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CENTER OF SPECIAL CARE
POLICY AND PROCEDURES

TITLE: INTRAVENOUS (I.V.) THERAPY – GUIDELINES/STANDARDS OF CARE	**EFFECTIVE/LAST MODIFIED DATE:** 9/13/2025
NEXT REVIEW DATE: 9/13/2027	
RESPONSIBLE DEPARTMENT/COMMITTEE:P&T COMMITTEE, CLINICAL PRACTICE COUNCIL	
APPROVED BY: VP OF NURSING/CNO	
CITATION/REFERENCES: Nickel, B. et al.(2024) Infusion Nursing Standards of Practice, 9th ed. *Journal of Infusion Nursing*, 47(*1S).* INS (2024). *Policies and Procedures for Infusion Therapy: Acute Care,* 7th ed. Infusion Nurses Society. Centers for Disease Control and Prevention. (2024) Central Line-Associated Bloodstream Infection (CLABSI) Basics. Resource and tools. ***efaidnbmnnnibpcajpcglclefindmkaj***/http://www.cdc.***gov healthcare-associated infections***/media/pdfs/checklist-for-CLABSI-P-pdf	
REPLACES/PREVIOUS TITLE: N/A	

PURPOSE: Provide safe, quality, and age-appropriate intravenous (I.V.) care using the best available evidence and current practice standards for central and peripheral intravenous therapy at Hospital for Special Care (HFSC).

POLICY:

1. A physician or advanced practice provider (APP) order is required to initiate an intravenous line and/or I.V. therapy. The order must include the type of solution, medications, additives and the total 24-hour volume to be infused and/or the hourly rate of flow. Note: A validated nurse may initiate an I.V. of Normal Saline at a rate of 30 ml/hour or to keep vein open (KVO) in an emergency.

2. I.V.s are administered via a volume infusion pump, except in emergency situations.

3. I.V. solution orders expire every 24 hours.

4. All I.V. solutions will be labeled with patient's name, visit ID, date, type of solution, and additives/medication(s).

5. Patients on continuous or intermittent I.V. therapy will be placed on Intake and Output (I&0).

6. Patients receiving I.V. therapy are monitored hourly. Monitor:
   6.1 Fluid level in I.V. bag
   6.2 Rate of infusion
   6.3 Patient response to I.V. therapy

7. Trace IV tubing from the patient to the point of origin before infusing IV fluids or medications.

8. It is preferred to route all IV lines toward the patient's head, to minimize the risk of dangerous medical errors.

9. Pediatric patients less than one year of age must have a filtered IV set.

10. All licensed nurses who will be administering I.V. therapy at Hospital for Special Care receive I.V. education and competence assessment during their orientation. They must meet hospital competency requirements prior to performing I.V. skills independently.

11. Long line IV catheters such as midline or peripherally inserted long lines or "PILL" catheters are not central line catheters. They are utilized as peripheral lines and are not to be used to infuse TPN or vesicant drugs. After insertion, tip placement is verified before use via ultrasound and blood return and documented in the electronic medical record (EMR).

REGISTERED NURSES' (RN) I.V. RESPONSIBILITIES:

1. All RN's – (HFSC staff, agency/travel, and newly licensed RNs) must attend an IV Class on use of the IV Infusion pump and IV policies. The class educates nurses on the CDC CLABSI bundle for prevention of patient harm (See Appendix A). Following the class, IV skills will be validated on the unit with a preceptor/resource who will access their competencies related to IV therapy (referring to HFSC policy). RN's who have completed the HFSC IV Therapy education requirements may:
   - 1.1 Administer IV solutions, medications via continuous infusion, TPN and lipids via peripheral or central lines.
   - 1.2 Administer IV intermittent medications via central catheters.
   - 1.3 Perform IV tubing changes on central lines (primary and secondary).
   - 1.4 Administer flushes to maintain central line patency.
   - 1.5 Administer IV push medications (per HFSC IV Therapy Standards) via peripheral and central line catheters.
   - 1.6 Convert a continuous infusion via central line to a Lock.
   - 1.7 Administer blood and blood products as per HFSC policy.

