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The Prevention of Intravascular Catheter-Related Infections

I. Description

Describes the infection prevention and control guidelines to prevent intravenous catheter-related infections

II. Rationale

Intravascular catheters provide a route for microorganisms to enter the vascular system bypassing normal skin defense mechanisms and putting the patient at risk for local and systemic infectious complications. Strict adherence to the guidelines in this policy can reduce the risk of a vascular catheter infection.

III. Policy

A. General Recommendations for All Intravascular Catheters

For additional guidelines, refer to Nursing Policies:

- [Peripheral Intravenous Device and Venipuncture](#)
- [Central Venous Access Device \(CVAD\) Care and Maintenance](#)
- [Parenteral Nutrition](#)

1. Health Care Worker Education and Training

Initial and ongoing education and training of health care workers who manage intravascular catheters is conducted by the Venous Access Team, Nursing Department, and Nursing Practice and Professional Development. Education includes indications for the use of and procedures for the insertion and maintenance of intravascular devices, and appropriate infection control measures to prevent intravascular catheter-related infections. Hospital Epidemiology personnel will conduct surveillance for intravascular device-related infections to determine infection rates, monitor trends in those rates, and assist in identifying lapses in infection control practices.

2. Hand Hygiene

- a. Refer to Infection Prevention policy: [Hand Hygiene and Use of Antiseptics for Skin Preparation](#)

3. Patient Assessment

- a. Record the date and time of catheter insertion in the patient record.
- b. Monitor the catheter site per nursing policy, visually or by palpation through the intact dressing. If the patient has tenderness at the insertion site, fever without obvious source, or other manifestation suggesting local or bloodstream infection notify the patient's licensed independent practitioner (LIP).
- c. Do not routinely perform surveillance cultures of patients or devices used for intravascular access.
 - i. When catheter infection is suspected and there is a catheter exit-site exudate, swab the drainage to collect specimens for culture and Gram staining.

4. Catheter Removal

- a. There should be a daily assessment for need of CVADs and the device removed when no longer clinically indicated.
- b. PIVs should not be routinely changed for infection prevention purposes. Remove a PIV when it is clinically indicated to do so. Clinical indications to change a peripheral IV include: inability to flush catheter, warmth, tenderness, erythema, or palpable venous cord at the insertion site or when patient develops a peripheral IV related bacteremia

5. Skin Antisepsis

- a. Disinfect clean skin with an appropriate antiseptic before catheter insertion and at the time of dressing change. A 2% chlorhexidine gluconate and alcohol preparation is preferred (e.g., chloraprep). Alternatively, 70% alcohol, 10% povidone-iodine, or 2% tincture of iodine may be used. The antiseptic should be liberally applied and allowed to dry per manufacturer's instructions prior to catheter insertion. When wearing clean gloves for PIV catheter insertion, do not touch the access site after application of antiseptic.
- b. If a topical skin anesthetic is used, the manufacturer's recommendations should be followed and the agent applied in a manner to prevent contamination of the container.

6. Dressings

- a. Generally, CVAD and PIV dressings are changed every 7 days. See nursing policies for specific instructions:
 - i. [Central Venous Access Device \(CVAD\) Care & Maintenance](#)
 - ii. [Peripheral Intravenous Device and Venipuncture](#)
- b. When changing the central catheter dressing, use clean gloves to remove the old dressing and sterile gloves to apply the new dressing, performing hand hygiene before applying gloves and then between glove change. A mask is worn for the dressing procedure by the healthcare personnel and for the patient who is unable to turn their head away from the catheter site and for all persons at the bedside.
- c. PIV dressings are changed wearing clean gloves
- d. Change transparent dressings and perform site care every 7 days or immediately if the

dressing is soiled loose, or damp; change gauze dressings every 2 days or earlier if the dressing is soiled loose or damp.

- e. If intravenous access is achieved through a burn or wound and a dressing will not adhere, a dressing appropriate for the underlying burn or wound may be used. CVAD Liaisons can be contacted for assistance with hard to dress intravenous access.
- f. Less frequent dressing changes may be used for selected pediatric patients to reduce the risk of catheter dislodgement.
- g. Do not submerge the catheter under water (e.g., tub baths or swimming). Showering is permitted if precautions are taken to reduce the likelihood of introducing organisms into the catheter (e.g., use an impermeable covering for the catheter and connecting device during the shower.)
- h. Do not use topical antibiotic ointment to the insertion site during dressing changes because of the potential to promote fungal infections and antimicrobial resistance. An exception to this guidance is hemodialysis catheters.

