



**LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER**

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

<b>CATEGORY:</b> Provision of Care	<b>EFFECTIVE DATE:</b> 1/80
<b>POLICY CONTACT:</b> Susan Stein, MD	<b>UPDATE/REVISION DATE:</b> 7/22
<b>REVIEWED BY COMMITTEE(S):</b> Critical Care Committee	

**PURPOSE:**

To prevent the occurrence of catheter-related bloodstream infections.

**POLICY:**

All Harbor-UCLA staff will adhere to the Center for Disease Control and Prevention (CDC) and Healthcare Infection Control Practices Advisory Committee (HICPAC) guidelines for the prevention of central line-associated bloodstream infections and all other device-related bloodstream infections.

**PROCEDURE:**

**I. INTRAVASCULAR DEVICES AND THEIR USE**

**A. Selection of appropriate device**

Select an intravascular device appropriate for its intended use (i.e., short-term or long-term access, size and length of the catheter, type of solutions or medications to be administered). Use a central venous catheter with the minimum number of ports or lumens essential for the management of the patient.

To select the appropriate catheter, the following guidelines should be considered carefully:

1. Devices for **short-term venous (non-tunneled)** access:
  - a. **Peripheral venous catheter:** Placed in distal peripheral veins for short-term use.
  - b. **Midline catheter:** Peripherally inserted catheters with the tips terminating in either the basilic, cephalic or brachial vein distal to the shoulder. Midline catheters are not central venous catheters, are indicated for peripheral infusion therapies prescribed for a duration of 1-4 weeks and may be placed by specially trained Vascular Access Nurses. (Example: Bard Midline catheter).

**REVISED:** 9/85, 3/89, 4/91, 11/95, 7/02, 11/03, 7/04, 8/10, 4/12, 5/13, 3/14, 1/15, 7/15, 1/17, 7/22

**REVIEWED:** 10/82, 3/89, 11/98, 10/00, 11/03, 7/04, 3/05, 4/12, 5/13, 3/14, 1/15, 7/15, 1/17, 7/22

**APPROVED BY:** \_\_\_\_\_

**Anish Mahajan, MD**  
Chief Executive Officer  
Chief Medical Officer

\_\_\_\_\_  
**Griselda Gutierrez, MD**  
Associate Chief Medical Officer

\_\_\_\_\_  
**Jason Black, MBA, DNP, RN**  
Chief Nursing Officer



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

- c. **Central venous catheter (CVC):** Placed in a central vein and used for short-term access, to monitor central venous pressure, administer total parenteral nutrition (TPN), IV fluids, medications, or blood products. Catheters can be single or multi-lumen.
  - d. **Umbilical venous catheters:** Placed in neonatal umbilical vein used for emergency delivery of intravenous fluids and medications, and the collection of blood samples.
2. Devices for **long-term venous (tunneled)** access:
- a. **Peripherally inserted central catheter (PICC):** Inserted into the superior vena cava (SVC) by way of the cephalic or basilic veins of the antecubital space. PICCs provide an alternative to subclavian or jugular vein cannulation, may remain in place longer than acute catheters, and may be placed by specially trained Vascular Access nurses. In neonates and infants, an additional site selection is the saphenous vein in the lower extremity, with the catheter tip terminating in the inferior vena cava. PICCs are used to administer IV fluids, medications, blood products, and TPN.
  - b. **Tunneled central venous catheter:** Surgically implanted central venous catheter which terminates in the SVC and is commonly used for chemotherapy or home infusion therapy.
  - c. **Implantable intravascular device:** Tunneled beneath the skin and have a subcutaneous port with a self-sealing septum accessible percutaneously through intact skin.
3. Devices used for **arterial** access:
- a. **Peripheral arterial catheter:** Used to measure intra-arterial pressure and for monitoring arterial oxygenation in critically ill patients.
  - b. **Pulmonary artery catheter:** Placed in the pulmonary artery for hemodynamic monitoring.
  - c. **Umbilical arterial catheter:** Placed in an infant's umbilical artery to administer intravenous fluids, short-term parenteral nutrition, and to obtain blood samples.

