

CONSIDERATIONS:

1. This procedure is for administering a medication or a solution via a previously established vascular access device (VAD).
 - a. If line is not established, see procedure for *Peripheral Line* or for *Midline Catheter*. Peripheral line procedure is appropriate for single dose infusion.
 - b. Central lines are required for medications/solutions with a pH or osmolality above 900 mOsm/L
 - c. Consult with pharmacist before administering medications/solutions through a peripheral or midline catheter to determine pH and osmolality
2. Specific physician orders should include:
 - a. Medication name and dose
 - b. If medication is added to a solution, name of solution and amount
 - c. Route of administration, including type of VAD
 - d. Frequency of administration
 - e. Duration of infusion
 - f. If infusion should be run by gravity or infusion pump (optional). All IV solutions 300ml or greater must be on volumetric pump on dial a flow.
3. Before visit, review:
 - a. Medication's actions, usual dosage, indications for use, side effects and incompatibilities of the solution or medication. Determine if any special precautions need to be taken, such as, checking lab values
 - b. If using an infusion pump, review manufacturer's instructions.
 - c. Call the infusion company pharmacist if any questions/concerns about the medication, pump or rate of infusion before or during the visit.
4. Review patient's medical record for allergies, diagnosis drug is treating, co-morbidities and lab values related to drug therapy.
5. Instruct the patient or caregiver regarding storage and handling of supplies and patient care required in the absence of the nurse.
6. There are alcohol caps that can be used to protect needleless connectors between uses. This type of product is increasingly used as emerging research is demonstrating reduced risk of bloodstream infection. When such caps are applied, the need for scrubbing the needleless connector before access is eliminated. The cap is discarded once removed and a fresh cap applied after each infusion.
7. IV poles are not always available for home care infusion therapy. Use a hanger on a floor lamp (remove bulb), a coat rack, door frame or a picture hanger in the wall to hang solution at appropriate height.
8. Tubing must be primed to remove air prior to attaching to the patient's VAD. Tubing should be changed according to the national standards:
 - a. Continuous infusion - every 72 hours
 - b. Intermittent infusion - every 24 hours
 - c. TPN and fat emulsion (lipids) - every 24 hours
9. Luer-lock connections should be used whenever possible; if not, tubing connections should be taped and a tab left for ease of removal.
10. When medication is administered via a VAD, use the SASH method of flushing to reduce the risk of precipitation due to drug incompatibility:
S – Saline (5-10 mL or as prescribed)
A – Administer drug/solution
S – Saline (5-10 mL or as prescribed)
H – Heparin 10 units/mL (3-5 mL or as prescribed)
11. If infusing by gravity, regulate the drip rate and apply time tape to solution container:
 - a. Formula for computing mL/hour is:
$$\text{Infusion Volume (mLs)} \div \text{Duration (hours)} = \text{Rate (mL/hour)}$$
 - b. Formula for computing drops/minute is:
$$\text{Rate (mL/hr)} \times \text{Drop Factor of tubing (gtts/mL)} \div 60 \text{ (min/hr)} = \text{drops/minute}$$
 - c. When delivering a medication by gravity drip, a micro drip set (60 drops/mL) is preferred because, the number of drops/minute equals the amount of solution/hour.
12. Special procedures are included in the *Infusion Therapy* section of this manual for:
 - a. *Chemotherapeutic Agents*
 - b. *Immune Globin*
 - c. *Inotropic Meds*
 - d. *Patient Controlled Analgesia (PCA)*

EQUIPMENT:

- Gloves
- Alcohol applicator (wipe/swab/disk/ampule)
- Medication and/or IV solution, as ordered
- IV administration set and tubing
- Filter/extension set (If required for medication/solution)
- Prefilled syringes (2) of 10 mL normal saline
- Syringe of 5 mL heparin solution (10 units/mL or as prescribed)
- IV pole (optional)
- IV Pump (optional)
- IV rate controller (optional)
- Puncture-proof container
- Impervious trash bag