7. Administration Sets

a. General Recommendations

- i. Replace administration sets including secondary sets, add on devices, and all needleless access devices every 96 hours
- ii. Change all IV tubing whenever a catheter is removed due to a suspected catheter-related infection.
- iii. Extension tubing attached to the catheter should be treated as part of the catheter.
- iv. It is not necessary to change the IV fluids at the time the tubing is changed unless the bag has been hanging for 96 hours or contamination is suspected.
- v. Tubing/bag connection must be prepped with a sterile alcohol swab for a minimum of 5 seconds and allowed to dry prior to removing old tubing and spiking new bag.
- vi. Change IV tubing whenever contamination is suspected (e.g., uncapped end of tubing falls on the floor or bed)

b. Tubing Medication Specific Administration Sets

- i. Tubing should be changed every 96 hours
- ii. Exception:
 - Lipid- Free Parenteral Nutrition (PN) tubing
 - Adults: Change tubing every 24 hours
 - Pediatrics: Change tubing at least every 96 hours
- iii. Lipids and Lipid Containing Parenteral Nutrition (PN)
 - Adults & Pediatrics: Change tubing every 24 hours
- iv. Lipid based intravenous medications (e.g., Propofol, Clevidipine)

- Change tubing every 12 hours

v. Blood

- Do not exceed 4 hours for infusion duration
- Dispose of all blood products and administration tubing after 4 hours.

NOTE: Do not infuse multiple units through the same blood administration tubing unless you are certain all units will completely infuse in less than 4 hours.

- After 4 hours of use, the blood administration tubing filter becomes full of product debris and will decrease the flow rate and damage the red cells.

vi. Vasopressors or other Life Supporting Medications

- For critically ill patients who are receiving vasopressors or other life supporting medications through a manifold stopcock system, it is allowable to delay changing the manifold. When the patient's condition improves, the manifold should be changed at the same interval as the remainder of the administration sets.

vii. Label IV tubing with the date the IV tubing is hung, date tubing is due to be changed and initials.

viii. It is not necessary to change the IV fluids at the time the tubing is changed unless the bag has been hanging for 96 hours or contamination is suspected.

c. Prime & Spike

i. Preoperative areas (PCS), VIR, Cardiac Cath Lab, PACU, GI procedures, and outpatient infusion areas are allowed to spike and prime IV sets up to 96 hours.

ii. Ready-to-use IV set-ups must be maintained in a secured manner until used.

iii. Label prime and spiked bag with date and time it was spiked, date it is due to expire and initials.

iv. Any left over, unused IV set-ups should be discarded when expired.

d. Accessing Intravenous Devices

i. Using a circular motion (like juicing an orange), vigorously cleanse needleless access ports with a sterile alcohol swab for a minimum of 5 seconds prior to accessing or per manufacturer's instructions for product used.

ii. The IV system should remain a closed system. If tubing must be disconnected, use aseptic technique to prevent contamination. The catheter must be capped with a needleless access port and the administration set tubing closed with a sterile cap.

iii. Routinely flush intravenous access devices per nursing policy.

8. Pressure Monitoring Systems (Arterial and Venous)

- a. Keep all components of the pressure monitoring system (including calibration devices and flush solution) sterile.