**B. Selection of Insertion Sites**

**1. Peripheral Venous/Midline Catheters**

- a. In adults, use an upper-extremity site for catheter insertion (use in a lower extremity in adults requires a prescriber order). Replace a catheter inserted in a lower extremity site to an upper extremity site as soon as possible. In access-limited adult patients, an external jugular peripheral venous catheter may be inserted.
- b. In pediatric patients, the upper or lower extremities, external jugular, or the scalp (in neonates or young infants) can be used.

**2. Central venous catheters**

- a. Avoid using the femoral vein for central venous access in adults, if possible.
- b. Use the subclavian vein or internal jugular vein site, rather than a femoral site, in adult patients to minimize infection risk for non-tunneled CVC placement.
- c. When emergency access is needed, such as during a resuscitation, consider the use of an intraosseous (IO) line, when available, particularly when a central line cannot be placed under maximal sterile barrier conditions. Once immediate IO access has been obtained, a central line can be placed later under the maximal sterile barrier, if still needed.
- d. The need for the use of all central lines must be evaluated and documented daily by the primary provider.



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

**3. Femoral vein central venous catheters**

- a. In adults, only use the inguinal area if absolutely necessary. Compared to other sites, this area leads to higher rates of infection, thrombosis, and septic phlebitis.
- b. Whenever possible, as determined by the patient's condition, in adults a femoral catheter should be either removed or replaced with a lower-risk catheter at a more peripheral site.

**4. Peripheral artery catheters**

In adults, the use of the radial or dorsalis pedis sites is preferred over the femoral or axillary sites of insertion to reduce the risk of infection. In children, the brachial site should not be used. The radial and dorsalis pedis sites are preferred over the femoral or axillary sites of insertion.

**5. Dialysis catheters**

- a. Use fistula or grafts instead of CVCs for permanent dialysis, if possible.
- b. Place catheters for hemodialysis or plasmapheresis in the jugular or femoral veins vs. subclavian veins.
- c. Use cuffed central venous catheters if access is needed for greater than 3 weeks.
- d. Do not use for blood drawing or other applications, except in emergencies or during dialysis.

6. Do not routinely use arterial or venous cut-down insertion procedures as a method to insert catheters. Use of a cut-down may be required in the event of an emergency.

**7. Umbilical vein**

- a. This site should be avoided unless its use is absolutely necessary.

**II. GENERAL GUIDELINES**

**A. Hand Hygiene**

Proper hand hygiene must be performed before inserting, changing, or dressing any intravascular device and for subsequent manipulation of the device and its components. Use either an alcohol-based product (preferred) or an antimicrobial soap and water for at least 15 seconds with adequate rinsing. Use appropriate gloves for device insertion. Sterile gloves must be worn for insertion and dressing changes of central and midlines. Clean gloves may be worn for peripheral line insertion. When accessing intravascular catheters wear either clean or sterile gloves as appropriate.

**B. Daily Patient Care**

All patients with CVC will be given a daily bath with Chlorhexidine Gluconate (CHG) wipes.

**C. Aseptic Technique**

1. Maintain aseptic technique for the insertion and care of intravascular catheters.
  - a. Use a new pair of disposable non-sterile gloves for the insertion of peripheral venous catheters. Do not touch the access site after the application of skin antiseptic.
2. For central venous (including PICC) catheters, including guidewire exchange:



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

- a. Use maximal sterile barrier precautions (e.g., cap, mask, sterile gown, sterile gloves, and large sterile drape) as this substantially reduces the incidence of catheter-related bloodstream infections compared with using only sterile gloves and small drape.
3. For arterial catheters, a cap, mask, and sterile gloves should be used. The use of a sterile gown and a large sterile drape may help reduce the incidence of infections.

