Services and Procedure Manual Annual Approval

Facility:

_____	_____
Facility Administrator	Date
_____	_____
Director of Nursing	Date
_____	_____
Medical Director	Date
_____	_____
Consultant Pharmacist	Date
_____	_____
Title	Date

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INFUSION THERAPY CLINICAL AND PHARMACY SERVICES

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OVERVIEW OF IV THERAPY

A. PRINCIPLE USES OF INTRAVENOUS THERAPY

Common Reasons for Intravenous Therapy

1. Restoring and maintaining fluid and electrolyte balance.
    a. IV fluids and electrolytes may be used to hydrate the resident and/or correct electrolyte imbalances.
    b. The most common electrolyte imbalances are sodium or potassium deficits/excesses. Other electrolyte imbalances may be corrected in this manner, but are not as common as sodium and potassium.
    c. The type of fluid (isotonic, hypotonic, or hypertonic) used is based on severity of hydration and/or laboratory results.
    d. The need for corrective hydration fluids can be related to:
        (1) Poor intake of PO fluids/food;
        (2) Overuse of diuretics;
        (3) Overuse of potassium supplements; and
        (4) Vomiting, diarrhea, use of enemas.
    e. This therapy is usually considered short term with treatment lasting several days. Lab results are monitored to determine if therapy is successful.
2. Administering medications.
    a. Many medications are available in IV form. The IV form is usually considered a more potent form of the medication than the PO form. IV medications are typically absorbed more rapidly and utilized more completely than PO forms. For these reasons, IV antibiotics may be given for drug-resistant forms of bacteria.
    b. Frequently used IV medications:
        (1) Antibiotics, antivirals;
        (2) Pain medication;
        (3) Chemotherapeutic agents; and
        (4) Anesthetic agents.
3. Delivering parenteral nutrition solutions (PN).
    a. Parenteral nutrition (partial or total) is used to supplement or totally supply a resident's nutritional needs.
    b. PN may be indicated for the following clinical conditions:
        (1) Inability to utilize feeding tube;
        (2) Wound healing, burns;
        (3) Chronic diseases affecting the gastrointestinal absorption;
        (4) Post bowel surgery;
        (5) Hyperemesis, weight loss; and
        (6) Long-term npo status.
    c. PN therapy can be a short- or long-term therapy.
    d. Formerly called hyperalimentation.

OVERVIEW OF IV THERAPY

B. TYPES OF VASCULAR ACCESS DEVICES

Short Peripheral Catheters

1. Short catheters that start and stop in the peripheral veins of the hand or arm.
2. Used for infusing fluids or medications that have an osmolarity of less than 900 mOsm/L.
3. Do not place in the lower extremities due to increased risk of complications.
4. Length of therapy determines catheter type. Peripheral catheters are for short-term therapies (typically less than 1 week).
5. Types of peripheral catheters:
    a. **Steel winged needle**
        (1) Generally referred to as a "butterfly catheter."
        (2) Should only be used for short-term or single dose medication administration.
        (3) Not utilized for hydration or antibiotics.
        (4) Put in and removed immediately; it does not stay in place.
    b. **Over the needle or short peripheral catheter**
        (1) Catheter is less than 3 inches (7.5 cm) long. Commonly called "saline lock".
        (2) Tip of the catheter terminates in the peripheral vein.
        (3) Requires verbal consent for placement.
        (4) Higher probability of causing phlebitis and infiltration than central line catheters.
        (5) Blood sampling from a short peripheral catheter may be considered in certain clinical situations. Consult with provider and current standards of practice to determine when this is appropriate for the resident.
        (6) Can stay in place 72-96 hours. Any time longer than 96 hours requires a physician's order and documentation of why it is being left in place.

Midline Catheters

1. Catheter is between 7.5 cm (3 inches) and 20 cm (8 inches) in length (specific to measurement of the resident).
2. The tip of the catheter dwells in the basilic, cephalic or brachial vein at or below the axilla. The tip does not enter the central vasculature.
3. Used for medications/solutions with a pH of 5 to 9 or osmolarity of less than 900 mOsm/L.
4. Used for therapies lasting 1 to 4 weeks.
5. Does not require chest X-ray for tip verification unless resident arrives without documentation verifying catheter type.
6. NOT USED FOR BLOOD SAMPLING. ASPIRATION MAY CAUSE CATHETER RUPTURE.
7. Sometimes midline catheter is confused with PICC central line related to placement location. If resident arrives without documentation, have chest X-ray done to verify type of catheter before using catheter.

Central Venous Access Devices (CVAD)

1. CVADs are large, longer catheters that are placed in the major veins of the body (jugular, subclavian, femoral; or upper arm cephalic, basilic, brachial, or median cubital) and dwell in the vena cava.
    a. The distal tip of the catheter dwells in the area from the lower one third of the superior vena cava to the junction of the superior cava and right atrium of heart.
    b. Catheters using the femoral approach dwell in the thoracic inferior vena cava above the level of the diaphragm of the lungs.
    c. X-ray, ECG or fluoroscopy verification of tip placement after insertion is required before using.

2. CVADs are indicated for the following situations:
    a. Medications/solutions that have osmolarity greater than 900 mOsm/L;
    b. Complex infusion regimen and/or clinically unstable patient;
    c. Chemotherapy treatment expected to last 3 months or longer;
    d. Continuous infusion therapy;
    e. Invasive hemodynamic monitoring;
    f. Any long-term, intermittent infusion therapy; or
    g. Known history of failed or difficult peripheral access.
3. CVADs cannot be used for dialysis; they cannot withstand the pressure of the dialysis machine. Specialized dialysis catheters are used for this purpose.
4. CVADs can be used to draw blood samples unless the provider gives order not to use the catheter for this purpose.
5. Central catheter can be open ended (non-valved) or closed ended (valved), and may be single, double or multiple lumen:
    a. **Open-ended (non-valved) catheters**
        (1) The tip of the catheter is cut which allows blood to enter the catheter easily.
        (2) This makes the catheter higher risk for forming clots than closed-ended (valved) catheters.
        (3) Each lumen of the catheter must be flushed with normal saline and/or heparin per protocol.
        (4) Catheter can be recognized by its characteristic external clamps.
    b. **Closed ended (valved) catheters**
        (1) The tip of the catheter is closed.
        (2) There is a pressure sensitive valve toward the end and side of the catheter.
        (3) The valve stays closed when not in use, opens outward when in use, opens inward for blood aspiration. Since the valve is closed or fluids are going outward most of the time, the catheter does not clot off as easily as open-ended catheters.
        (4) Only normal saline flush is needed. Heparin is not necessary, but will not harm the catheter.
        (5) This type of catheter should be used for residents with heparin allergy.
        (6) There are no external clamps.
        (7) Common manufacturer name: Groshong®.[1]
6. Generic Categories of Central Venous Access Devices
    a. **Tunneled Catheters**
        (1) Surgically placed, surgically removed.
        (2) Insertion site is located mid-chest, goes through subcutaneous tissue, then into subclavian vein and ends in the superior vena cava.
        (3) May stay in place for multiple years with proper maintenance. Optimal time is unknown.
        (4) Originally designed for long-term continuous treatment such as TPN.
        (5) Catheter is not sutured in place. “Tunneling” the catheter under skin for 3 to 4 inches before entering the subclavian vein helps to hold it in place. Usually it also has a Dacron cuff that forms scar tissue around it to hold catheter in place.
        (6) Common manufacturer names: Hickman®,[2] Groshong®.[1]

[1] Groshong® is a trademark (or registered trademark) of Bard Access Systems (www.bardaccess.com).
[2] Hickman® is a trademark (or registered trademark) of Bard Access Systems (www.bardaccess.com).

b. **Non-Tunneled Catheters**

(1) Percutaneously inserted by a qualified provider; can be removed at bedside by a qualified RN (per state nurse practice act).
(2) Inserted into internal jugular, subclavian, or femoral veins with tip ending in vena cava or right atrium.
(3) Catheter is sutured or secured to outside of body. If the sutures break, there is a high risk of the catheter dislodging, which can cause air emboli or high volume bleeding from site.
(4) Dwell time of catheter is usually 4 to 6 weeks.
(5) Catheter has higher risk of infection than any other CVAD related to the sutures and the fact that it moves slightly in and out upon inhalation and exhalation.
(6) Common manufacturer names: Hohn□.[3]

c. **Implanted Venous Ports**

(1) Catheter is surgically placed and removed. It is placed under the skin - with only the outline of catheter visible - and ends in vena cava.
(2) Dwell time is multiple years with proper maintenance.
(3) Can be made of metal, plastic, or titanium.
(4) Originally designed for long-term intermittent therapy use, specifically chemotherapy for cancer.
(5) Requires the placement of a non-coring needle through the skin to access the port for treatment. Transparent dressing is applied when accessed.
(6) Accessing and de-accessing with the non-coring needle may require demonstration of clinical competency. Verify with State Nurse Practice Act.
(7) Locations: upper chest, upper arm. May be found in abdomen for purposes such as pain medicine delivery, gastric banding surgery (these purposes have specific policies per manufacturer).
(8) Common manufacturer names: Port-a-Cath□.[4]
(9) Non-coring needle can stay in place for 7 days, then it has to be replaced if treatment is to continue.
(10) Monthly access and flushing is necessary if port is not being used for treatment.

d. **Peripherally Inserted Central Catheter (PICC)**

(1) Located in the upper arms above the antecubital fossa and below the shoulder area.
(2) Veins that are used are basilic, median cubital, cephalic, and brachial.
(3) Tip of catheter stops in superior vena cava or right atrium.
(4) Catheter can be placed or removed at the bedside or in the hospital setting by a nurse with advanced training and/or certification. Verify with the state nurse practice act.
(5) Length of catheter is specific to resident. This length needs to be documented in the medical record by the person who is placing catheter. The catheter length is usually altered from original manufacturer length according to the resident's measurement.
(6) Catheter length is measured for baseline comparison upon removal. Upon removal, catheter measurements are compared to baseline to verify that all of catheter has been removed.
(7) Catheter can stay in place for approximately one year if maintained properly.
(8) This is a very fragile catheter and can be broken easily. Avoid placing on agitated residents to prevent breakage.
(9) Upper arm circumference should be measured on admission and weekly to monitor for infiltration.

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[3] Hohn® is a trademark (or registered trademark) of Bard Access Systems (www.bardaccess.com).
[4] Port-a-Cath® is a trademark (or registered trademark) of Smiths Medical (www.smiths-medical.com)

(10) External catheter length should be monitored on admission, and weekly to monitor for outward migration.
(11) No blood pressures or phlebotomy should be done on arm that contains PICC.
(12) Anchor catheter to skin to prevent accidental removal while changing clothes.

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C. INFUSION EQUIPMENT AND SUPPLIES

Blood/Fluid Warmer

1. Used to prevent hypothermia, hemolysis or cold agglutination when infusing blood, contrast media or other high-volume solutions through a central line.
2. Must be an FDA-approved device.
3. ONLY use according to manufacturer's instructions.
4. Never warm intravenous solutions in a microwave, hot water bath, or other non-approved devices.

Electronic Infusion Pumps

A programmable electronic device used to deliver consistent and accurate rates of infusion. The primary tubing (after being primed) is placed in the pump, which is programmed to regulate the delivery of fluids/medications to the catheter.

Elastomeric Home Pump

A device that is usually sphere or football shaped. It is filled with a medication at the pharmacy and then pressure is put on the device which collapses it. The sphere is attached to the IV catheter and the pressure is released at a slow rate to deliver medication. When infusion is finished, the sphere is disconnected and disposed.