- b. Minimize the number of manipulations and entries into the pressure-monitoring system. Use a closed-flush system (i.e., continuous flush), rather than an open system (i.e., one that requires a syringe and stopcock), to maintain the patency of the pressure-monitoring catheters. If stopcocks are used, treat them as sterile and cover them with a sterile cap or syringe when not in use.
 - c. Replace the pressure monitoring system every 96 hours.
 - d. Do not administer dextrose-containing solutions or parenteral nutrition fluids through the pressure monitoring circuit.
9. Preparation and Quality Control of Intravenous Admixtures
- a. Admix all parenteral fluids in the Pharmacy under a laminar-flow hood using aseptic technique. Strict aseptic technique must be used when preparing these solutions. Refer to the Infection Prevention Policy: [Pharmacy](#).
 - b. Check all containers of parenteral fluid for visible turbidity, leaks, cracks, particulate matter, and the manufacturer's expiration date before use and discard if present or solution expired. Report abnormal observations to the originating source of the parenteral fluid (i.e. pharmacy for pharmacy prepared medications, central distribution for stocked fluids, etc.) Share any information that could assist in identifying a wider issue such as lot numbers, date of preparation, type of defect, etc.
 - c. Medication Vials
 - i. Cleanse the rubber diaphragm of medication vials with a sterile alcohol swab and allow to dry prior to entering.
 - ii. Each entry into a vial should be achieved using a new sterile syringe and new sterile needle or a new sterile needleless access device.
 - iii. If a sterile access device (vial adaptor) is used, a new sterile syringe must be used for each access. Cleanse the access port with a sterile alcohol swab for a minimum of 5 seconds prior to accessing.
10. "Hang Time" for Parental Fluids. These guidelines apply to the bag of fluid only. See Administration Sets (section 7.) for frequency of administration set replacement.
- a. Commercially prepared parenteral fluids (e.g. normal saline, D5%) can hang for a maximum for 96 hours.
 - b. Admixed by pharmacy (under a laminar flow hood) parenteral fluids can hang for a maximum of 48 hours. Beyond use dating allows the admixed fluids to hang for 48 hours after the bag is spiked.
 - c. Parenteral fluids admixed on the unit must be replaced as soon as possible by those prepared in pharmacy, but may hang for a maximum of 24 hours. These fluids include all medication drips and syringe pump infusions, prepared by the nurse on the patient care unit. The type of medication, the manufacturer, or Pharmacy may indicate a shorter expiration time.
 - d. Parenteral nutrition fluids (PN)/lipids should be completed within 24 hours or no longer than specified expiration on label.

- e. Infusions of blood and blood products should be completed within 4 hours of hanging.
 - f. Epidural fluids may hang no longer than 48 hours.
 - g. Patient Controlled Analgesia (PCA)
 - i. Commercially prepared PCA fluids can hang per the manufacturers' recommendations of 96 hours
 - ii. PCA fluids admixed in pharmacy can hang for a maximum of 48 hours
11. In-Line Filters
- a. Do not routinely use filters for infection prevention purposes. In-line filters are used with PN and other medications to prevent infusion of precipitates.
12. Prophylactic Antimicrobials
- a. Do not routinely administer antimicrobials for prophylaxis of catheter colonization or bloodstream infection before insertion or during use of an intravascular device. Prophylactic Antibiotic Lock Therapy might be considered in high-risk patients to prevent CLABSIs in lines that are infrequently accessed such as dialysis and chemotherapy lines. See UNC Health Care Pharmacy Services policy: [Antibiotic Locks for the Treatment or Prevention of Catheter-Related Bloodstream Infections](#)

B. Additional Recommendations for Peripheral Venous Catheters

- 1. Selection of Catheters
 - a. Select catheters based on the intended purpose and duration of use, known complications (e.g., phlebitis and infiltration), and experience at the institution.
- 2. Selection of Insertion Site
 - a. Considerations for selection of insertion site include:
 - i. Maintenance of asepsis and risk of infection
 - ii. Risk of mechanical complications
 - iii. Patient-specific factors (e.g., preexisting catheters, anatomic deformity)
 - iv. Security
 - v. Comfort
 - b. Major risk factors for infection
 - i. The density of skin flora at the insertion site and risk of thrombophlebitis are major risk factors for infection. Lower extremity insertion sites are associated with higher risk of infection than upper arm extremity sites, in adult patients.
 - c. Insertion site selection based on age
 - i. In adults, use an upper extremity site in preference to one on a lower extremity for catheter insertion (e.g., hand, wrist, and arm). Replace a catheter inserted in a lower

extremity site to an upper extremity site as soon as possible.

- ii. In pediatric patients (1-12 years of age) insert the catheter into the veins of the hand, wrists, or forearm. At the request of the patient's physician, lower extremities may also be used but this is recommended for non-ambulatory children only and when no other site is available. Refer to Nursing policy: "[Peripheral Intravenous Device and Venipuncture.](#)"
- iii. In children <1 year of age, insert the catheter preferably in the superficial veins of the hands, arms, feet, or legs. Scalp veins (in neonates or young infants) can be used as the catheter insertion site.