**D. Skin Antisepsis and Topical Antimicrobial Ointment**

1. Prior to insertion, skin cleansing/antisepsis of the insertion site is required.
  - a. A 2% chlorhexidine preparation with alcohol is preferred. A tincture of iodine, an iodophor, or 70% alcohol can be used as alternatives.
2. Allow antiseptics to remain on the skin and air dry. Povidone iodine should be allowed to air dry for at least 2 minutes.
3. Do not apply organic solvents (acetone or ether) to the skin before the insertion and at dressing time.
4. Do not use topical antibiotic ointment or creams on the insertion site.
  - a. Exception: when using dialysis catheters, as long as there are no interactions with materials of the hemodialysis catheters, apply povidone iodine ointment to the exit site after insertion, at the end of each dialysis session, and at each dressing change.
5. The use of a sustained-release chlorhexidine gluconate patch (e.g., Biopatch) should be used unless there is a known contraindication. It is important for the patch to be placed around the line at the skin entry site, not simply laying on top of the line. The patch must be placed with the medicated side toward the skin.

**E. Technique/precautions for Inserting or Accessing Central Venous and Arterial Catheters**

1. Personnel placing catheters must be trained and have demonstrated clinical competency in placement and care of intravascular devices. Depending on the type of device, intravascular catheters may be placed by physicians, mid-level providers, or specially trained Registered Nurses.
2. Central line checklist:
  - a. Except for extreme emergencies, a registered nurse (RN) will assist the practitioner in placing a central line by completing the central line checklist as the procedure is performed. The checklist is a separate checklist available for printout from the hospital computer system (form HH1002, **Appendix A**). The RN shall have the authority to stop the procedure if elements of the checklist are not being performed properly, and work with the practitioners to meet any missing elements. Once the checklist portion of the form is complete, the nurse will hand the form to the inserter who will enter this information and other information on the procedure using the electronic Central Line Insertion Practice (CLIP) form, which is found on the electronic health records. The electronic CLIP form will also serve as a procedure note.
  - b. For patients, the RN will assure that all staff coming in contact with the sterile field wear maximal sterile barrier (cap, mask, sterile gown, sterile gloves). All staff coming within 3 feet of the sterile field (including the RN assisting with the procedure) will wear a cap and mask.



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

- c. For PICC lines, the nurse completing the electronic documentation of the line placement is responsible for recording that all elements of the checklist were completed during placement.
3. Placement of central venous and arterial catheters is ideally performed in the OR, ER, ICUs, and Interventional Radiology. These catheters should be placed in patients on the general wards only in special circumstances.
4. Use ultrasound guidance to place central venous catheters (if available and appropriate).
5. Confirmation of Position: For jugular or subclavian central venous lines, a chest x-ray (abdominal for umbilical line) must be ordered and reviewed by the practitioner who inserted the line or their designee to confirm placement and rule out a pneumothorax. For an umbilical venous line, an abdominal x-ray must be ordered or reviewed by the practitioner who inserted the line or their designee to confirm placement. The final reading of x-rays by the radiologist is not necessary to begin using the line. The above procedure applies to all lines including those placed using ultrasound and guide wire exchanges. Except in an emergency situation, the chest x-ray must be performed prior to the use of the catheter. A specific order from the practitioner who confirmed placement is required prior to the infusion of any solution. A chest x-ray is not required for a femoral line. **The practitioner will document line confirmation before using the line except in emergencies.**

All line ports should be able to freely draw blood and flush easily. If any port fails to operate correctly, misplacement must be considered, and the line should not be used until intravascular placement can be confirmed.

In cases where a line is placed during an episode of severe hypotension or cardiac arrest, it can be difficult or impossible to tell if the line is in an artery or vein, because the arterial and venous blood may have a similar appearance. If there is any doubt about placement, pressure transduction to look for a venous pressure wave is the most reliable form of confirmation. Sending blood gases and performing ultrasound are other methods that may help determine placement. If the arterial placement of a venous line inadvertently occurs, the line should be left in place and Trauma or Vascular Surgery consulted immediately.