Patient Controlled Analgesia Pump

A small electronic pump used to deliver pain medications at patient-controlled intervals.

INFUSION SUPPLIES

Administration Sets (IV Tubing)

1. Primary set – long tubing that is used for infusing fluids or antibiotics. Must have the air primed out of it before using. It is connected to the infusion bag, then fluid is released into it to prime.
2. Secondary set – shorter tubing that is put into the smaller mini bags of medicine. It is attached to the primary tubing after being primed.
3. Regulator/Controller set – an attachment that goes onto the end of the primary set that includes a device that can be manually adjusted to deliver a certain rate of fluid. The device usually has a capacity to run fluids from 10 mL/hr to 250 mL/hr. According to facility policy, it can be used instead of a pump. It is not as accurate as a pump, but is considered to be safer than straight gravity delivery. (Dial-A-Flow)
    a. Regulator/controller set or Dial-A-Flow are only recommended to be used with hydration fluids.

Note: Administration sets used to administer lipid – based infusates such as intravenous fat emulsions (IVFE), total nutrient admixture (TNA), or total parenteral nutrition should be free of diethylhexyl phthalate (DEHP). DEHP is considered a toxin especially in neonates, pediatrics, and long-term care patients.

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Admixture Bags

Infusion bags with the medication to be added attached. The medication is mixed into the IV fluid just before being infused. Admixture bags are used for medications that cannot be premixed at the pharmacy due to stability issues. It is a closed system and remains sterile.

Catheter Stabilization Device

A device that holds the catheter in place on the skin: an alternative to sutures. (See specific manufacturer instructions on use and changing intervals.)

Central Venous Catheter Dressing Kit

A STERILE preassembled kit that usually includes: sterile gloves, antiseptic cleaning supplies, tape, transparent dressing, label, ointment and gauze.

Extension Tubing

An add-on device that is used on peripheral catheters or central lines (if needed). It can be 2, 4, or 6 inches in length with a clamp and attached needleless connection device in place. It is connected to the infusion catheter and stays as part of the flushing system.

Filters

1. Sizes 0.22 micron, 1.2 micron.
2. One end is placed on end of IV tubing, primed with fluid, and then other end is connected to infusion catheter, or it may be a part of tubing.
3. Used with parenteral nutrition or blood transfusions.
4. New filter is placed on IV tubing with every dose of medication infused.

Filter Straw

1. This is used to draw medications out of a glass vial. When the vial neck is broken, glass may shatter in the medication. Directions for use:
    a. Attach filter straw to a sterile syringe.
    b. Place straw in medication.
    c. Draw medication through the straw into the syringe.
    d. Remove filter straw from syringe and place in sharps container. Glass pieces will stay in the filter part of the straw.
2. Filter needles are also used at times. They are not to be used to inject medication into a resident or tubing.

IV Start Kit

A preassembled kit that contains the supplies to clean and dress a peripheral IV site. Usually contains: tourniquet, sterile tape, gloves, transparent dressing, antiseptic cleaning solutions, label, and dressing.

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Labels

These may be preprinted with date, time, gauge, initials or can simply be a piece of tape that contains the same information. All tubing and dressings must have a label or they are considered to be out of date and should be changed.

Multi-Dose Bottle

Usually a bottle of normal saline, heparin, or medication that is for SINGLE RESIDENT USE ONLY. A needleless access adaptor may be placed into the top of the bottle for access. Because it is accessed for more than one dose it is at higher risk for contamination. Aseptic technique must be used to remove dose.

Needleless Connection Device

1. Attached to end of all catheter lumens to prevent induction of air emboli and back flow of blood.
2. This prevents needlesticks and damage to catheters/tubing.
3. The most common design is the luer lock system which has “male” and “female” parts to fit together and then screws in place.

Needleless Fluid Transfer Kit

A system that is used to transfer blood or body fluids into laboratory tubes/containers without the use of a needle. It is used to prevent needlesticks when transferring blood/fluids.

Normal Saline

Normal saline is a sterile, isotonic solution that is used intravenously to dilute medications, provide fluids and electrolytes, and flush and lock catheters. Normal saline should ALWAYS be 0.9% preservative-free sodium chloride.

Smooth Clamps

A scissor-looking device used to close or hold onto a catheter. It does not have teeth like many surgical clamps. Usually blue in color and made out of plastic. It will not cut the catheter and is therefore SAFE to use on any type of catheter. Also used for clamping catheters during peritoneal dialysis.

Time Tape

A way to monitor the infusion time of a fluid, time tape is usually used on bags containing at least one liter. A piece of tape or paper is placed alongside the 100 mL marks on a bag. The rate per hour is calculated. A timeline is placed next to the mL marks as a visual way to monitor if the fluid is infusing at the ordered rate.

Tourniquet

An elastic strip that is placed at least 4 to 6 inches above the intended catheter insertion site to create pressure on the vein (which makes it larger) and also slows blood flow to area. The tourniquet should be SNUG, not tight and cannot stay on longer than 2 minutes to avoid vascular damage. Tourniquets are single-use disposable items.

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D. IV THERAPY IN OLDER ADULTS

General Guidelines

1. Licensed staff administering IV therapy to older residents will have demonstrated clinical competency and working knowledge of the physiologic differences in this population, including:
    a. Medication metabolism and the need for appropriate selection, dosing and monitoring parameters;
    b. Renal function and the potential for fluid volume overload; and
    c. How medication side effects may cause or contribute to existing clinical conditions.
2. Residents will be assessed for any limitations associated with the safe and effective administration if intravenous therapy, including:
    a. Cognitive deficits;
    b. Behavioral symptoms associated with dementia;
    c. Impaired ambulation or dexterity;
    d. Communication deficits; and
    e. Psychosocial and socioeconomic impact of therapy.
3. Educational information will be appropriate to age, cognitive level, health literacy, culture and language preferences.
4. Any therapy-related care or tasks involving the resident/family/surrogate will be taught and validated for appropriate knowledge and skill acquisition, including:
    a. Care of the vascular access device;
    b. Infection prevention and control (hand hygiene, aseptic technique, etc.);
    c. How to prevent, identify and report complications;
    d. Prevention of catheter damage; and
    e. Signs and symptoms of adverse effects of medication or therapy.
5. Informed consent will be obtained prior to IV therapy in accordance with state or local laws and organizational policy.
6. The resident/family/surrogate has the right to refuse treatment of any kind.

E. TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
Occlusion □ The partial or complete obstruction of a catheter, which obstructs the infusion of solutions or medications. □ Occlusions can result from the coagulation of blood (thrombotic), from obstruction due to catheter problems or buildup of infusion precipitates and residue (mechanical).		
1. Electronic pump "occlusion" alarm is activated frequently. 2. Noticeable slowing of infusion rate. 3. Difficulty aspirating from catheter. 4. Visible clots in the catheter. 5. Pain upon infusion. 6. Resistance when flushing.	1. Flush the needleless connection device according to facility protocols. 2. Correct any obvious signs of mechanical occlusions, such as closed clamps, kinks in line, dressing or sutures that are too tight. 3. Use in-line, air eliminating filters. 4. Monitor infusions of possible precipitate-forming solutions, such as lipid containing parenteral nutrition or thick fluids like albumin. Flush the catheter with normal saline when bags are changed to prevent accumulation of precipitate. 5. Check for compatibility: some medications and solutions are at risk for precipitation when in contact with each other. Flush with normal saline between infusions.	1. Keep catheter flushed per protocol and PRN. 2. Identify type of occlusion (thrombotic or mechanical). 3. For thrombotic occlusion (or cause of occlusion cannot be determined): □ Notify the provider immediately. □ Obtain orders for thrombolytic agent and catheter clearance. 4. For mechanical occlusion: □ Troubleshoot the catheter line (e.g., observe for kinks, clogged in-line filter, sutures causing occlusion). □ If occlusion cannot be resolved, notify provider. □ If occlusion is due to precipitates (medication or mineral) or lipid residue, notify provider. □ Obtain orders for catheter clearance and catheter clearing agent. 5. Notify the provider immediately if pinch-off, catheter rupture, or migration is suspected. These can be medical emergencies. 6. Document observations, interventions, resident's
Phlebitis □ Inflammation or irritation of the vein. It is a common complication associated with intravenous therapy. □ It may occur at any time related to pH or osmolarity of the fluid being infused, size or condition of vein. □ It may occur up to 48 hours after catheter removal especially if there was pressure put on the vein while catheter was removed which can cause irritation of the vein. □ Phlebitis can be a result of mechanical, chemical, or bacterial sources.		
1. Warmth, redness and inflammation. 2. Resident complains of heat, stinging at insertion site or along vein path if catheter is in a peripheral site. 3. Discomfort at access site.	1. Frequent assessment of insertion site and surrounding areas for pain, redness, warmth. 2. Select a vein with ample blood supply when starting an IV catheter. 3. If catheter was inserted under emergency conditions or poor aseptic technique, remove and re-site when conditions allow.	1. Assess degree of phlebitis using a standardized Phlebitis Scale. Determine the etiology of phlebitis, if possible. 2. For chemical phlebitis: □ Discontinue or slow rate of infusion. □ Determine if catheter removal is needed. 3. For bacterial phlebitis: □ Disinfect the access site. (Note: If purulent drainage is present, obtain a culture sample prior to disinfection.) □ If infection is suspected, culture catheter tip.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
4. Pain and tenderness along pathway of afflicted vein demonstrated by visual red streak that migrates upward with the venous flow if the catheter is in a peripheral site. 5. Induration of vein, palpable venous cord. 6. Purulent drainage.	4. Catheters should be the smallest gauge and shortest length that will accommodate the treatment to allow blood flow around catheter. 5. Solutions that have an osmolarity of >900 mOsm/L and certain medications may require a CVAD or PICC to prevent phlebitis. 6. Infuse solutions over recommended times. 7. Avoid multiple venipunctures, lower extremities, joint flexion vein sites. 8. Secure catheters to prevent movement. 9. Maintain aseptic technique. 10. Prepare skin properly before inserting catheter. Allow antiseptic solution to dry thoroughly prior to catheter insertion.	4. For mechanical phlebitis: • Stabilize catheter. • Apply heat. • Elevate affected extremity. • Monitor for 24-48 hours; if symptoms persist, consider removing catheter. 5. For post-infusion phlebitis: • Monitor for signs and symptoms of sepsis if bacterial source • If non-bacterial source, apply warm compress, elevate, and administer analgesics as needed. 6. Always notify provider of phlebitis. 7. Apply warm compress and administer analgesics for resident comfort, per provider's order. 8. When inserting a new catheter, use the non-affected extremity if possible. 9. Document the observations, interventions, resident's response and outcome in resident's medical chart.
Infiltration • When the catheter dislodges from the vein and non-vesicant solution or medication is administered into the surrounding tissue.		
1. Edema, blanching, cool, stretched and/or firm skin around insertion site and surrounding area. 2. Mild to moderate pain; numbness. 3. Pitting edema. 4. Circulatory impairment. 5. No blood return from IV access.	1. Confirm patency of catheter prior to administering medications or solutions. Verify blood return in catheter. 2. Once infusion begins, observe the access site for 1 to 2 minutes. Observe for any swelling around insertion site; monitor frequently thereafter. 3. Do not pull or tug on the catheter or administration set. 4. Use a syringe barrel size of 10 mL or greater when flushing. 5. Assess for fragility of veins (e.g., hands, any vein in an older person or person impaired by disease that affects the vasculature) before starting catheter. 6. Avoid areas of flexion (e.g., antecubital fossa) when starting catheter.	1. Assess degree of infiltration using a standardized Infiltration Scale. 2. Discontinue infusion and remove catheter. 3. Apply warm compress to help absorb infiltrate. 4. If leaking of the tissue is present, apply sterile dressing. 5. Notify provider of infiltration grade 3 or 4. 6. Complete an Incident Report if required by facility policy. 7. Document observations, interventions, resident's response and outcome in resident's medical chart. Note: When inserting a new catheter, use the non-affected extremity if possible.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
Extravasation • An infiltration of vesicant medication into surrounding tissue causing a chemical burn and major damage to surrounding areas.		
1. Blisters, tissue necrosis, sloughing of tissue. 2. Edema, blanching, stretched/firm and/or cool skin. 3. Pain (often severe), heat, stinging at access site. 4. Can lead to tissue necrosis, permanent damage to surrounding areas.	1. Central venous catheters should be considered for medications/ solutions that are vesicants, have a pH of <5 or >9, or an osmolarity of >900. 2. Confirm patency of catheter prior to administering medications or solutions. 3. Once infusion begins, observe the access site for 1 to 2 minutes and frequently throughout infusion. 4. Do not pull or tug on the catheter or administration set. 5. Administer vesicant solutions with extreme caution and frequent monitoring. 6. Educate resident as to signs and symptoms of infiltration and extravasation. Inform them to report any problem immediately. 7. If nurses are administering vesicant medications, especially chemotherapy, they should have received previous education related to how to intervene with each type of medication extravasation.	1. Discontinue infusion immediately. Do not remove catheter unless instructed to do so by provider. 2. Notify provider and obtain orders to treat extravasation. 3 Administer antidote as ordered, either through existing catheter or by injection. 4. If ordered to remove catheter, aspirate as much infiltrate as possible before removing and apply pressure to access site to prevent bleeding. 5 Apply ice to affected area if appropriate per protocol. 6 Elevate affected extremity if appropriate per protocol. 7. DO NOT FLUSH THE CATHETER. 8 Document in resident's medical record: a. date and time of extravasation; b. catheter type and size, date, and time of catheter insertion; c. solution or medication infused, method of administration, time and rate of infusion, and estimated amount infused; d. appearance of site; e. provider notification; f. treatment/antidote measures; and g. resident's response and outcome. 9 Photograph the access site at time of injury, at 24 hours post-injury, at 48 hours post-injury, and at one week post-injury. 10. Complete an Incident Report.
Catheter-Related Infections (CRIs) • Can be local, systemic or both. • Local infections are limited to the catheter insertion site, exit site of tunneled catheters, or implanted port pocket. • Systemic (catheter-related blood stream) infections are characterized by the presence of >10-15 times the colony forming units of bacteria per mL of blood drawn from the vascular access device. CRBSIs can be life-threatening. Prompt assessment and intervention are essential (see Septicemia/CRBSIs).		
1. Inflammation or purulent drainage at catheter insertion site. 2. Tenderness. 3. Erythema. 4. Induration.	**1. Never reinsert catheter that has moved out of place.** 2. Use aseptic/sterile technique per protocol during initiation and care of IV catheters. 3. Follow the CDC guidelines for proper hand hygiene.	1. If local infection is suspected: a. notify provider immediately; b. obtain site culture, per order and report results; c. apply warm compresses, if ordered; and d. administer anti-infective therapy, as ordered. 2. Removing catheter may not always be needed.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
5. Sudden onset of symptoms of infection, such as increase in temperature, changes in vital signs, increased WBC count on lab results. 6. Onset or worsening of symptoms upon start or increased rate of infusion. 7. Necrosis of skin over reservoir of implanted port.	4. Assess access site and administration set at established intervals. 5. Change administration set and rotate IV access site at established intervals. 6. Make sure that all IV equipment is sterile when starting the IV and maintain aseptic technique when using equipment.	3. If systemic infection is suspected: a. notify provider immediately; b. obtain blood cultures from vascular access device and from a peripheral vascular site as ordered; c. culture infusion solution of medication, if contamination is suspected; d. administer anti-infective therapy, as ordered; and e. remove VAD, if ordered. Note that provider may want to wait until culture results are received. 4. Document observations, interventions, provider notification, resident's response and outcomes. 5. Complete an Incident Report.
Septicemia / Catheter-Related Bloodstream Infection (CRBSI) A systemic infection characterized by the presence of pathogens and their toxic metabolites in the circulating blood.		
Septicemia: 1. Fever. 2. Chills. 3. Hypotension. 4. Backache. 5. Nausea. 6. Headache. 7. Diarrhea. 8. Vomiting. 9. Flushing. **Late Stage Septicemia:** 1. Cyanosis. 2. Hyperventilation. 3. Vascular collapse. 4. Shock. 5. Death.	1. Use aseptic/sterile technique per protocol during initiation and care of IV catheters. 2. Follow the CDC guidelines for proper hand antisepsis. 3. Inspect medications and solutions prior to administration looking for any signs of problems, such as particles, cloudiness, color changes, leakage, and contamination. 4. Assess insertion site, dressing condition on every shift. 5. Make sure that all IV equipment is sterile when starting the IV and use aseptic technique when handling the catheter thereafter. 6. Change administration set, end caps, dressings, etc., (using aseptic technique) per protocol times and PRN if needed. 7. Change tubing, dressings, or any equipment immediately if contamination is suspected.	1. Notify provider immediately. 2. Administer interventions and treatment as ordered. 3. Obtain cultures of catheter, infusate, blood, as ordered. **4. Obtain cultures prior to administration of anti-infectives**. 5. Remove catheter, if ordered. 6. Document observations, interventions, resident's response and outcome in the resident's medical chart. 7. Complete an Incident Report.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
Catheter-Related Venous Thrombosis (CRVT) • The formation of a thrombus (fibrin) along the venous wall. • CRVT is a potentially life-threatening complication. • Prompt assessment and intervention are essential.		
Note: catheter-related deep vein thrombosis often does not produce obvious signs and symptoms. If present, may include: 1. Pain or burning in neck, chest, or shoulders. 2. Swelling of face, neck, arm, or at catheter exit site. 3. Numbing or tingling in extremities. 4. Superficial collateral veins on the chest. 5. Periorbital edema. 6. Tachycardia. 7. Shortness of breath.	1. Assess for risk factors for venous thrombosis prior to inserting CVAD. 2. Select catheter type and location according to risk factors. 3. Administer low-dose anticoagulant therapy, as ordered.	1. Notify provider immediately. 2. Initiate anticoagulant and/or thrombolytic therapy as ordered. 3. Prepare resident for radiographic studies, as ordered. 4. Document observations, interventions, resident's response and outcome in the resident's medical chart. 5. Complete an Incident Report.
Air Embolism • Characterized by the entry of an air bolus into the vascular system. • If the air bolus enters the cardiac circulation, it blocks the ejection of blood from the right ventricle into the pulmonary artery. • It can cause a fatal embolism if the air blocks the pulmonary capillaries.		
1. Chest pain. 2. Shortness of breath. 3. Cyanosis. 4. Hypotension. 5. Weak pulse. 6. Tachycardia. 7. Syncope. 8. Loss of consciousness. 9. Shock. 10. Cardiac arrest.	1. Use air-eliminating filters. 2. Do not use scissors or razors near the catheter. 3. Clamp catheter and tubing during administration set changes and removal of catheter. 4. Use luer lock connections for infusion equipment and piggy-backs. **5. Prime infusion sets and tubing prior to connecting to catheter**. Purge excess air from syringes, administration sets, needleless connectors and any add-on devices.	1. Notify provider immediately. **2. Place resident on left side in Trendelenburg position (head down, feet up)**. 3. If embolism is due to open or leaking administration set, clamp line close to catheter and change administration set and tubing. **4.** If embolism is due to disconnected or damaged central venous access device, clamp catheter and repair, if appropriate. 5. Stay with resident; prepare to call emergency services to transport to hospital. 6. Place oxygen, as ordered. 7. Monitor resident closely until ambulance arrives. 8. Document observations, interventions, resident's response and outcome in the resident's medical chart.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
	6. Place resident in supine position and have them perform Valsalva maneuver when removing central catheter. 7. After catheter removal, apply pressure to exit site. 8. Apply occlusive dressing to exit site and change every 24 hours until site is epithelialized. 9. Stop flushing when syringe has 0.5 mL normal saline/heparin left in barrel.	9. Complete an Incident Report.
Catheter Embolism • Occurs when a catheter piece becomes dislodged and enters the general circulation. • Major vessel blockage can lead to cardiac, respiratory, or other area damage/arrest. • This is a more common occurrence with mid or PICC lines.		
1. Severity of symptoms is dependent on the location of the catheter piece. 2. Location of symptoms can help determine where the catheter piece is located. 3. Palpitations. 4. Arrhythmia. 5. Dyspnea, coughing. 6. Thoracic pain. 7. Cyanosis. 8. Hypotension. 9. Tachycardia. 10. Syncope/loss of consciousness.	1. Always know length of mid or PICC catheter – document in chart. 2. Never reinsert needle, stylet or guide wire. 3. Never use scissors near an IV site – catheter could be cut. 4. Only use smooth clamps on a catheter, not sharp clamps such as Kelly clamps. 5. Inspect catheter for any problems prior to insertion. 6. Only use 10 mL or larger barrel size syringes to flush catheter to avoid too much pressure. 7. Assess resident for agitation and previous pulling out of catheters before placing the catheter, especially midline and PICC lines that are fragile and break easily.	1. Minimize resident anxiety. Place on bed rest which could slow down catheter traveling through circulation. 2. Do assessment of resident, monitoring for signs of where catheter piece may be located. 3. Measure length of catheter from end of hub to end of catheter. Compare to documented length in chart. Save catheter piece. 4. For mid or PICC line breakage, place snug – not tight – tourniquet on arm that catheter was placed. The tourniquet should be above the insertion site. 5. If any catheter breakage is suspected, **IT IS A MEDICAL EMERGENCY – TRANSPORT** resident to hospital with tourniquet still in place. 6. If measurements match documented length, notify provider, monitor for signs and symptoms of distress or changes. Provider may want chest X-ray to see if piece has stopped in heart or lungs. Resident may complain of other area pain and that needs to be investigated. 7. Document assessment, interventions, resident's response and outcome in resident's medical chart. 8. Complete an Incident Report.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
Pulmonary Edema • Caused by fluid overload in the circulatory system. • The left side of the heart cannot pump enough fluid into the arterial circulation. • The fluid backs up into the pulmonary system. This can lead to congestive heart failure, shock, and cardiac arrest. • Happens more in elderly and people with renal and cardiac impairments.		
1. Restlessness. 2. Increased pulse rate. 3. Headache. 4. Shortness of breath. 5. Non-productive cough. 6. Flushed skin. 7. Hypertension. 8. Dyspnea with gurgle, rales upon auscultation. 9. Frothy sputum. 10. Engorged neck veins. 11. Pitting edema. 12. Edematous eyelids.	1. Assess resident prior to infusion therapy for history of complications related to IV therapy, cardiac or respiratory problems, present fluid status, and ability to tolerate fluid volume. 2. Monitor closely for signs and symptoms of fluid intolerance. 3. Fluid flow rate should be ordered and maintained appropriately according to resident's medical condition. 4. Fluid rate should not be increased to compensate for being behind schedule. 5. Monitor intake and output. 6. Time tape fluid bag, use flow control device or electronic pump.	1. Place resident on strict bed rest in high Fowler's position (HOB elevated 90°). 2. Slow or stop infusion rate, maintain venous patency. 3. Notify provider immediately. 4. Monitor vital signs, intake and output. 5. Administer interventions and treatments per provider orders: a. oxygen; b. pain medication; c. diuretic; and/or d. vasodilators. 6. Document observations, interventions, resident's response and outcome in resident's medical chart. 7. Complete an Incident Report.
Pulmonary Embolism Occurs when a blood clot or other substance such as particles become free floating and are propelled through the venous circulation into the right side of the heart and then into the pulmonary artery. This causes a blockage of the blood circulation.		
1. Dyspnea. 2. Chest pain on inspiration. 3. Apprehension. 4. Cough. 5. Tachycardia. 6. Cyanosis. **7.** Tachypnea. **8.** Possible decreased level of consciousness due to anoxia.	1. Frequent monitoring of resident and needleless connection device. 2. Avoid use of small syringes in CVAD's, use at least 10 mL syringe. Use push-pause method. 3. Do not irrigate IVs or use positive pressure to relieve possible clot formation. 4. Use filters for blood products and to remove particulates from solutions or medications being administered. 5. Avoid lower extremities. 6. Examine solution for particulate matter.	1. Slow IV rate per provider order. 2. Semi Fowler's position to facilitate breathing. 3. Monitor vital signs. 4. Notify provider. 5. Oxygen per provider's order. **6.** Requires emergency intervention.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
Speed Shock • When a substance that is foreign to the body (i.e., medication/fluids) is infused too fast into the circulation. • This causes the concentration in the plasma to reach toxic levels which affects the kidneys, heart, brain, and vessels. The body can go into shock.		
Mild symptoms: 1. Flushing, rash. 2. Severe headache. 3. Dizziness. Advanced symptoms: 1. Irregular heart rate, tachycardia. 2. Hypotension, syncope. 3. Shock. 4. Cardiac arrest.	1. Run medication according to recommended infusion rate. Look at label on medication for recommended length of time for infusion. This rate can be run slower if resident's condition requires. 2. Using a flow control device or electronic pump for infusion is preferred. Gravity flow rates can be difficult to control. 3. Monitor infusion rates to ensure correct flow rate. 4. Many aminoglycosides (i.e., Vancomycin) are prone to cause speed shock. Using a pump while administering these is preferred.	**1. Stop the infusion immediately**. 2. Maintain vascular access. 3. Notify provider immediately. 4. Administer interventions and treatments as ordered. 5. Monitor resident for cardiac arrest and be ready to resuscitate if necessary. 6. Document observations, interventions, resident's response and outcome in resident's medical chart. 7. Complete an Incident Report.
Allergic Reaction • A generalized hypersensitivity reaction to a solution, medication, or additive. Allergic reactions can be immediate or delayed, mild or severe. Severe allergic reactions (anaphylaxis) can be life threatening.		
1. Chills and fever. 2. Urticaria. 3. Erythema. 4. Pruritus. 5. Shortness of breath. 6. Respiratory distress. 7. Anaphylactic shock. 8. Cardiac arrest.	1. Obtain a thorough history of medication allergies. 2. Place ID bracelet on resident noting allergies. 3. Flag medical record and alert other providers of resident's allergies. 4. Re-check resident identification and blood type during blood transfusion procedures. 5. Monitor resident frequently during infusion for any signs/symptoms of allergic reactions. 6. Inform resident to make staff aware immediately if any signs/symptoms occur. 7. Be aware that cross allergies can occur between medications.	**1. Stop infusion immediately.** 2. Discontinue any suspected medication or substance causing the reaction. 3. Maintain vascular access. 4. Notify provider immediately. 5. Administer treatment to counteract and treat allergic symptoms as ordered. **6. Do not use the same administration tubing used to administer the suspected allergen. Replace tubing and flush catheter well to remove any remaining medication.** 7. Monitor vital signs. 8. Document observations, interventions, resident's response and outcome in the resident's medical chart. 9. Complete an Incident Report.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
Local Reaction is a reaction that occurs usually at insertion site or immediate surrounding area.		
1. Redness. 2. Edema. 3. Pain. 4. Purulent drainage. 5. Itching.	1. Aseptic or sterile technique when inserting catheter. 2. Observe insertion site every shift, monitor for resident complaints. 3. Use non-allergic cleaning solutions, dressings.	1. Notify provider. 2. Remove catheter if appropriate. 3. Restart catheter in location away from problem area.
Medication Allergic Reaction (Mild) • A reaction to the medication that is being infused or has been infused in the immediate past. It may be a reaction to the medication, solution, or additive. • See also "Allergic Reaction."		
1. Generalized, specific, or systemic itching or rash. 2. Nausea, vomiting. 3. Headaches, general malaise.	1. Investigate and document allergy history. 2. Monitor resident during and after infusion for any allergic reaction. 3. Place allergy ID bracelet on resident. 4. The Nurse should be aware of side effects and allergic reactions that are known to happen with the medications being given.	1. Stop infusion immediately. 2. Discontinue any suspected medication or substance causing the reaction. 3. Maintain vascular access. 4. Notify provider immediately. 5. Administer treatment to counteract and treat allergic symptoms as ordered. 6. Do not use the same administration tubing used to administer the suspected allergen. Replace tubing and flush catheter well to remove any remaining medication. 7. Monitor vital signs. 8. Document observations, interventions, resident's response and outcome in the resident's medical chart. 9. Complete an Incident Report.
Anaphylaxis • Severe allergic reaction - can be life threatening. • The offending allergen evokes an antigen antibody response. • Histamine is released which acts on organs and tissues. • Reaction can happen at any time during therapy or contact with allergen.		
Sudden, severe onset of one/all of the following: 1. Respiratory distress: dyspnea, wheezing, choking, cyanosis. 2. Gastrointestinal: nausea, vomiting, abdominal cramps, diarrhea, incontinence.	1. Knowledge of allergy history. 2. Close monitoring of resident during infusion and for at least an hour afterward. 3. Educate person who is receiving the infusion about signs/symptoms of allergic reactions. 4. Receive orders for anaphylaxis intervention medicine protocol, have these medications available.	1. Requires **immediate** action, call for emergency services. 2. Administer emergency medications for anaphylaxis per order. 3. Stay with person until help arrives. 4. Apply oxygen per orders. 5. Anticipate cardiac/respiratory arrest.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
3. Dermatological: urticaria, erythema, hives, rash. **4. Vascular response: severe hypotension, chills, sweating, weakness, anxiety, weak pulse, dizziness**.	5. Inspect any medication/solution bag for problems and contamination.	
Catheter Migration / Malposition • When the tip of a central venous catheter is displaced away from the documented vena cava position. • This can be caused by poor placement, strong blood flow around catheter causing it to change direction upward, forceful flushing, excessive pulling or tension on catheter. • PICC lines can be moved outward by muscle movement against catheter.		
1. Inability or difficulty flushing, infusing or aspirating from any lumens. 2. "Gurgling in the ear" if catheter in jugular vein. 3. External catheter length increase. 4. Complaint of pain in neck, shoulder, or chest area. 5. Atrial and ventricular dysrhythmias. 6. Edema of the neck and shoulder. 7. Changes in respiration. 8. Chest, shoulder or back pain.	1. Prevent trauma to the catheter site. **2. Properly secure catheter** and extension set to avoid pull on catheter. 3. Know length of catheter on mid/PICC. Measure external length of catheter on admission, at least q 7 days, and PRN. 4. Chest X-ray results to verify original tip placement.	1. Discontinue infusion. 2. Measure external part of catheter that is showing. PICC line measurements are compared to original documented placement measurements. **3. Stabilize catheter** to prevent dislodgement. 4. Verify catheter tip location by getting a **chest X-ray** per provider order. Inform of results. **5. DO NOT USE CATHETER** for infusions or blood draws until tip location is verified. **6. DO NOT REINSERT** catheter into body – this will introduce contamination. 7. Remove catheter per orders. Only qualified medical staff can perform removal of catheter.