3. Catheter Insertion

- a. Perform hand hygiene before putting on gloves. Wear clean gloves during catheter insertion. **Do not cut off glove's fingertip.**
- b. Refer to section III.A.5. of this policy for skin preparation.

4. Catheter-Site Dressing

- a. Peripheral venous/arterial catheters are dressed with a sterile transparent dressing. The dressing should be changed every 7 days **or whenever damp, loosened or soiled**. Change dressing according to [the Nursing policy: Peripheral Intravenous Device and Venipuncture.](#)

5. Catheter Change

- a. Catheter may remain in place until there is a clinical indication to change it. Clinical indications to change a peripheral IV include: inability to flush catheter, warmth, tenderness, erythema, or palpable venous cord at the insertion site or when patient develops a peripheral IV related bacteremia.
- b. Consider removing and/or replacing catheters inserted under emergency conditions, if breaks in aseptic technique were likely to have occurred.

6. Medlocks

- a. All infection control guidelines for peripheral venous catheters and central venous catheters receiving a continuous infusion apply to medlocks that are used for intermittent infusion.
- b. Medlocking IVs for patient transport:
 - i. If necessary to medlock IV, the process should be done aseptically
 - Sterile cap placed on end of administration set (do not connect IV tubing back into the needleless access port).
 - Needleless access device should be disinfected using a sterile alcohol swab prior to reconnection.

7. Midline Catheters

- a. Midline catheters are inserted by a Venous Access Team Registered Nurse and are used for patients who are receiving iso-osmotic, non-irritating IV medications for greater than 6 days.
- b. Midline catheters are standard peripheral catheters that do not extend beyond the axillary

region (do not enter a central vein). These catheters have a lower rate of phlebitis than short peripheral catheters and are not routinely changed.

- c. The site dressing is changed every 7 days or whenever damp, loosened, or soiled.
- d. For care and maintenance of Midline Catheters, refer to [Nursing Policy: Midline Catheter-Adults](#).

C. Additional Recommendations for Central Venous Catheters

(Including PICC, Pulmonary Artery Catheters in Adult and Pediatric Patients)

1. Patients/family member should be educated regarding measures to prevent catheter-associated infections and documented.
2. Selection of Catheters
 - a. Use a catheter with the minimum number of ports or lumens essential for the management of the patient.
 - b. A peripherally inserted central catheter (PICC) may be indicated when the duration of therapy is expected to exceed 6 days.
 - c. Use tunneled catheters (i.e., Powerlines, Hickman or Broviac) or implantable vascular access devices (i.e., ports) when long-term vascular access (>30 days) is anticipated. Use totally implantable access devices for long-term intermittent venous access. Use a tunneled catheter for frequent or continuous access.
3. Selection of Insertion Site
 - a. The risk and benefits of different insertion sites (e.g., subclavian vein vs. internal jugular vein) must be considered on an individual basis with regard to infectious and noninfectious complications.
 - b. Avoid using the femoral vein for central venous access in adult patients when the catheter is placed under planned and controlled conditions.
4. Catheter Insertion
 - a. Central catheters should be inserted with maximal sterile barrier technique (e.g., patient draped in a sterile drape from head to toe) using sterile equipment. This includes sterile gloves, sterile gown, hair covering and a surgical mask with eye protection.
 - b. A checklist can be used as a reminder for important elements of insertion. Here is a link to the [Central Line Insertion Check List](#), which can also be found in the plastic sleeves of the triple lumen and introducer kit.
 - c. Needle-guided access using ultrasound technology should be used for CVAD insertion whenever possible to reduce the risk of mechanical complications and infection. Transilluminators may also be used for catheter insertion.
 - d. Perform all ultrasound guided vascular access device insertions (PIV, Midline, PICC, CVC, arterial line) with the use of a sterile sheath and single-use sterile gel.