6. Prior to accessing any line, hand hygiene must be performed.

**F. Dressing/re-dressing of the Catheter Insertion Site**

1. Perform hand hygiene prior to applying any dressing to the line.
2. Use sterile gauze or sterile, semi-permeable transparent dressing.
3. Disinfect clean skin with appropriate antiseptic (2% chlorhexidine is preferred).
4. A transparent dressing is preferred for most central venous catheters. A sterile gauze dressing is preferred when a site is bleeding or oozing or when a patient is diaphoretic.



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

5. Dressings should be changed if damp, loosened, or soiled, and may require more frequent changing in diaphoretic patients. Use aseptic technique with dressing changes (use sterile gloves, mask, and drape).
6. Replace dressings on short-term CVC catheter sites every 2 days for gauze dressings.
7. Replace dressings on short-term CVC catheter sites every 7 days for transparent dressings, except in those pediatric patients in which the risk for dislodging the catheter may outweigh the benefit of changing the dressing.
  - a. Replace transparent dressing change with IV change for the peripheral catheter. Gauze dressing must be changed every 48 hours or as necessary if wet, soiled, or nonocclusive.
  - b. Replace dressing every 7 days if using Biopatch/ chlorhexidine gluconate patch (for central line).
  - c. Transparent dressings are not recommended for diaphoretic patients or for peripheral arterial catheters.
8. Replace transparent dressings used on tunneled or implanted CVC sites no more than once every 7 days, unless the dressing is soiled or loose, until the insertion site has healed. With a well-healed tunneled CVC site, consideration may be given to using no dressing.
9. Document dressing changes and condition of the catheter insertion site in the patient record.

**G. Specific Recommendations for Care of Catheters & Components**

1. Daily Assessment
  - a. The patient's primary providers (physicians or mid-levels) must conduct and document a daily assessment of the continued need for CVCs (including PICCs).
  - b. To minimize contamination and colonization of the catheter and prevent catheter-related infections, nurses must assess the catheter and catheter insertion sites every shift.
    - Inspect and palpate the catheter insertion site every shift through the dressing. If the patient has local tenderness or other signs of possible infection, an opaque dressing should be removed, and the site inspected visually.
    - Visually inspect the catheter site if the patient develops redness, discharge, and/or tenderness at the insertion site, fever with no obvious source, or symptoms of local or bloodstream infection.
    - If the patient has a large bulky dressing that prevents palpation or direct visualization of the catheter insertion site, remove the dressing and visually inspect the catheter at least daily and apply a new dressing.
    - Nurses must follow the assessment and care of the intravenous catheter according to hospital policy (See Hospital Policy 325M: Guidelines for Intravenous Medication Administration).
2. Frequency of tubing change and other component changes
  - a. Replace administration sets, and add-on devices, no more frequently than every 96 hours, unless clinically indicated.