TABLE 1.1 COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

Signs/Symptoms	Prevention	Nursing Interventions/Treatment
Pinch-off Syndrome • A rare complication that affects implantable central venous access devices that are placed via the subclavian vein. • CVAD may become obstructed by thrombosis, impingement against a vein wall, or compression between the clavicle and first rib. • It is confirmed by radiographic findings or fluoroscopy.		
1. Obstruction during flushing and withdrawing blood. 2. Resident complaint of pain in shoulder or upper chest area. 3. Infection. 4. Radiographic findings showing catheter obstruction, compression.	1. Nurses cannot do anything to prevent complication. It is strictly prevented by placement techniques and proper readings of radiographic studies post placement. 2. Monitor resident and catheter for problems.	1. Recognize any signs of problems with catheter function. 2. Request X-ray for verification after informing provider of problems.
Nerve Damage • Compression or damage to a nerve associated with catheter-related complications such as infiltration, phlebitis, thrombophlebitis, or direct nerve puncture during insertion.		
1. Respiratory difficulty. 2. Unusual pain or sensation during or after catheter insertion. 3. Symptoms of paresthesia: a) Tingling b) Burning c) Numbness	1. Do not attempt multiple needle or catheter "probes" during insertion. 2. Control bleeding at the catheter insertion site to prevent hematoma. 3. Observe for any signs and symptoms of neurological changes.	1. Stop the procedure if the resident complains of unusual pain or sensation during catheter insertion. 2. Remove peripheral catheter if signs or symptoms of neurovascular complications are present. 3. Notify provider promptly if the resident with a CVAD exhibits signs or symptoms of respiratory distress, pupil constriction, eyelid drooping, neck or shoulder pain, distended neck veins, or hiccups.

II. ORGANIZATIONAL ASPECTS OF IV THERAPY

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ORGANIZATIONAL ASPECTS OF IV THERAPY

A. INFUSION THERAPY RESPONSIBILITIES AND SCOPE OF PRACTICE

Policy

1. Clinicians administering infusion therapies will practice within the scope of practice for their licensure and applicable state laws, and within their clinical level of competency as established by the facility training and competency evaluation programs.
2. The responsibilities for resident safety and the safe administration of infusion therapy are across all disciplines. The interdisciplinary team will work collaboratively to maintain these priorities.

Nursing Responsibilities in Infusion Therapy

Nursing responsibilities include:

1. Administering medications within specified times, starting treatments within a responsible time after order is written, and administering medications in a safe, responsible manner.
2. Maintaining clinical competencies through education and demonstration.
3. Performing ongoing assessments of residents during infusion therapy.
4. Understanding the nature of the specific therapy being administered, including reason for the therapy, risks and potential complications, and type and duration of therapy.
5. Knowing the *Five Rights of Medication Administration* (right medicine, right resident, right dose, right route, and right time).
6. Intervening appropriately when complications arise.
7. Safely handling equipment. If a piece of equipment is not functioning properly, the equipment must be labeled as malfunctioning/broken and must be taken off of the unit and returned to pharmacy.
8. Performing functions and procedures that are consistent with current standards of care, facility policies and procedures, and that are within the scope of the State Nurse Practice Act.
9. Understanding how to conduct a detailed history and assessment of the resident. This includes an allergy history.
10. Obtaining consent (verbal, written) from the resident before performing a procedure.
11. Understanding that at no time is it acceptable to coerce or restrain a resident against his or her will.
12. Clarifying an illegible, incomplete, or incorrect order.
13. Understanding of aseptic and sterile techniques and maintaining infusion equipment and medications in a way to avoid contamination.
14. Establishing and maintaining supportive and appropriate relationships with resident, family, and other professionals that are involved in the care of the resident.
15. Maintaining adequate documentation (see documentation section).
16. Communicating complications to legally authorized prescribers, supervisors, and other professional staff.
17. Providing education to resident/family.
18. Supervising and providing a safe and secure environment for the residents.
19. Completing incident reports for any unusual occurrence (according to facility policy and procedure).