2. RN's who have completed and met the HFSC IV Therapy education requirements and clinical validation requirements may also:
   - 2.1 Insert peripheral IV catheters.
   - 2.2 Perform a peripheral phlebotomy to obtain lab specimens.
   - 2.3 Access and de-access implanted vascular access devices (IVAD's) or VAD ports.
   - 2.4 Perform site care, inspection and application of a central venous catheter (CVC) Authoring Device (if needed) on all central catheters.
   - 2.5 Utilize the Centers for Disease Control and Prevention (CDC) Checklist for prevention of Central Line Associated Blood Stream Infections (See Appendix A).
   - 2.6 Draw blood from central line catheters.

AGENCY/TRAVEL RN I.V. RESPONSIBILITIES POST VALIDATION:

1. After satisfactory completion of education and competency skill validation, the agency/travel nurse may perform all the skills of the RN listed above.

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LICENSED PRACTICAL NURSE (LPN) IV RESPONSIBILITIES:

1. All LPN's are required to attend an IV Class on use of the IV Infusion Pump and HFSC policies.

2. LPN's who have completed IV education and competency requirements are responsible for the following:
   - 2.1 Administer via IV Infusion Pump peripheral IV fluids with additives that are premixed or added by Pharmacy. Exceptions to this are vasopressors, antidysrhythmics, adrenergics, high risk/high alert medications or TPN/Lipids.
   - 2.2 Administer IV antibiotics via peripheral lines, after RN has administered first dose.
   - 2.3 Perform tubing changes on peripheral and central IV's.
   - 2.4 Remove peripheral IV catheters and document condition of site post removal.
   - 2.5 Provide second check of blood to be administered with an RN. Monitor a patient receiving a blood transfusion after the first 15 minutes. (HFSC IV validated RN must be with the patient for the first 15 minutes of a transfusion and must discontinue the transfusion.)
   - 2.6 Flush a peripheral IV catheter with Normal Saline.
   - 2.7 Regulate rates of peripheral IV's.

   Specific Central Line Responsibilities:
   - 2.8 Maintain central line patency with ordered flushes. IVAD (ports) must be first accessed by RN prior to LPN flushing.
   - 2.9 Infuse IV solutions and antibiotics through a central line. IVADs (ports) must be first assessed by RN prior to LPN infusing IV solutions and antibiotics.
   - 2.10 Perform PICC sterile dressing changes and care per Centers for Disease Control and Prevention (CDC) CLABSI standards patient care.

I.V. TUBING CHANGE:

1. Intravenous tubing will be changed as follows:
   - 1.1 Primary and secondary tubing are changed every 96 hours. Avoid disconnecting primary and secondary administration sets whenever possible (Nickel et al., 2024, p. S137).
     - 1.1.1 If the secondary administration set is disconnected from the primary set, the secondary set is now considered a primary intermittent administration set and is changed every 24 hours (Nickel et al., 2024, p. S137).
     - 1.1.2 Change intermittent administration sets every 24 hours (Nickel et al., 2024, p. S137).
   - 1.2 TPN and lipids tubing change every 24 hours.
   - 1.3 Blood administration tubing is changed with each unit of blood administered.
   - 1.4 Attach a new, sterile, compatible covering device to the male luer end of the administration set after each intermittent use. Do not attach the exposer male luer end of the administration set port on the same administration set (looping).
   - 1.5 Cover tubing administration port when not in use with alcohol impregnated cap (e.g. Curos™).

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2. Label all tubing changes with date and initials.
3. Tubing changes should be coordinated with solution change.
4. Intermittent medication and/or bolus fluid administration tubing that is disconnected from will not be used again in the next 24-hour period should be discarded and a new tubing used with the next I.V. dose.