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

- Replace tubing used to administer parenteral nutrition or lipid emulsions within 24 hours of initiating the infusion.
  - Replace tubing used to administer propofol infusions every 12 hours and when the bottle is changed.
  - Blood and/or blood products administration sets must be replaced after every four (4) hours or after every 2<sup>nd</sup> unit of blood product, whichever comes first.
  - For hemodynamic monitoring: change tubing every 96 hours (including the stopcock).
  - Secondary tubing used for intermittent infusions (e.g., IVPB) must be replaced every 24 hours.
3. Frequency of solution change
- a. Solutions must be labeled with the date, time, and initial and the solution must be replaced with a new solution every 24 hours.
  - b. For pressure monitoring systems, replace continuous-flush solution at the time transducer is changed at least every 96 hours.
4. Maintenance of pressure-monitoring systems
- a. Whenever feasible, replace arterial catheters if the patient develops septicemia while the catheter is in place.
  - b. Persons handling or entering the pressure-monitoring delivery system must perform hand hygiene and wear gloves. Minimize the number of manipulations and entries into the pressure-monitoring system. When changing dressings on intravascular catheters, wear sterile gloves.
  - c. Use a closed-flush system to maintain the patency of the pressure-monitoring cannula.
    - Keep all devices and fluids that come into contact with the fluid of the pressure-monitoring circuit sterile (e.g., calibration devices, heparinized saline).
  - d. Transducers:
    - Use disposable transducers when possible. Do not reuse disposable equipment.
    - Replace disposable or reusable transducers, tubing, flush devices, and flush solutions every 96 hours.
  - e. If using an open system (one that requires a syringe and stopcock), treat stopcocks as a sterile field and cover them with a cap or syringe when not in use. Minimize the number of stopcocks or other access points within the system.
  - f. Scrub with friction the access port or stopcock with alcohol for at least 15 seconds and allow to dry for another 15 seconds before accessing the pressure-monitoring system.
  - g. Use a sterile sleeve for all pulmonary artery catheters.
  - h. Except in pediatric patients, do not administer dextrose-containing solutions or parenteral nutrition fluids through a pressure-monitoring circuit. Use only heparinized or non-heparinized normal saline.
  - i. Routine blood cultures should not be taken through pressure-monitoring devices.
5. Use of alcohol-containing port protectors:  
Alcohol-containing port protectors help protect central and peripheral lines from pathogens that can cause device-associated bloodstream infections (BSI) by providing continuous





LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

passive disinfection. They are intended for use on Luer access valves and male Luer IV tubing connectors.

- a. The following standards will be followed for all patients who have CVC, midline, peripheral line, or any combination of IV lines regardless of patient location.
- b. Place alcohol port protectors on all indicated ports. The port protector remains in place until the port is accessed. Once removed it must be discarded and replaced with a new port protector.
- c. Port protectors are effective for a maximum of 7 days. However, port protectors are to be replaced more frequently as necessary - i.e. during all routine tubing changes.
- d. Alcohol tip protectors are to be used to cap all IV tubing ends when disconnecting from the central/peripheral access ports.
- e. Alcohol port/tip protectors are for **one-time use only**. Once removed, a port /tip is to be discarded. Do not place the same port/tip protector back onto a port or tip.
- f. Do not use a port/tip protector if the packaging seal is broken, torn, or punctured.
- g. Once the port/tip protector is pulled from the strip or opened, push and twist the cap onto the port/male Luer connection.
- h. Outpatient Clinics: Alcohol port protectors may be used on outpatient CVC access ports (PICC, Broviac, and dialysis catheters), according to the guidelines noted above. Nurse will provide patients with enough supply of alcohol port/tip protectors to use at home. Patient education regarding the importance and use will also be provided prior to home use.

**H. Documentation in Patient Record**

- a. Documentation in CLIP PowerForm (see II.E Checklist) to include the following information, but not necessarily limited to:
  - Confirmation of position, indications for insertion, type of catheter, site of insertion, type of skin preparation, local anesthesia (if any), type of dressing, complications (if any), physician performing the procedure (or Vascular Access Nurse).
- b. Although not a requirement to document specifically, primary provider(s) should evaluate the ongoing need for the presence of a CVC each day, and if not deemed necessary, strong consideration should be given to its removal.
- c. Nurses must follow the assessment and care of the intravenous catheter according to nursing policy (See *Central Venous Catheters, Care and Maintenance, Nursing Procedure Manual, p.105* & *Intravenous Therapy (Peripheral), Nursing Procedure Manual, p.215*).

**I. Training of personnel**

1. Insertion, manipulation, and maintenance of the catheter and its parts must be performed by trained individuals with demonstrated clinical competency, knowledge of each device (and its components), and the special infection prevention and control precautions required for the device in use.
2. It is the responsibility of each department to assure the clinical competency of its staff.





LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

**III. DURATION OF LINE USE**

**A. Frequency of catheter and site change:**

1. Change or remove the intravascular catheter as soon as no longer clinically needed. Remove emergently placed catheters as soon as the patient's condition permits.
2. Short-term **venous devices**:
  - a. Peripheral IV catheters should be changed at least every 7 days to minimize the risk of phlebitis. If the patient develops signs of phlebitis at the insertion site, remove the device. In pediatric patients, do not replace peripheral catheters unless clinically indicated.
  - b. Central venous catheters: it is not necessary to routinely replace central venous catheters, including peripherally inserted central lines and hemodialysis catheters.
3. Long-term central venous catheters:
  - a. Certain long-term catheters such as PICC lines may remain in place for 6-12 months.
  - b. Long-term catheters (e.g., Hickman, Broviac) are also not routinely changed.
4. Arterial devices:
  - a. Do not routinely replace arterial or pulmonary artery catheters.
  - b. After Swan-Ganz catheter insertion, the catheter is not to be advanced if the sterile sleeve has been contaminated.

**IV. INDICATIONS AND PROCEDURE FOR GUIDEWIRE EXCHANGE (GWX) OF CENTRAL LINES**

**A. Insertion Indications/Contraindications for GWX**

1. Routine GWX is not recommended. To reduce infection risk, it is preferable to remove the catheter completely and, if needed, place another catheter at a different site.
2. Do not change catheters over a guidewire when central line-associated bloodstream infections (CLABSIs) are clinically suspected.
  - a. Do not exchange catheter over a guidewire in the following circumstances:
    - The patient is febrile.
    - The exit site is red, warm, tender, erythematous, or has purulent discharge.
    - The patient exhibits other clinical signs and symptoms of sepsis.
  - b. Exception: In selected patients with tunneled hemodialysis catheters and bacteremia, catheter exchange over the guidewire, in combination with antibiotic therapy, might be an alternative as a salvage strategy in patients with limited venous access.
3. It is acceptable to use GWX to change a malfunctioning catheter or to exchange a pulmonary artery catheter for a central venous catheter when cardiac output monitoring is no longer needed.

**B. Technique/Precautions for GWX**

1. Meticulous aseptic technique is required throughout the procedure.
2. Perform hand hygiene using an alcohol-based product or antimicrobial soap and water.
3. Use Maximal Barrier Precautions (MBP), which include sterile gloves, sterile gown, large sterile drape, surgical cap, and mask.



**LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER**

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

4. Clean the site vigorously with chlorhexidine or 10% povidone iodine. Allow to dry (30-60 seconds for chlorhexidine and 2 minutes for povidone iodine) before proceeding.
5. Insert guidewire and remove the old catheter. Care should be taken to avoid contaminating the sterile field with non-sterile portions of the old catheter. Control of the guidewire should be maintained by the practitioner at all times. Cleanse the site again with the antiseptic product.
6. New catheter is placed over the wire.
7. Apply central line dressing [dry sterile gauze, or sterile transparent dressing with a chlorhexidine-impregnated sponge dressing (Biopatch)].

**C. Documentation of GWX**

1. Document in the medical chart progress note that catheter was changed by means of guidewire exchange (use preprinted procedure note, Appendix A).

**V. HANDLING OF INFUSATE, ADMIXTURES, AND MULTIDOSE VIALS**

**A. Infusate and Admixtures**

1. Check all containers of parenteral fluid for visible turbidity, leaks, cracks, particulate matter, and manufacturer's expiration date before use.
2. Label infusate with admixture, date added, time, and by whom, in addition to the patient's name and MRUN.
3. Hang time for parenteral fluids is up to 24 hours.

