been ruled out, suspect fibrin formation and implement alteplase protocol
• Consult IV Therapy for assistance with PICC Midlines and port a cath occlusions.
Clotted Catheters

Alteplase (tPA) is available for the following conditions:

- Clotted Catheters (adults and pediatrics)
- Clotted Hemodialysis Access (adults)
- Venous Thrombolysis (adults and pediatrics)
- Arterial Occlusion (adults and pediatrics)

**Can be performed by RN’s competent in administration (CO 13.420)**

**Adult and Pediatric Use Concentration:** 1mg/ml
References