- e. When inserting the catheter, a wide field should be prepped using a 2% chlorhexidine gluconate and alcohol solution (e.g. Chloraprep) unless there is a contraindication in which case 70% alcohol or 10% povidone iodine may be used. Solutions should be allowed to air dry.
- f. Use a sterile sleeve to protect pulmonary artery catheters.
- g. The catheter site should be dressed immediately after insertion.
 - i. **Temporary (<30 days) non-tunneled catheters** (e.g., triple lumen catheters) should be dressed immediately after insertion. This includes catheters placed in Vascular Interventional Radiology (VIR) and the Operating Room (OR).
 - ii. **Long-term tunneled catheters** (e.g., broviacs, hickmans) are dressed as a central line.
 - iii. **Implanted ports** are dressed as a surgical wound immediately after placement. When the port is accessed with a non-coring needle (e.g., Port Safety Needles), the site is dressed as a central line. The dressing and non-coring needle are changed every 7 days.

5. Central Venous Catheter Dressing Changes

- a. Generally, central venous catheters (including Peripherally Inserted Central Catheters – PICC's) are dressed using a sterile transparent dressing and CHG impregnated product. The dressing is changed every 7 days or sooner if the dressing becomes loosened, damp, or soiled.
- b. A CHG containing product (i.e. CHG Tegaderm, BioPatch) should be used on central venous access devices and midline catheters for inpatients unless contraindicated. Contraindications include: sensitivity to product, umbilical catheter, and use on PICC lines with premature infants in NCCC. The CHG containing product should be placed at the insertion site within 24 hours of catheter placement. If the dressing must be changed prior to the 7 day time-period, the CHG containing product also should be changed at that time.
- c. **Refer to the [Nursing policy: Central Venous Access Device \(CVAD\) Care & Maintenance](#)** for detailed instructions.

6. Catheter exchange/replacement

- a. Do not routinely replace temporary central venous catheters or PICCs as a method to prevent catheter-related infections.
- b. Do not routinely replace pulmonary artery catheters more frequently than 7 days as a method to prevent catheter-related infection.
- c. Do not remove CVC or PICCs solely because of fever. Use clinical judgment regarding the appropriateness of removing the catheter if there is evidence of infection elsewhere
- d. Guidewire Exchange
 - i. Routine guidewire exchange of non-tunneled catheters has not been shown to reduce CRBSI and should be avoided
 - ii. Use a guidewire exchange to replace a malfunctioning non-tunneled catheter if there is **no evidence of infection** and the risk of inserting a catheter into a new site is

unacceptably high. This procedure is completed using the same aseptic technique as used to place a new central line.

iii. Use full barrier precautions (hair cover, mask, sterile gown, gloves, towels, drape) and site preparation as if placing a new catheter in a new site. Use a new set of sterile gloves prior to handling the new catheter.

e. Do not use guidewire-assisted catheter exchange whenever catheter-related sepsis is documented or tunnel/IV site infection is present. If the patient requires continued vascular access, remove the implicated catheter and replace it with another catheter at a new site.

7. Flush Solutions and Anticoagulants

a. Patients with a positive HIT test (heparin induced thrombocytopenia) or pending HIT test result should not receive heparin. Use of a positive or neutral pressure cap is recommended.

b. Use commercially prepared, pre-filled flush solutions.

8. Additional Recommendations for Hemodialysis/Apheresis Catheters

a. Selection of Catheter

i. Use cuffed tunneled central venous catheters for hemodialysis if the period of temporary access is anticipated to be prolonged (i.e., >3 weeks). Use a fistula or graft instead of a central catheter for permanent access.

b. Selection of Insertion Site

i. Use the jugular or femoral vein rather than a subclavian vein to avoid venous stenosis.

c. Catheter Insertion

i. Whenever possible, these catheters should be placed in Vascular Interventional Radiology or the Operating Room. If, under emergent conditions, the catheter must be placed outside these areas, follow the insertion guidelines for central venous catheters provided in this policy.

d. Catheter Changes

i. Do not routinely replace hemodialysis catheters as a method to prevent catheter-related infection. There is no routine change required for hemodialysis/apheresis catheters. Refer to the catheter change section for Central Venous Catheters in this policy for additional information regarding catheter changes.

e. Additional Guidelines

i. Catheters, shunts, fistulas, femoral, subclavian, or other vascular access catheters (e.g., ECMO cannulas) will be cared for using meticulous aseptic technique. Hemodialysis Policies and the Apheresis Catheter Policies describe in detail care for these devices. ECMO vascular access catheter care is performed following the guidelines in the [ECMO policy: Extracorporeal Membrane Oxygenation \(ECMO\)](#).

ii. Only hemodialysis staff/nephrologists may access catheters used for dialysis. The only exception to this policy would be in the event of a life threatening medical emergency where rapid vascular access is required for resuscitation. If the catheter is being

considered for other purposes, the Nephrology Consult Service should be contacted.