CATHETER LABELING:

All I.V. catheters must be clearly labeled as to catheter type and gauge. Most manufacturers identify the type and gauge of their catheters. The printing may be on the catheter wings, extensions, or hub. If there is no identification present, the nurse will attach a label identifying catheter type and gauge (i.e. PICC – 3 French).

DOCUMENTATION:

EMR: Admission Note-Complete IV data section; identify IV therapy in Nursing Plan of Care. Select the Assessment and Cares parameter specific to the type of I.V. catheter to document routine care requirements and the flushing requirements for that specific catheter. Document medication administration using KBMA function in EMAR. IV insertions are documented in Nursing Procedure Note. IVAD Access and De-access are documented on a Nursing Procedure Note.

Problems with and removal of central line catheters will be documented in Assessment and Cares, and additional information may be documented using a DAR Nursing Note.

CATHETER FLUSHING:

Maintenance flush refers to flushes that are routinely scheduled when the IV line is not being used to administer IV fluids or IV medications. Maintenance flushes are done to prevent line occlusion.

Intermittent flushes are used to prevent line occlusion when the line is used intermittently. Peripheral lines are flushed with Normal Saline. Central lines are also flushed with Normal Saline, and may be flushed with heparin solution (only if ordered by Provider).

Check for presence of blood return prior to flushing.

1. **PERIPHERAL LINE FLUSHES**: Use Push/Pause Technique
   1.1 Flush with 3 ml preservative free 0.9% sodium chloride (Normal Saline or NS) every 8 hours if catheter is not being used. Flush with 3 ml Normal Saline after use and prior to next infusion.

2. **CENTRAL LINE FLUSHES**: Use 10 ml syringe or larger to flush a central line – Push/Pause Technique. Unless otherwise ordered by Provider or recommended by central line manufacturer, 0.9% preservative free sodium chloride solution (Normal Saline or NS) flush is the standard flush solution. If heparin is ordered by Provider, 30 units/3mL Heparin flush solution is used after flushing with normal saline.

   2.1 **Multi-lumen Catheter (MLC):**
   Maintenance: 10 mL Normal Saline to each lumen

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Intermittent: Flush before and after medication with 10 ml Normal Saline. When conducting blood sampling, consider flushing other lumens at that time to reduce the possibility of changing the intraluminal pressure causing blood reflux into the other lumens (Nickel et al., 2024, p. S137).

2.2 **Implantable Vascular Access Devices or ports (IVADS):** (Adult)
Monthly Maintenance and De-Access: Use 5 ml of 100 units/mL Heparin (500 units)
Maintenance: If IVAD accessed: 10 mL Normal Saline every 8 hours.
Intermittent: 10 mL Normal Saline after each use. Flush after medication and prior to next medication dose.

2.3 **Tunneled (e.g. Hickman/ Broviac) Catheter:**
Maintenance: 10 mL Normal Saline every 24 hours to each unused lumen.
Intermittent: Flush after medication with 10mL Normal Saline Flush with Normal Saline prior to next medication dose.

2.4 **Peripherally Inserted Central Catheters (PICC):**
Maintenance: 10mL Normal Saline flush every 8 hours for each port (single or double lumen).
Intermittent: Flush after medication with 10 ml Normal Saline Flush with Normal Saline prior to next medication dose.

3. **Pediatric**-If Heparin Flush used, Dosage Guidelines:
Dosage for Heparin is calculated using the following:
10 units of Heparin per Kg. If calculated dose is 30 units or greater, use single dose prefilled Heparin flush of 30 units (3 ml) for each lumen every 24 hours or after each use.

4. **Long line peripheral flushes (midline or PILL lines):**
Maintenance: 10mL Normal Saline every 8 hours for each port (single or double lumen)
Intermittent: 10 mL Normal Saline Flush after Medication.
Flush with Normal Saline prior to next medication dose.