**B. Use of Multi-Dose Medication Vials**

1. Whenever possible use single-dose vials for the admixture of parenteral additives or medications.
2. Scrub the rubber diaphragm of multi-dose vials with alcohol for 15 seconds and allow 15 seconds of drying time before entering. Use a sterile needle and syringe each time a multi-dose vial is entered and avoid touch contamination of the needle penetrating the rubber diaphragm.
3. Refrigerate multi-dose vials if specified by the manufacturer.
  - Dispose of vials in the appropriate pharmaceutical waste container (not regular trash). Discard multi-dose vials when suspected or visible contamination occurs, or when the manufacturer's stated expiration date is reached if it is unopened. If the multi-dose vial is opened the vial must be discarded within 28 days from the date of opening (See Hospital Policy 325Q: Medication Administration).



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

**VI. TOTAL PARENTERAL NUTRITION (TPN) THERAPY**

**A. Precautions to Prevent Bloodstream Infection or CRI during TPN Therapy**

1. Insert and maintain TPN catheter using sterile technique.
  - The application of organic solvents (acetone, ether) to “defat” the skin (remove skin lipids) prior to insertion of parenteral nutrition catheter and during routine dressing changes has NOT been shown to decrease the incidence of CRI.
2. Do not use parenteral nutrition catheters for purposes other than hyperalimentation.
3. Designate one port exclusively for hyperalimentation if a multi-lumen catheter is used for TPN.
  - Although it is preferable to have a “dedicated” port or lumen for total parenteral nutrition (TPN), a patient’s critical condition or lack of vascular access may necessitate that a previously used port or lumen be designated for TPN. Preservation of IV access in a critical patient is paramount.
4. Prepare infusate aseptically under the pharmacy laminar flow hood.

**VII. USE OF INTRAVASCULAR DEVICES IN PEDIATRIC PATIENTS**

**A. Infection Control Guidelines for Pediatric Patients**

In general, infection control guidelines described in sections I-VII apply to the use of intravascular devices for pediatric patients.

1. Selection of cannula:
  - a. Use a single lumen central venous catheter unless multiple ports are required.
  - b. Whenever possible, use Hickman or Broviac catheters or implantable vascular access devices (i.e., ports) for long-term vascular access (greater than 30 days).
  - c. Use implantable access devices for pediatric patients <4 years of age who require long-term vascular access.
2. Selection of site:
  - a. Insert cannulae into the scalp, hand, foot, antecubital fossa, femoral, or other site as clinically indicated. Peripheral sites are preferred, when possible.
3. Frequency of catheter and site change:
  - a. Do not routinely replace peripheral IV catheters or arterial catheters unless clinically indicated. For short peripheral IV catheters, unless complications occur, leave the catheter in place until the treatment is completed.
4. Umbilical catheters: insertion and maintenance:
  - a. Before cannula insertion cleanse the umbilical insertion site with an approved antiseptic, such as chlorhexidine or 10% povidone.
  - b. Remove the catheter as soon as possible.
  - c. Optimally, umbilical artery catheters should not be left in place longer than 5 days.



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

- d. Umbilical venous catheters should be removed as soon as possible when no longer needed but can be used for up to 14 days if managed aseptically.
  - e. Do not use topical antibiotic ointment or creams on umbilical catheter insertion sites.
  - f. Add low doses of heparin (0.25—1.0 U/ml) to the fluid infused through umbilical arterial catheters.
5. Catheter-site dressing regimens:
- a. Same as basic guidelines for Adults in section III above.
  - b. Do not use chlorhexidine sponge dressings in neonates less than 7 days or gestational age less than 26 weeks.
  - c. Central venous catheter sites: for gauze dressings change dressing every 2 days and for transparent dressings at least every 7 days, except in those patients in which the risk for dislodging the catheter outweighs the benefit of changing the dressing.
6. Frequency of tubing change:
- a. Routine IV tubing changes are performed according to guidelines in section II.F.

**Note:** Also refer to policies on Intravenous Therapy in the Nursing Department Procedure Manual and the Neonatal and Pediatric Specialty Manuals.