Nursing Functions Specific to Infusion Therapy

The following procedure/functions associated with infusion therapy must be verified with the state nurse practice act regarding RN and LPN scope of practice, as the regulations differ from state to state:

1. Starting and discontinuing infusion/intravenous (IV) solutions.

2. Administering and/or monitoring of IV solutions. (Note: Specialty treatments such as IV chemotherapy, blood products, total parenteral nutrition, pain medication, and immune therapies require specific education and knowledge of treatment, along with demonstrated clinical competency.)
3. Adding medications to existing IV solutions (admixtures).
4. Administering IV push medications.
5. Caring for and maintaining infusion equipment and catheters (peripheral and central venous access catheters). This includes flushing, dressing changes, site assessment, site rotation (for short peripheral catheters only), changing IV tubing and needleless connection devices.
6. Inserting and removing short peripheral catheters. (Note: Inserting and removing other catheters require special education, certification, and demonstration of clinical competency.)
7. Monitoring the function of IV pumps and IV tubing.
8. Calculating and adjusting flow rates of IV tubing and IV pumps.
9. Observing and reporting on catheter patency, insertion site, complications and resident's reaction to treatment.
10. Documenting treatment, observations, complications, interventions, resident's response to treatment.
11. Creating, documenting, and following through on care plans for resident.
12. Providing education to resident and family.
13. Addressing complications related to IV therapy.

Facility/Administration Responsibilities in Infusion Therapy

1. Developing and approving policies and procedures for infusion therapy.
2. Maintaining a written agreement with the infusion services provider detailing responsibilities.
3. Providing education or verifying qualifications of the staff that will be providing infusion therapy. This may include IV fundamental classes, precepting and/or clinical competency evaluations.
4. Assuring that federal and state regulations are followed, along with facility policies and procedures.
5. Providing a safe, secure environment for the practice of infusion therapy.
6. Correcting and investigating infusion related problems.
7. Providing proper and safe equipment for use during infusion therapy.

Infusion Services/Product Provider Responsibilities in Infusion Therapy

The infusion services provider/pharmacy is responsible for:

1. Maintaining a current pharmacy permit/license and adequate professional liability insurance, and provides proof of it to the facility upon each renewal.
2. Rendering services in accordance with local, state, and federal laws and regulations; facility policies and procedures; community standards of practice; and professional standards of practice.
3. Performing the following pharmaceutical services, including but not limited to:
    a. Assisting the facility, as necessary, in determining the appropriate equipment and packaging to meet the infusion therapy needs of the residents and the facility.
    b. Developing, maintaining, and educating staff on Infusion Therapy Policies and Procedures.
    c. Accurately dispensing infusion therapy products based on authorized prescriber orders.
    d. Providing medications packaged and labeled in accordance with the facility's needs and equipment requirements.
    e. Supplying only USP-NF approved medications, biologicals, and supplies, other than extemporaneously compounded medications or investigational drugs.

f. Labeling all medications dispensed in accordance with the policy on medication labeling and with state and federal requirements.
g. Maintaining a medication profile and infusion care plan for each resident for whom infusion therapy products are provided that includes all medications dispensed and facility-provided information such as resident's age, diagnoses, weight, condition, medication allergies, diet, type of IV access/catheter, and any other pertinent information.
h. Reviewing the medication profile and care plan prior to dispensing any infusion therapy product.
i. Screening each new infusion order for an appropriate indication or diagnosis; for drug interactions with other medications ordered for the resident; for duplication of therapy with other drugs in the same therapeutic class ordered for the resident; appropriate monitoring; and for appropriate drug dose, dosing interval, and route of administration, infusion rate, based on resident and other pertinent variables. If diagnosis/indication, pertinent resident information, or lab data are not available, the infusion products provider notifies the nursing staff of the need to obtain the information from the prescriber prior to administering the drug.
j. Providing information and consultation to the facility's nursing staff on infusion therapy products, supplies, and equipment.
k. Providing, maintaining, and replenishing an emergency infusion therapy products supply in a timely manner.
l. Assisting the prescriber in documenting the medical necessity for a "non-covered" or non-formulary medication ordered for a resident otherwise eligible for medication benefits through Medicare, Medicaid or other third-party programs, or providing therapeutic alternatives that are "covered."

4. Maintaining infusion medications/solutions at the proper temperature during transportation.
5. Preparing infusion therapy products in a laminar flow clean air center or equivalent (qualified pharmacy personnel only; according to USP 797 standards).
6. Following stringent infection control procedures during preparation and distribution of infusion therapy products.
7. Developing and adhering to a quality assurance and performance improvement plan for sterility of completed solutions. Providing information and results regarding this program to the facility as requested.
8. Contacting the facility to obtain updates on resident infusion therapy product needs before delivery to the facility.

B. DOCUMENTATION GUIDELINES FOR INFUSION THERAPY

Documenting Infusion Therapy

1. Document device insertion procedure, including the following:
    a. The clinical reason and need for device insertion and infusion therapy.
    b. Provider order for type of treatment and catheter.
    c. Verbal or written consent received.
    d. Questions, education done.
    e. Anatomic location of catheter insertion.
    f. The type, gauge and length of catheter.
    g. Type of dressing that was placed (transparent or gauze with transparent).
    h. Type of catheter stabilization device.
    i. Number of attempts.
    j. Any complications that arose after the insertion or attempt (bruise, hematoma, skin tear).
    k. Date and time of insertion.
    l. Signature and title.
2. Document unsuccessful catheter insertion attempts. The note should include the following information:
    a. Location of attempt(s).
    b. Number of attempts.
    c. Gauge, length and type of catheter.
    d. Condition of insertion site post insertion.
    e. Statement from resident on how he or she tolerated the procedure.
3. Document every shift if resident has an infusion catheter in place, or whenever an infusion treatment is given. The shift note should include the following information:
    a. Location and objective description of insertion site.
    b. Patency and/or functionality of the device.
    c. Type, rate and length of infusion.
    d. Any complications, interventions.
    e. Resident education, questions.
    f. A statement from the resident regarding how they are tolerating treatment. If the resident is non-verbal, describe any objective signs/symptoms of problems.
    g. Date, time, signature and title.
4. Document continuous infusion every 2 hours. This includes:
    a. Observation of the insertion site.
    b. Patency and/or functionality of the device.
    c. Type, rate and length of infusion.
    d. How the resident is tolerating the infusion.
    e. Date, time and initials.
5. Document continued need to for the catheter at regular intervals.
6. Complete an incident report for any unusual occurrences. Only include what was observed at the time of the incident or quotes from other observers. The nursing note should include exactly the same information.
7. Complete a nurse's note if there are any complications. Complications note should include the following:
    a. Nature of the problem – document just the facts or objective description. Do not use diagnostic terms such as "infiltration", "infection", or "phlebitis".

b. Interventions that were done – such as "stopped infusion", "removed catheter", "received order for different type of catheter", "informed provider", etc.
c. Plan for follow up – this must be written in past or present tense. Never write "next shift to continue to monitor". Write that the information was reported to the next shift, or written in 24 hour report.

8. When an infusion catheter is discontinued, document:
   a. The reason for the discontinuation (end of treatment, site rotation, complications, placement of different type of catheter).
   b. Condition and length of the catheter.
   c. Dressing applied.
   d. Date and time of removal.
   e. Resident's response.
   f. Description of any complications or nursing interventions.
   g. Signature and title.

Additional Documentation for Midline Catheters and PICCs

1. Immediately after catheter insertion, and as needed, document confirmation of the location of the catheter tip.
2. At established intervals, document:
   a. The external length of the catheter and the original length of the catheter inserted.
   b. Arm circumference:
      (1) Before insertion of the PICC;
      (2) After insertion at regular intervals and when clinically indicated to check for edema and rule out deep vein thrombosis;
      (3) Measure arm 3 inches above the antecubital fossa; and
      (4) Characterize any edema as pitting or non-pitting.

C. LATEX ALLERGIES

Policy

The facility will provide latex-free personal protective equipment (PPE) for individuals with latex sensitivities.

General Guidelines

1. Latex exposure will be minimized or eliminated among latex-sensitive individuals.
2. Staff will be screened for latex allergy upon hire.
3. Residents will be assessed for latex allergy upon admission.
4. The facility is responsible for providing latex-free supplies to residents or staff with latex sensitivity.
5. The director of nursing will have knowledge of guidelines from the Centers for Disease Control and Prevention (CDC) and Occupational Safety and Health Administration (OSHA) regarding the prevention of allergic reactions to latex in the workplace.
6. Allergic reactions will be reported to OSHA and the Food and Drug Administration (FDA), as required.
7. Staff and resident education will be available concerning latex allergies.
8. The pharmacy will be available to help facility staff identify any products that may contain latex (such as rubber lids on tops of bottles).

III. INFECTION CONTROL

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INFECTION CONTROL

A. HANDWASHING/HAND HYGIENE

Policy

This facility considers hand hygiene the primary means to prevent the spread of infections.

Objectives

To prevent and control the spread of infectious diseases.

General Guidelines

1. All personnel shall be trained and regularly in-serviced on the importance of hand hygiene in preventing the transmission of healthcare-associated infections.
2. All personnel shall follow the handwashing/hand hygiene procedures to help prevent the spread of infections to other personnel, residents, and visitors.
3. Hand hygiene products and supplies (sinks, soap, towels, alcohol-based hand rub, etc.) shall be readily accessible and convenient for staff use to encourage compliance with hand hygiene policies.
4. Triclosan-containing soaps will not be used.
5. Residents, family members and/or visitors will be encouraged to practice hand hygiene through the use of fact sheets, pamphlets and/or other written materials provided at the time of admission and/or posted throughout the facility.
6. Wash hands with soap (antimicrobial or non-antimicrobial) and water for the following situations:
    a. When hands are visibly soiled; and
    b. After contact with a resident with infectious diarrhea including, but not limited to infections caused by norovirus, salmonella, shigella and C. difficile.
7. Use an alcohol-based hand rub containing at least 62% alcohol; or, alternatively, soap (antimicrobial or non-antimicrobial) and water for the following situations:
    a. Before and after coming on duty;
    b. Before and after direct contact with residents;
    c. Before preparing or handling medications;
    d. Before performing any non-surgical invasive procedures;
    e. Before and after handling an invasive device (e.g., urinary catheters, IV access sites);
    f. Before donning sterile gloves;
    g. Before handling clean or soiled dressings, gauze pads, etc.;
    h. Before moving from a contaminated body site to a clean body site during resident care;
    i. After contact with a resident's intact skin;
    j. After contact with blood or bodily fluids;
    k. After handling used dressings, contaminated equipment, etc.;
    l. After contact with objects (e.g., medical equipment) in the immediate vicinity of the resident;
    m. After removing gloves;
    n. Before and after entering isolation precaution settings;
    o. Before and after eating or handling food;
    p. Before and after assisting a resident with meals; and
    q. After personal use of the toilet or conducting your personal hygiene.
8. Hand hygiene is the final step after removing and disposing of personal protective equipment.

9. The use of gloves does not replace hand washing/hand hygiene. Integration of glove use along with routine hand hygiene is recognized as the best practice for preventing healthcare-associated infections.
10. Single-use disposable gloves should be used:
    a. Before aseptic procedures;
    b. When anticipating contact with blood or body fluids; and
    c. When in contact with a resident, or the equipment or environment of a resident, who is on contact precautions.
11. Wearing artificial fingernails is strongly discouraged among staff members with direct resident-care responsibilities.