PROCEDURE:

1. If medication/solution is refrigerated, call patient/caregiver and instruct to remove from refrigerator 30 – 60 minutes before scheduled visit.
2. During visit, adhere to Standard Precautions and explain purpose of infusion to patient/caregiver.
3. Assess patient, with special attention to
 - a. Signs/symptoms related to the purpose of the medication/solution
 - b. VAD patency and entry site
4. Assemble and prepare medication/solution/equipment on a clean surface, with adequate lighting, close to the patient.
 - a. Check labels carefully against the physician's orders.
 - b. Check for cracks, discoloration or sediment in solutions. (Defective solutions should be returned to pharmacy supplier with a written report of findings.)
 - c. Check expiration dates
 - d. Add medication to solution, if necessary. Label the container with name of additive, date, time and nurse's initials.
5. Prepare tubing
 - a. Remove administration set from package and close roller clamp.
 - b. Attach filter/extension set (if required/recommended) to end of tubing opposite the spike
 - c. Invert solution container, remove protective cover and insert administration set spike.
 - d. Suspend solution container on IV pole
 - e. Squeeze drip chamber half full
 - f. Open roller clamp and allow fluid to prime tubing
 - g. Close roller clamp when fluid reaches the end of tubing.
6. If using an IV pump:
 - a. Follow manufacturer's directions for preparing tubing and connecting tubing to pump.
 - b. Assure correct programming of pump for infusion before connecting to patient. Program may require setting volume to be delivered, duration of administration, infusion rate, etc.
7. Administer medication/solution:
 - a. Clean injection port or needless adaptor with alcohol using friction for at least 15 seconds. Allow to air dry.
 - b. Attach syringe with 3 – 5 cc normal saline
 - i. Aspirate for blood return to assure line patency. Do not teach patient/caregiver this step.
 - ii. Flush line with normal saline. (If peripheral/midline VAD, observe site carefully for signs of leaking/infiltration)
 - iii. Remove syringe dropping into sharps container.
 - c. Clean port/adaptor with alcohol wipe
 - d. Connect IV tubing to port/adaptor and secure tubing with luer lock or tape.
 - e. Start infusion and regulate drip rate or start infusion pump.
8. During medication/solution infusion, monitor:
 - a. Drip rate, if pump not used
 - b. Patient's status and vital signs, if required by medication instructions
9. After medication/solution infused:
 - a. Stop pump or close roller clamp
 - b. Disconnect tubing from injection port/needleless adaptor. (If same medication will be infused the same day [within 24 hours], cap the end of the tubing so it can be used for next infusion without contamination
 - c. Disinfect port/alcohol with alcohol wipe using friction. Allow to air dry
 - d. Administer saline flush
 - e. Administer heparin flush (unless valved catheter or not prescribed)
10. Reassess patient as appropriate post-administration.
11. Discard soiled supplies in appropriate containers.

AFTER CARE:

1. Document in patient's medical record:
 - a. Medication name and dose
 - b. Solution name and amount
 - c. Route of administration, including VAD accessed, and if gravity or pump used
 - d. Time, date, and duration of infusion
 - e. Patient assessment pre- and post-infusion with special attention to diagnosis that medication is treating
 - f. Condition of infusion access site
 - g. Instructions given to patient/caregiver
 - h. Any communication with physician/pharmacist
2. Provide patient/caregiver education:
 - a. Signs/symptoms to report
 - b. Medication administration steps taught
 - c. Patient/caregiver response to teaching
 - d. Medication administration steps for which patient/caregiver provided return demonstration

REFERENCE:

Infusion Nurses Society (2011). *Policies and Procedures for Infusion Nursing*. 4th edition. Norwood, MA: Author.

Infusion Nurses Society (2011) Infusion nursing standards of practice. *Journal of Infusion Nursing* 34 (1S), S1-S110.

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