- iii. Hemodialysis and Apheresis staff will perform catheter dressing changes on treatment days when indicated. When dressing changes are performed by other clinical personnel, follow the guidelines provided in this policy and nursing policy.

D. Management of Parenteral Nutrition (PN)

Although parenteral nutrition can be a lifesaving therapeutic modality, complications are possible. Reported complications include metabolic derangements, hepatic injury, sepsis, thrombosis of central veins, and extravasation of fluid. However, the most frequently noted serious complications of parenteral nutrition have been metabolic derangements and sepsis. Refer to the [Nursing policy: Parenteral Nutrition \(PN\)](#) for additional guidelines.

1. Guidelines for Administration of Parenteral Nutrition (PN) Therapy

- a. Adult patients receiving Parenteral Nutrition therapy (PN) at UNC Medical Center are overseen by the Adult Parenteral Nutrition Service which is a multidisciplinary team comprised of pharmacists, dietitians and a physician with particular expertise in parenteral nutrition. This team oversees the metabolic monitoring of adult patients receiving PN and advocates for sound infection control principles and techniques to physicians and nurses charged with the care of parenteral systems.
- b. For patients receiving long term PN, disconnection at the PN tubing/catheter junction may be necessary under the following circumstances:
 - i. **PN Cycling:** PN may infuse over shorter time-periods, such as 12, 14, 16, or 20 hours. Each time-period is called a "cycle." If tubing must be disconnected, use aseptic technique to prevent contamination. The catheter must be capped with a needleless access port and the administration set tubing closed with a sterile cap. The tubing may be reattached to the catheter junction as long as aseptic technique is used, no contamination is suspected and the PN bag has not expired past 24 hours.
 - ii. **Central line change and no infection is suspected:** The disconnected tubing must be capped with a sterile device using aseptic technique. After the catheter is changed and placement verified by x-ray, the tubing may be reattached to the catheter junction as long as aseptic technique is used and no contamination is suspected.
 - iii. **Central line change and infection is suspected:** new tubing must be attached to the PN bag. The bag/spike connection must be prepped for a minimum of 5 seconds with a sterile alcohol swab and allowed to dry prior to removing the old tubing. Spike the bag with the new tubing using aseptic technique.
 - i. If the bag was contaminated during re-spiking, the old bag of PN and tubing will need to be discontinued. New tubing should be attached.
 - ii. For the adult PN patient, dextrose containing IVF (e.g. D5%) should be ordered by provider and administered until a new PN bag can be dispensed.
- c. The physician must be notified of signs of inflammation, erythema or purulent drainage at the IV catheter site. However, catheters may be the source of septicemia even if local signs of inflammation are not present.

- d. In addition to patient identification, a distinctive supplementary label should be attached to each parenteral nutrition admixture (PN) stating, at a minimum; volume of solution, the additives and their dosages, the date and time of compounding, the expiration date and time.
- e. In some instances, parenteral Nutrition may also be delivered via peripheral IV catheters.
- f. Once PN is started through a lumen, do not use that lumen for any other purpose (e.g., administration of fluids, blood/blood products). Do not rotate the PN lumen. PN catheters remain in place for long-periods of time and have the highest risk of infection. Exceptions may be made with an LIP's order.

E. Peripheral Arterial Catheters

1. Arterial Catheter Insertion

- a. A cap, mask, sterile gloves, and a large sterile fenestrated drape should be used during peripheral arterial catheter insertion.
 - i. For peripherally inserted arterial catheters in the neonatal population, minimally sterile gloves and mask is required during insertion.
- b. The site is prepped and dressed using guidelines for peripheral venous catheters
- c. Use disposable, rather than reusable, transducer assemblies.
- d. Replace transducers at 96-hour intervals. Replace other components of the system (e.g., tubing, continuous flush device, flush solution) at the time the transducer is replaced.

2. Arterial Catheter Changes

- a. Replace arterial catheters only when there is a clinical indication.