Procedure

Equipment and Supplies

1. The following equipment and supplies are necessary for hand hygiene;
    a. Alcohol-based hand rub containing at least 62% alcohol;
    b. Running water;
    c. Soap (liquid or bar; anti-microbial or non-antimicrobial);
    d. Paper towels;
    e. Trash can;
    f. Lotion; and
    g. Non-sterile gloves.

Washing Hands

1. Vigorously lather hands with soap and rub them together, creating friction to all surfaces, for a minimum of 20 seconds (or longer) under a moderate stream of running water, at a comfortable temperature. Hot water is unnecessarily rough on hands.
2. Rinse hands thoroughly under running water. Hold hands lower than wrists. Do not touch fingertips to inside of sink.
3. Dry hands thoroughly with paper towels and then turn off faucets with a clean, dry paper towel.
4. Discard towels into trash.
5. Use lotions throughout the day to protect the integrity of the skin.

Using Alcohol-Based Hand Rubs

1. Apply generous amount of product to palm of hand and rub hands together.
2. Cover all surfaces of hands and fingers until hands are dry.
3. Follow manufacturers' directions for volume of product to use.

Applying and Removing Gloves

1. Perform hand hygiene before applying non-sterile gloves.
2. When applying, remove one glove from the dispensing box at a time, touching only the top of the cuff.
3. When removing gloves, pinch the glove at the wrist and peel away from the hand, turning the glove inside out.
4. Hold the removed glove in the gloved hand and remove the other glove by rolling it down the hand and folding it into the first glove.
5. Perform hand hygiene.

B. PERSONAL PROTECTIVE EQUIPMENT – USING FACE MASKS

Policy

To guide the use of masks.

Objectives

1. To prevent transmission of infectious agents through the air.
2. To protect the wearer from inhaling droplets.
3. To prevent transmission of some infections that are spread by direct contact with mucous membranes.
4. To prevent the splashing of blood or body fluids into the mouth or nose.
5. To prevent occupational exposure to bloodborne pathogens such as the HIV and hepatitis B viruses

Equipment and Supplies

1. High-efficiency disposable masks; or
2. Cotton gauze or paper tissue masks; and
3. Eyewear (e.g., goggles). (Note: When the use of a mask is indicated, appropriate eyewear will also be worn.)

Miscellaneous

1. Put the mask on before entering the room, and after cleaning hands.
2. Be sure that face mask covers the nose and mouth while performing treatment or services for the resident.
3. If the face mask becomes wet, change it. Masks become ineffective when moist.
4. Do not hang the face mask around the neck.
5. Before changing a face mask, wash hands.
6. Do not remove the mask while performing treatment or services for the resident.
7. Use a mask only once and then discard it.
8. Handle mask only by the strings (ties).
9. Never touch the mask while it is in use.
10. Follow established handwashing techniques.

When to Use a Mask

1. When providing treatment or services to a resident who has a communicable respiratory infection;
2. When providing treatment or services to a resident and the use of a mask is indicated; and
3. When performing a task that may involve the splashing of blood or body fluids into the mouth or nose.

Procedure

Putting on the Mask

1. Obtain a mask.
2. Wash hands.
3. Remove the mask from its container. (Note: If gowning procedures are necessary, put the mask on before putting on gown.)
4. Unfold the mask. Do not touch the part of the mask that will cover the face. Hold the mask by the strings only.
5. Place the mask over the nose and mouth. Using a shoelace bow, tie the top strings over the ears, then tie the lower strings.
6. Avoid any unnecessary handling of the mask.

Removing the Mask

1. Wash hands.
2. Untie the lower strings of the mask first. Hold the strings of the mask only.
3. Untie the top strings of the mask. Remove the mask from the face. Handle strings only.
4. Discard the mask into the designated waste receptacle inside the room.
5. Wash hands.

C. PERSONAL PROTECTIVE EQUIPMENT – USING GLOVES

Policy

To guide the use of gloves.

Objectives

1. To prevent the spread of infection;
2. To protect wounds from contamination;
3. To protect hands from potentially infectious material; and
4. To prevent occupational exposure to bloodborne pathogens such as the HIV and hepatitis B viruses.

Equipment and Supplies

1. Gloves

Miscellaneous

1. When gloves are indicated, use disposable single-use gloves.
2. Discard used gloves into the waste receptacle inside the examination or treatment room.
3. Use sterile gloves for invasive procedures to prevent contamination of the resident, and to decrease the risk of infection when changing dressings.
4. Use non-sterile gloves primarily to prevent the contamination of the employee's hands when providing treatment or services to the resident and when cleaning contaminated surfaces.
5. Wash hands after removing gloves. (Note: Gloves do not replace handwashing.)
6. Remove gloves before removing the mask and gown and discard them into the designated waste receptacle inside the room.

When to Use Gloves

1. When touching excretions, secretions, blood, body fluids, mucous membranes or non-intact skin;
2. When the employee's hands have any cuts, scrapes, wounds, chapped skin, dermatitis, etc.;
3. When cleaning up spills or splashes of blood or body fluids;
4. When cleaning potentially contaminated items; and
5. Whenever in doubt.

Procedure

Putting on Sterile Gloves

1. Wash hands.
2. Obtain gloves. (Note: If gowning procedures are used, put gloves on after putting on the gown so that the cuff of the gloves can be pulled over the sleeve of the gown.)

3. Open the package. Do not touch the gloves.
4. With one hand, grasp a glove by the inside of the cuff. Insert the opposite hand into the glove. Leave the cuff turned down.
5. Pick up the remaining glove with gloved hand. Insert ungloved hand into the second glove.
6. Pull up cuffs of the glove.

Removing Gloves

1. Using one hand, pull the cuff down over the opposite hand turning the glove inside out.
2. Discard the glove into the designated waste receptacle inside the room.
3. With the ungloved hand, pull the cuff down over the opposite hand, turning the glove inside out.
4. Discard the glove into the designated waste receptacle inside the room.
5. Discard the glove package into a waste receptacle inside the room.
6. Wash hands.

D. PERSONAL PROTECTIVE EQUIPMENT – USING GOWNS

Policy

To guide the use of gowns.

Objectives

1. To prevent the spread of infections;
2. To prevent soiling of clothing with infectious material;
3. To prevent splashing or spilling blood or body fluids onto clothing or exposed skin; and
4. To prevent occupational exposure to bloodborne pathogens such as the HIV and hepatitis B viruses.

Equipment and Supplies

1. Disposable gowns; or
2. Clean and laundered gowns when disposable gowns are not used.

Miscellaneous

1. Use gowns only once and then discard into an appropriate receptacle inside the exam or treatment room.
2. Clean reusable or disposable gowns may be worn in most circumstances.
3. Use gowns only when indicated or as instructed.
4. Follow established handwashing procedures.
5. Reusable gowns shall be laundered after each use in accordance with established laundry procedures.
6. When use of a gown is indicated, all staff must put on the gown before treating or touching the resident.
7. Gowns shall be large enough to cover all of the wearer's clothing, and they must be tightly cuffed at the sleeves.
8. After completing the treatment or procedure, gowns must be discarded in the appropriate container located in the room.
9. If blood or another potentially infectious material penetrates a garment(s) (e.g., gown, apron, lab coat, etc.), the garment(s) must be removed immediately or as soon as possible.
10. Soiled gowns must not be worn in break rooms, lobbies, or into any area in which contamination of equipment is likely to occur.

Procedure

Putting on the Gown

1. Obtain the gown (disposable or reusable).
2. If long sleeves are being worn, roll the sleeves above the elbows.
3. Wash hands.
4. Unfold the gown so that the opening is at the back.
5. Put arms into the sleeves of the gown.
6. Fit the gown at the neck.

7. Secure at the neck (tie or Velcro).
8. Overlap the gown at the back. Be sure clothing is completely covered.
9. Secure at the waste (tie or Velcro).

Removing the Gown

1. Untie/unfasten the back of the gown.
2. Remove gloves and discard them into a waste receptacle in the room.
3. Untie/unfasten the neck band. While still holding the neck strings, pull the gown off the shoulders.
4. Remove the gown by rolling it away from the body. Handle the inside of the gown only.
5. Fold the outside (contaminated portion) of gown inward, and roll the gown into a bundle.
6. If the gown is disposable, discard it into the waste receptacle inside the room. If the gown is reusable (washable), discard it into the soiled laundry container inside the room.
7. Wash hands.
8. If a mask was used during the procedure(s) or service, remove it at this time and discard it into the waste receptacle inside the room.
9. Wash hands.

E. PERSONAL PROTECTIVE EQUIPMENT – USING PROTECTIVE EYEWEAR

Policy

To guide the use of protective eyewear.

Objectives

1. To protect staff from splashes, spattering, spraying, or droplets of blood, body fluids, or other potentially infectious materials.
2. To protect the employee's eyes, nose, and mouth from potentially infectious materials.
3. To prevent occupational exposure to bloodborne pathogens such as the HIV and hepatitis B viruses.

Equipment and Supplies

1. Protective eyewear (disposable or reusable);
2. Goggles (disposable or reusable);
3. Face shield (disposable or reusable); and
4. Masks (disposable or reusable).

Miscellaneous

1. Masks and eye protection devices, such as goggles or glasses with solid side shields or chin-length face shields, will be worn together whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be expected.
2. Personal eyeglasses should not be considered as adequate protective eyewear.
3. Protective eyewear will have adequate side and top coverage and will fit the staff properly.
4. Hands should be washed after removal of protective eyewear.

Procedure

1. Put on eyewear, goggles, mask or face shield per manufacturer's instructions.
2. Adjust the eyewear to fit properly.
3. Dispose of, or clean, eyewear as applicable.
4. Dispose of masks in a designated container prior to leaving resident's room.
5. Wash hands after removing the mask and eyewear.

F. NEEDLE HANDLING AND/OR DISPOSAL

Policy

To guide the safe handling and disposal of used needles.

Objectives

To prevent needlestick injuries and exposure to the HIV (AIDS) and hepatitis B (HBV) viruses or other bloodborne infections through contact with blood or tissues.

Equipment and Supplies

1. Needle box;
2. Recapping device (if a needle box is not available);
3. Gloves (as indicated); and
4. Other as necessary or appropriate.

Procedure

1. After using a needle, if the needle disposal box is directly available, discard the needle without recapping.
2. Place used needles in the needle disposal box. Do not bend, break, or cut needles. When the disposal box is three-quarter filled or at fill line, seal the box and store it in a closed, puncture-resistant container marked "Biohazard" until incinerated or picked up by a licensed vendor for proper disposal.
3. Do not discard used or unused needles into trash receptacles.
4. Never recap a needle before discarding. In the event of a needlestick injury, the staff should:
    a. Immediately wash the wound vigorously with soap and running water;
    b. If desired, apply alcohol or hydrogen peroxide to the wound; and
    c. Notify the supervisor or infection preventionist of the incident as soon as practical.

G. CLEANING SPILLS OR SPLASHES OF BLOOD OR BODY FLUIDS

Policy

Environmental contamination and the possible spread of bloodborne infections, including the AIDS (HIV) and hepatitis B (HBV) viruses, to staff and residents while cleaning up spills of blood or body fluid splashes will be minimized. Spills or splashes of blood or other body fluids must be cleaned and the spill or splash area decontaminated as soon as practical.

Preparation

Assemble the equipment and supplies as needed.