**B. General Recommendations**

1. Evaluation of patient:
  - a. Any patient with an intravascular device who is being evaluated for signs of sepsis or fever of unknown origin must have a careful review of all catheter sites. Document the condition of each catheter insertion site, including signs of warmth, tenderness, erythema, purulent discharge, edema, palpable venous cord, and malfunctioning catheter.
2. Consultation:
  - a. For device-related bloodstream infection or suspected catheter-related infection, an Infectious Disease consult (Adult or Pediatric) should be considered to assist in the appropriate antibiotic therapy and management or removal of the existing catheter.
3. Indications and procedures for removal of short-term venous or arterial catheters:
  - a. If purulent thrombophlebitis, cellulitis, or IV catheter sepsis is suspected, the entire IV system (cannula, tubing, and fluid) should be changed immediately.
  - b. If the catheter site is purulent or draining, obtain a gram stain and culture of the drainage.
  - c. Remove the catheter after preparing the site in a sterile fashion.
  - d. Document removal of the catheter in the progress notes.
4. Indication for removal of long-term venous catheter:
  - a. Routine removal of chronic central venous catheters is not recommended.
    - For questions about PICCs, including the viability of the catheter or suspected catheter-related infection, consult the IV team nurse prior to discontinuation of the catheter.



LOS ANGELES COUNTY DEPARTMENT OF HEALTH SERVICES  
HARBOR-UCLA MEDICAL CENTER

**SUBJECT:** GUIDELINES FOR THE PREVENTION OF INTRAVASCULAR  
CATHETER-RELATED INFECTIONS

**POLICY NO.** 324A

- b. If sepsis is suspected, draw peripheral and central line blood cultures prior to the initiation of antibiotic therapy. If positive blood cultures persist or there is evidence of continued sepsis, consider removal of the device.
  - c. Remove the catheter in a sterile fashion and send the catheter tip for semi-quantitative culture (see procedure above for removal of short-term catheters).
  - d. Promptly remove any intravascular catheter that is no longer essential.
5. Procedure for suspected infusate-related sepsis:
- a. Onset of fever or shock with the initiation of infusion should be suspect.
  - b. Stop the infusion immediately and send infusate (bottle/bag of solution) to the lab for quantitative culture.
  - c. Notify the pharmacy. Include the lot number of the fluid and any additives.
  - d. Obtain a blood culture from the peripheral venous site (not from the catheter).

**VIII. SELECTED REFERENCES:**

- Marschall J, Mermel DO, Fakih M, et al. Strategies to Prevent Central Line-Associated Bloodstream Infections in Acute Care Hospitals: 2014 Update. Infect. Cont. Hosp. Epidemiol 2014;35:753-771.
- O'Grady NP, Alexander M, Burns LA, et al for the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for the prevention of intravascular catheter-related infections. Clin Infect Dis. 2011 May;52(9):e162-93.
- Yokoe DS, Anderson DJ, Berenholtz SM, et al. A compendium of strategies to prevent healthcare-associated infection in acute care hospitals: 2014 updates. Am J Infect Cont 2014;42:820-8.
- Camp-Sorrell, D. (ed.). Access Device Guidelines: Recommendations for Nursing Practice and Education. 3<sup>rd</sup> ed. Pittsburgh, PA: Oncology Nursing Society; 2012.
- Journal of Infusion Nursing: Infusion Nursing Standards of Practice. INS; 2011: 34(1S).
- Wright M, Tropp J, Schora DM, et al. Continuous passive disinfection of catheter hubs prevents contamination and bloodstream infection. Am J Infect Control 2013;41(1):33-8.

**Reviewed by:**

Infection Prevention & Control Dept. staff  
Infection Prevention & Control Committee  
Critical Care Committee  
Harbor-UCLA Medical Center CLABSI Task Force

Reviewed and approved by:  
Medical Executive Committee 06/2022

---

Beverley A. Petrie, M.D.  
President, Professional Staff Association