F. Recommendations for Umbilical Catheters

1. Catheter Insertion/Care

- a. Umbilical arterial and venous catheters are placed using sterile technique with sterile barrier, gowns, masks, and gloves. Hair and beards must be covered.
- b. Cleanse the umbilical insertion site with an antiseptic before catheter insertion. Avoid tincture of iodine because of the potential effect on the thyroid. Povidone iodine may be used.
- c. Dressings are not routinely applied.
- d. Add low dose heparin to fluid infused through umbilical artery catheters.
- e. Do not use topical antibiotic ointment or creams on an umbilical catheter insertion site.
- f. Replace IV tubing and all add on devices at least every 96 hours; lipid-containing lines are changed every 24 hours.
- g. Complete infusions of lipid containing fluids within 24 hours of hanging the fluid.

2. Catheter Changes

- a. Umbilical catheters should be removed as soon as no longer essential for medical management or for any signs of catheter-related bloodstream infection.

- b. Umbilical catheters are not routinely changed.
- c. Optimally, remove umbilical arterial catheters within 5 days. Umbilical venous catheters can be left in place up to 14 days if managed aseptically.

G. Special Considerations – Documentation

Licensed Independent Practitioners (LIPs) and/or nurses should document the following:

1. Placement of IV lines under non-sterile conditions such as in emergencies.
2. Use of hemodialysis, PN catheters for other purposes.
3. Inability to change a catheter despite known or probable catheter sepsis.
4. Any line related complications (e.g., phlebitis, extravasation with tissue damage, sepsis).
5. Education of patients and caregivers of patients going home with central line catheters.

H. Management of Stopcock Ports

1. Stopcocks should be used only when absolutely necessary, as in the care of critically ill patients.
2. Prep all ports with a sterile alcohol swab and let dry prior to access
3. Stopcock ports must be covered with a sterile cap. Never reuse an old cap. Stopcocks on venous lines (not arterial lines) should be capped with a needleless access cap and all accesses should be through the cap.
4. Flush stopcock immediately if blood is seen in the port.

I. IV-Related Infections

1. Notify the LIP if there is a suspicion of site infection. Clean site and cover with a small occlusive sterile dressing.
2. If an IV system is to be discontinued because of suspected IV-related infection, such as purulent thrombophlebitis or bacteremia, the skin at the skin-cannula junction should be cleaned with CHG/alcohol allowing 30 second contact time and allowed to dry before cannula removal.
 - a. Notify Infection Prevention of any suspected contamination of IV fluids.
 - b. If contamination of fluid is confirmed, the implicated bottle and the remaining units of the implicated lot should be saved, and the lot numbers of fluid and additives should be recorded.
 - c. If intrinsic contamination (contamination during manufacturing) is suspected, the local health authorities, CDC, and the U.S. Food and Drug Administration should be notified immediately.

IV. Responsibility Statement

Implementation of this policy is the responsibility of Nursing service line directors, Vascular Access Team, Nutrition Support Service, and Medical Staff.

V. References

CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2011.

Infusion Nurses Society. Infusion Nursing Standards of Practice. Journal of Infusion Nursing. Jan/Feb 2016.

Infusion Nurses Society. (2011) Policies & Procedures for Infusion Nursing, 4th Edition.

VI. Related Policies

[ECMO policy: Extracorporeal Membrane Oxygenation \(ECMO\)](#)

[Infection Prevention policy: Pharmacy](#)

[Infection Prevention policy: Hand Hygiene and Use of Antiseptics for Skin Preparation](#)

[Nursing policy: Central Venous Access Device \(CVAD\) Care and Maintenance](#)

[Nursing Policy: Midline Catheter- Adults](#)

[Nursing policy: Parenteral Nutrition](#)

[Nursing policy: Peripheral Intravenous Device and Venipuncture](#)

[Pharmacy policy: Antibiotic Locks for the Treatment or Prevention of Catheter-Related Bloodstream Infections](#)

Attachments:

- 1: Quick Reference Timing for Tubing Changes
- 2: Quick Reference: Hang Time Reference for Parenteral Fluids

Approval Signatures

Step Description	Approver	Date
Policy Stat Administrator	Patricia Ness: Clin Nurse Education Spec	12/2019
	Thomas Ivester: CMO/VP Medical Affairs	12/2019
	Emily Vavalle: Director, Epidemiology	10/2019
	Sherie Goldbach: Infection Prevention Registrar	10/2019

Applicability

UNC Medical Center