General Guidelines

1. Whoever spills or splashes blood or body fluid, or witnesses splattered or spilled blood anywhere in the facility, shall notify environmental services that a spill or splash of blood or body fluids has occurred and shall provide pertinent information, including the amount and area in which the incident occurred.
2. An appropriately trained and authorized individual shall clean and disinfect any surfaces or equipment contaminated with spills or splashes of blood or body fluids as soon as practical to prevent exposure.
3. Whoever is exposed to blood or body fluids shall report the occurrence to the infection preventionist (or designee) and wash his/her hands as soon as practical after exposure.
4. Staff must wear gloves when cleaning spills or splashes of blood or body fluids. (Note: Other protective equipment, i.e., gowns, masks, and goggles, may be necessary if splashing of blood or body fluids into the eyes, nose, or mouth, or soiling of clothing is likely. Shoe coverings will be necessary if there is a large amount of blood or body fluids on the floor.)
5. Wash hands as soon as practical after exposure to blood or body fluids.
6. The facility has established procedures governing the cleaning and disinfection of spills or splashes of blood or body fluids.
7. As all residents' blood and body fluids are considered potentially infectious, all exposures to blood/body fluids will be reported to the infection preventionist (or designee) or supervisor.
8. Do not pick up broken glass by hand. Use forceps, tongs, or brush and dustpan.
9. Report spills of blood or body fluids to the infection preventionist (or designee) so that an investigation into the cause of the spill can be initiated and the corrective measures identified to prevent similar spills from occurring.

Equipment and Supplies

The following equipment and supplies will be necessary when performing this procedure.

1. Nonsterile gloves (exam or heavy-duty);
2. Bleach (EPA registered sodium hypochlorite 5.25%);
3. Spray bottle;
4. Water;
5. Cloth or paper towels;

6. Plastic bag (Note: If a red bag is not used, a "biohazard" label will be affixed to the bag);
7. Forceps, tongs, or brush and dustpan (as applicable if picking up broken glass);
8. Personal protective equipment (e.g., gowns, gloves, mask, etc., as needed); and
9. Other as appropriate or as may be needed.

Procedure

1. Arrange the supplies so they can be easily reached.
2. Using appropriate personal protective measures, mix and label the following disinfectant solutions:
    a. One (1) part bleach and ten (10) parts water (written as 1:10); and/or
    b. One (1) part bleach and one hundred (100) parts water (written as 1:100).
3. Put on nonsterile exam gloves or heavy-duty gloves.
4. If the spill involves large amounts of blood (two cups or more), spray the area with 1:10 disinfectant solution until thoroughly saturated.
5. Use forceps, tongs, or brush and dustpan to pick up broken glass.
6. Place contaminated items, including equipment used to pick up glass fragments, in properly labeled receptacle for decontamination.
7. Wipe up the spill or splash with a cloth or paper towels or use granules to absorb spill.
8. Discard the saturated cloth or paper towels into the plastic "biohazard" bag.
9. Repeat as necessary until the spill or splash area is dry.
10. Disinfect the area by swabbing with a cloth or paper towel which has been moderately saturated with a 1:100 bleach solution. Allow to air dry.
11. Discard the contaminated cleaning cloth or paper towels into the plastic "biohazard" bag.
12. Spray disinfectant solution onto the discarded cloth or paper towels inside the plastic bag.
13. Tie the bag. If the outside of the plastic bag becomes contaminated with blood, body fluids, secretions, or excretions, place the contaminated bag into a clean plastic bag.
14. Place the plastic bag into a designated container for medical waste.
15. Remove gloves and place them into designated container. Wash and dry hands thoroughly.
16. Return unused supplies or equipment to the designated storage areas.
17. Wash and dry hands thoroughly.

Reporting

1. Notify environmental services of spills of blood or body fluids and/or incidents that result in broken glass.
2. Report other information in accordance with facility policy and professional standards of practice.

H. ASEPTIC AND STERILE TECHNIQUES

Policy

Staff will strictly adhere to aseptic and sterile technique as applicable to help prevent the spread of infection.

Principles of Aseptic Technique

Aseptic technique may also be called clean technique. The areas designated "aseptic" or "clean" are kept free from cross-contamination with microorganisms. Aseptic technique encompasses:

1. Proper handwashing – a minimum 20 second soap and water wash, rinsing using warm water; or using hand gels if appropriate.
2. Wearing non-sterile gloves.
3. Following standard precautions (use of mask, gowns, etc. if chance of contamination).
4. Keeping equipment that is going to be used (tubing, fluid bags, syringes) sterile and keeping as close to sterile as possible. A sterile field is not maintained.
5. Cleaning the area to be used (such as the end of the catheter) with alcohol or other cleaning agents approved for aseptic technique.
6. Taking care not to cross-contaminate "dirty" surfaces or objects and the aseptic area.

Principles of Sterile Technique

Sterile technique means keeping the designated area free from any type of contamination or microorganisms until procedure is completed. Sterile technique encompasses:

1. Establishing and maintaining a sterile field throughout the procedure.
2. Wearing a mask, sterile gloves, and possibly a gown or cap throughout the procedure.
3. Removing equipment and supplies that come in sterile packaging and placing them on a sterile field in such a way that prevents contamination.
4. Taking care not to cross-contaminate sterile objects (including gloves) with non-sterile objects.
5. Cleaning the designated sterile area from the center outward in circular motion if using alcohol and povidone iodine. If using other types of cleaners, follow manufacturer's instructions.
6. Air drying sterile areas that have been cleaned (not waving or blowing over cleaned area).

INFECTION CONTROL

I. MANAGEMENT OF MULTIDRUG-RESISTANT ORGANISMS

Policy

Appropriate precautions will be taken when caring for individuals known or suspected to have infection with a multidrug-resistant organism. (Note: **Infection** means that the organism is present and is causing illness. **Colonization** means that the organism is present in or on the body but is not causing illness.)

General Guidelines

1. Multidrug-resistant organisms (MDROs) are bacteria and other microorganisms that have developed resistance to one or more classes of antimicrobial medications.
    a. Common examples of MDROs in long-term care facilities include MRSA (methicillin/oxacillin-resistant *Staphylococcus aureus*) and VRE (vancomycin-resistant Enterococci).
    b. In addition, gram-negative bacilli (e.g., *Escherichia coli*, *Klebsiella pneumoniae*, and resistant *Acinetobacter baumannii*) and multidrug-resistant *Streptococcus pneumoniae* have been identified as emerging MDRO threats in long-term care.
2. Persons who have *Staphylococcus aureus* resistant to nafcillin, oxacillin, or methicillin are considered to have MRSA, no matter what other antibiotic sensitivities are identified for the organisms.

Standard Precautions

1. Staff will use standard precautions as the primary approach to preventing transmission of MDROs.
2. Caregivers will perform hand hygiene as indicated in the hand hygiene policy. (before and after contact with resident and before leaving facility)
3. Masks are not recommended for routine use in caring for residents with MDRO infection or colonization except as indicated by standard precautions when there is a risk of splashing body fluids.

Contact Precautions

1. The staff and practitioner will evaluate each individual known or suspected to have infection with a multidrug-resistant organism for room placement and initiation of contact precautions on a case-by-case basis. Standard precautions will be adequate for some.
2. The infection prevention and control committee or medical director may implement or consider the following to determine the need for contact precautions and/or room placement:
    a. The individual's ability to contain infected/colonized body fluids or body site.
    b. Personal hygiene of the resident (e.g., handwashing, keeping hands away from infected/colonized areas).
    c. Risks for transmission including uncontrolled secretions, stool incontinence, draining wounds, diarrhea, and total dependence for activities of daily living or behaviors that may increase the risk of transmission.
3. Should a resident be placed on contact precautions, implement the facility contact precautions policy.

Room Placement

1. A resident with a multidrug-resistant organism may need to be separated from a roommate who has any of the following: a device such as an indwelling urinary catheter, gastrostomy feeding tube, or intravenous

access line, a pressure ulcer or other open skin wound including a postoperative wound, or significant immunosuppression (due to malignancy, chemotherapy, etc.).

2. The resident need not be moved from his/her room until after screening is done and the need for contact precautions is determined.
3. Depending on the situation, placement may include the following:
    a. Placement in a room with someone else who is colonized or infected with the same organism, but does not have any other infection (cohorting).
    b. Placement with someone who does not have invasive devices or wounds.
    c. Placement in a private room, if possible.
4. A resident who is infected or colonized with a multidrug-resistant organism will be permitted to participate in group meals and activities if draining wounds are covered, bodily fluids are contained, and he/she observes good hygiene practices.
5. Personnel with open skin lesions should ensure they are covered. If uncovered skin and immuno-compromised, the personnel will not care for a resident with MRSA or other MDRO infection.

Discontinuing Contact Precautions

1. Residents who are placed on contact precautions will remain so until a clear culture report has been obtained or until it is determined that they no longer present a risk of transmission. CDC no longer provides specifics on the number of cultures required to discontinue precautions for a resident with a MDRO.
    a. If a resident is asymptomatic and has a positive culture, he or she is considered colonized and does not require precautions.
    b. If resident is symptomatic and has a positive culture, a case by case decision will be made on whether precautions are needed.
    c. If resident is considered colonized but there are other factors such as behaviors that increase the risk of transmission, precautions may be continued.
2. Contact precautions or isolation may not be discontinued until the infection preventionist/designee reviews the situation and the attending provider approves the discontinuation.
3. Upon approval from the infection preventionist/designee and attending provider, a resident who has had a multidrug-resistant organism at a site that has healed (or who has recovered from bacteremia or sepsis due to a multidrug-resistant organism) may be removed from contact precautions without having a repeat culture of the site.

Environmental Precautions

1. In general, healthy visitors and volunteers will be encouraged to wear disposable gowns and gloves during visitation. If refused, visitors will be asked to perform hand hygiene before leaving the room and will be requested to not visit with other residents.
2. For residents with colonization or infection with MDROs, non-critical resident-care items will be dedicated for individual use or decontaminated prior to use with another resident.
3. Towels used for drying hands after contact should be used only once.
4. Disposable gloves should be worn if contact with body fluids is expected and hand hygiene performed after removing the gloves.
5. Linens should be changed and washed if they are soiled and on a routine basis.
6. The resident's environment should be cleaned routinely and when soiled with body fluids.

Surveillance and Communication

1. Complete surveillance documentation (e.g., line history, reports) for residents who have a multidrug-resistant organism infection/colonization.
2. The nursing staff and/or infection preventionist will ensure that staff is aware of a resident with a MDRO infection.
3. If there is a first case or outbreak of an epidemiologically important MDRO (MRSA, VRE, ESBL, resistant A. *baumannii*), surveillance of target MDRO infection will be initiated.
4. If a resident who is colonized or infected with a MDRO is transferred to another facility, the information will be included on the transfer form sent to the receiving facility.
5. Notify providers and other healthcare personnel who provide care for the resident who is colonized or infected with a MDRO.

Enhanced MDRO Control Efforts

1. If prevalence of MDROs are not controlled through the use of routine control measures, the infection preventionist will initiate enhanced control efforts, which may include the following:
    a. Consulting with persons with experience in the infection control and epidemiology of MDROs.
    b. Reviewing facility systems and staffing patterns that may be contributing to the spread of MDROs.
    c. Intensifying training of staff and personnel.
    d. Reviewing antibiotic usage data.
    e. Intensifying antibiotic stewardship measures.
    f. Obtaining active cultures from residents at risk.
    g. Intensifying surveillance of targeted MDROs.
    h. Initiating contact precautions for all residents infected or colonized with MDROs.
    i. Implementing policies for resident admission and placement as needed.
    j. Implementing resident-dedicated use of non-critical care items.
    k. Monitoring environmental services for compliance with cleaning and disinfecting procedures.
    l. Obtaining environmental cultures.
    m. Consulting with experts on decolonization therapies for residents and staff.