5. Maintenance and intermittent heparin flushes (30u/mL) are only ordered in select situations. Some patients may develop heparin-induced thromobocytopenia (HIT), and in this situation all forms of heparin should be discontinued. Many medications are incompatible with Heparin. If

heparin flushes are ordered and to prevent incompatibilities, use a “SASH” technique. “SASH” technique is as follows:

- Saline flush
- Administer medication
- Saline flush to clear line
- Heparin flush

Appendix A: Checklist for Prevention of Central Line Associated Blood Stream Infections

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Checklist for Prevention of Central Line Associated Blood Stream Infections

Based on 2011 CDC guideline for prevention of intravascular catheter-associated bloodstream infections:
https://www.cdc.gov/infectioncontrol/guidelines/bsi/index.html
Strategies to Prevent Central Line–Associated Bloodstream Infections in Acute Care Hospitals: 2014 Update
http://www.jstor.org/stable/10.1086/676533

For Clinicians:

Follow proper insertion practices

- ☐ Perform hand hygiene before insertion.
- ☐ Adhere to aseptic technique.
- ☐ Use maximal sterile barrier precautions (i.e., mask, cap, gown, sterile gloves, and sterile full body drape).
- ☐ Choose the best insertion site to minimize infections and noninfectious complications based on individual patient characteristics.
  - Avoid femoral site in obese adult patients.
- ☐ Prepare the insertion site with >0.5% chlorhexidine with alcohol.
- ☐ Place a sterile gauze dressing or a sterile, transparent, semipermeable dressing over the insertion site.
- ☐ For patients 18 years of age or older, use a chlorhexidine impregnated dressing with an FDA cleared label that specifies a clinical indication for reducing CLABSI for short term non-tunneled catheters unless the facility is demonstrating success at preventing CLABSI with baseline prevention practices.

Handle and maintain central lines appropriately

- ☐ Comply with hand hygiene requirements.
- ☐ Bathe ICU patients over 2 months of age with a chlorhexidine preparation on a daily basis.
- ☐ Scrub the access port or hub with friction immediately prior to each use with an appropriate antiseptic (chlorhexidine, povidone iodine, an iodophor, or 70% alcohol).
- ☐ Use only sterile devices to access catheters.
- ☐ Immediately replace dressings that are wet, soiled, or dislodged.
- ☐ Perform routine dressing changes using aseptic technique with clean or sterile gloves.
  - Change gauze dressings at least every two days or semipermeable dressings at least every seven days.
  - For patients 18 years of age or older, use a chlorhexidine impregnated dressing with an FDA cleared label that specifies a clinical indication for reducing CLABSI for short-term non-tunneled catheters unless the facility is demonstrating success at preventing CLABSI with baseline prevention practices.
- ☐ Change administrations sets for continuous infusions no more frequently than every 4 days, but at least every 7 days.
  - If blood or blood products or fat emulsions are administered change tubing every 24 hours.
  - If propofol is administered, change tubing every 6-12 hours or when the vial is changed.

Promptly remove unnecessary central lines

- ☐ Perform daily audits to assess whether each central line is still needed.

For Healthcare Organizations:

- ☐ Educate healthcare personnel about indications for central lines, proper procedures for insertion and maintenance, and appropriate infection prevention measures.
- ☐ Designate personnel who demonstrate competency for the insertion and maintenance of central lines.
- ☐ Periodically assess knowledge of and adherence to guidelines for all personnel involved in the insertion and maintenance of central lines.
- ☐ Provide a checklist to clinicians to ensure adherence to aseptic insertion practices.
- ☐ Reeducate personnel at regular intervals about central line insertion, handling and maintenance, and whenever related policies, procedures, supplies, or equipment changes.
- ☐ Empower staff to stop non-emergent insertion if proper procedures are not followed.
- ☐ Ensure efficient access to supplies for central line insertion and maintenance (i.e. create a bundle with all needed supplies).
- ☐ Use hospital-specific or collaborative-based performance measures to ensure compliance with recommended practices.

Supplemental strategies for consideration:

- ☐ Antimicrobial/Antiseptic impregnated catheters
- ☐ Antiseptic impregnated caps for access ports