J. DISINFECTION OF DURABLE MEDICAL EQUIPMENT FOR INTRAVENOUS THERAPY

Policy

1. Durable medical equipment (DME) shall be cleaned and disinfected routinely and following resident use.
2. Protocols for disinfection of DME will be in accordance with current practice guidelines for disinfection of DME.

General Guidelines

1. Disinfection solutions will be high level germicides and will be used in accordance with manufacturers' labeled use and directions. Solutions will be Environmental Protection Agency (EPA) registered.[1]
2. Disinfection is to remove foreign material, prevent cross contamination, transmission of disease, and to eliminate microorganisms.
3. Intravenous therapy equipment that will be cleaned/disinfected should include (but not limited to):
    a. IV poles;
    b. Electronic and mechanical infusion devices; and
    c. Other non-disposable, non-porous infusion-related equipment.
4. Clean and disinfect infusion-related DME when visibly soiled.
5. Dedicate infusion-related DME for *single resident use* when resident is on contact precautions, and clean/ disinfect before use on another resident.
6. Do not use disinfection solutions that could alter the integrity or performance of the equipment. Avoid the sensor areas on electronic pumps.
7. Use standard precautions when handling DME. Place DME in a plastic bag or decontaminate before transporting to another location for cleaning and disinfection.

K. GUIDELINES FOR PREVENTING INTRAVENOUS CATHETER-RELATED INFECTIONS

Policy

The purpose of this procedure is to maximally reduce the risk of infection associated with indwelling intravenous (IV) catheters.

General Guidelines

1. Facility staff who manage infusion catheters will have training and demonstrated clinical competency in intravenous therapy, including:
    a. Indications for IV catheter use;
    b. Proper procedures for the insertion and maintenance of IV catheters; and
    c. Appropriate infection control measures to prevent IV catheter-related infections.
2. Staff may only insert catheter types for which they have adequate training and demonstrated skill.
3. Aseptic technique shall be observed at all times when working with IV equipment.
4. All infusion equipment shall be sterile when first opened. At all times equipment shall remain aseptic. If it becomes contaminated it must be changed.
5. Resident complaints of pain or problems regarding the catheter or treatment shall be investigated immediately. Interventions shall be initiated as soon as the appropriate measure is identified.

Overview of Catheter-Related Infections

1. Potential risk factors associated with venous access device (VAD) and infusion-related infections include:
    a. Catheter dwell time, sutures;
    b. Frequent manipulation of VAD;
    c. Multi-lumen catheters; and
    d. Immunosuppression.
2. Signs and symptoms that can indicate infection include:
    a. Edema;
    b. Tenderness or pain at insertion site;
    c. Erythema, induration, purulent drainage;
    d. Rupture and drainage of the site;
    e. Fluid in the subcutaneous pocket of an implanted device or tunneled catheter;
    f. Positive blood cultures or catheter tip;
    g. Phlebitis;
    h. Fever;
    i. Chills; and
    j. Altered mental status.
3. Infections can be local, systemic, or both.

Nursing Practice Guidelines to Prevent Catheter-Related Infections

Surveillance

1. Observe the insertion site (and sutures if present) on every shift, on admission, and with dressing changes.
2. Observe visually or by palpation through the intact dressing.
3. If signs and symptoms of catheter-related infection are present, contact the provider.
4. Obtain an order for culture if there are signs of drainage, expanding redness, tenderness at insertion site, and/or fever without obvious source.
5. Cultures may be taken from the site of drainage, the catheter, peripheral blood samples, or any other suspected source as ordered.
6. Any time that dressing is not intact or end caps are missing, the catheter has potential for contamination.
7. The infection preventionist is responsible for documenting, reporting, and retaining infection rate statistics.

Hand Hygiene

1. Observe proper hand hygiene procedures either by washing hands with conventional soap and water, or with waterless alcohol-based hand rubs.
2. Observe hand hygiene before and after palpating catheter-insertion sites, as well as before and after inserting, replacing, accessing, repairing, or dressing an IV catheter.
3. Palpate insertion site after hand hygiene and non-sterile gloves are applied.
4. Palpation of the insertion site should not be performed after the application of an antiseptic, unless aseptic technique is maintained.

Other Strategies to Prevent Cather-Related Infections:

1. Select the appropriate type of catheter to accommodate the resident's vascular access needs based on the intended purpose and duration of use, known infectious and non-infectious complications, and experience of individual catheter operators.
2. Maintain aseptic technique during peripheral catheter insertion and care.
3. Maintain sterile technique when inserting and caring for a central vascular access device.
4. Follow facility protocols for dressing and administration set changes.
5. Follow facility procedures for preparation and quality control of IV admixtures.
6. Obtain provider order for the removal of any peripheral catheter that is no longer essential.
7. Remove a peripheral venous catheter if the resident develops signs of phlebitis or infection, or if the catheter malfunctions.
8. If a catheter is placed under emergency conditions, and aseptic technique cannot be ensured, replace the catheter as soon as possible (within 48 hours).
9. Do not routinely replace midline catheters, CVC or arterial catheters solely for the purpose of reducing the incidence of infection.
10. Any time the resident complains of discomfort or pain related to the catheter, or there are signs and symptoms of complications, assess the resident and catheter site and intervene as appropriate. CVCs and PICCs should not be removed on the basis of fever alone.
11. If a catheter-related bloodstream infection is suspected and a culture is ordered, cultures of catheter and site are obtained before removing catheter.
12. Removal of a midline or any central line is to be performed upon the order of a provider or authorized prescriber in accordance with state nurse practice act.
13. Never re-advance a catheter that is found out of place.

14. When a new site is selected for cannulation, the site should be proximal to the previous site.
15. A catheter with the fewest number of lumens possible should be used for the infusion management of the resident.
16. Consider labeling each lumen as to purpose, to avoid cross contamination and medication interaction.
17. Follow manufacturer recommendations or facility policy for purpose and use of lumens.

Documentation

The following information should be recorded in the resident's medical record:

1. Objective information regarding appearance of insertion site, catheter, and dressing.
2. Any interventions that were done (dressing change, cultures, etc.).
3. Results of any laboratory tests, cultures.
4. Communication with provider, supervisor, oncoming shift.

Reporting

1. Report objective information, lab results, and interventions to supervisor, provider, and oncoming shift.
2. Report any infection control information to infection preventionist, pharmacy, federal agencies if needed.

L. CULTURING FOR CATHETER-RELATED INFECTIONS

Policy

Suspected sources of catheter contamination will be obtained aseptically and submitted to the microbiology lab with information needed to identify the microorganisms associated with catheter-related infections.

Preparation

1. A provider's order is required to draw blood for culture or to culture the catheter tip after removal of catheter.
2. Follow laboratory specific procedures for collection of specimen.
3. Verify with state nurse practice act for RN/LPN scope of practice for this procedure.
4. State waiver required for CVAD blood draws in some states.

General Guidelines

1. This is a sterile procedure. Use only sterile scissors and collection container for specimen collection. If the collection bottle is not part of a sterile collection kit, disinfect the rubber stopper of the bottle with alcohol swab prior to collecting the specimen.
2. Obtain blood cultures from a peripheral venipuncture site. If a catheter-related blood stream infection is suspected, another culture may be taken from the CVAD.
3. Do not obtain blood cultures from peripheral or mid line catheters. Obtain blood specimen for culture before obtaining blood for other tests.
4. To obtain specimen from suspected contaminated catheter, remove the catheter by holding the hub to avoid touching the portion of the catheter that has been under the skin.
5. Include catheter segments (tip and/or subcutaneous segment), the delivery system, the access site, and infusate solution in cultures for suspected infusion-related and/or catheter-related infection.
6. Routine culturing of all central vascular access device tips upon removal is not recommended.
7. Removal of a functioning CVAD based on temperature elevation alone is not recommended.
8. Salvaging the catheter should be a decision made by the practitioner, the nurse and the resident or representative based on the following criteria:
    a. The type of vascular access device;
    b. Anticipated difficulty or complication associated with inserting a new device;
    c. The infecting organism, determined by blood cultures; and
    d. Other complicating conditions, such as sepsis, suppurative thrombophlebitis, endocarditis, or the presence of any vascular hardware (i.e., pacemaker).
9. Infection of an implanted port or a tunneled catheter requires removal of the CVAD. However, uncomplicated infection of the exit site (i.e., no systemic infection, positive blood culture, or purulence) may be treated with topical antimicrobial ointment, as indicated by the culture results and practitioner order.

Equipment and Supplies

1. Central line dressing change kit;

2. Sterile scissors (suture removal kit);
3. Sterile container for placing culture to send to lab;
4. Sterile cotton swabs for drainage culture (this may come with culture tube);
5. Labels for sterile containers;
6. Venipuncture equipment, sterile gauze, tourniquet, antiseptic cleaning solution for blood cultures;
7. Normal saline, Vacutainer® lab tubes and holder, alcohol wipes for catheter blood draws; and
8. Lab biohazard bags to place samples.

Procedure

1. Perform hand antisepsis. Wear non-sterile gloves.
2. Discontinue any infusions for at least two minutes before obtaining blood cultures. Flush with at least 5 mL of normal saline to clear catheter of medications.
3. Remove old dressing if catheter insertion site drainage is to be cultured.
   a. **To obtain culture from drainage at catheter-skin junction:**
      (1) Culture drainage before removing catheter.
      (2) Do not clean area before culturing drainage.
      (3) Keep the sterile swab that is used to collect culture from touching anything except the drainage.
      (4) Swab any drainage with sterile swab.
      (5) Uncap culture tube.
      (6) Drop swab into culture tube using aseptic technique.
      (7) Recap tube.
   b. **To obtain culture from catheter tip:**
      (1) Verify order to remove catheter.
      (2) Verify with state nurse practice act if LPN/RN with clinical competency is allowed to remove catheter.
      (3) Using sterile technique and supplies, remove catheter, avoiding contact with surrounding skin and environment.
      (4) Have second person uncap culture container, making sure that cap and container stay sterile.
      (5) Place catheter tip into container, and using sterile scissors cut approximately 2 inches of catheter tip into container.
      (6) Finish placing pressure dressing to exit site of catheter.
   c. **To obtain blood culture (venipuncture):**
      (1) Refer to procedure for obtaining blood specimens from a direct venipuncture
   d. **To obtain culture from infusate container:**
      (1) Disinfect access port of infusate container.
      (2) Insert needle with syringe into access port.
      (3) Withdraw 3 mL of infusion solution.
      (4) Uncap culture tube.
      (5) Inject contents of syringe.
      (6) Recap tube.
   e. **To obtain blood sample from central venous access device:**
      (1) Refer to procedure for obtaining blood specimens from a central venous catheter.

(2) If cultures of drainage and/or tip are also ordered, obtain blood sample from CVAD before removing dressing or catheter.

f. **When culture(s) are obtained:**

(1) Label culture with:

a) Resident's name;
b) Resident's medical record number or ID;
c) Date and time specimen was collected; and
d) Contents of the culture tube.

(2) Place labeled cultures in lab biohazard bag and send to lab.
(3) Discard used supplies.
(4) Remove gloves. Perform hand antisepsis.
(5) Notify provider when culture results are received.

Documentation

1. The following information should be recorded in the resident's medical record:
   a. The signs and symptoms of catheter-related infection, when the signs and symptoms were first discovered, and location of catheter and type of culture sent (tip, drainage, blood).
   b. The date and time of the culture.
   c. The condition of the resident, including vital signs and his or her response to the procedure.
   d. Results of the culture, notification of the provider and actions taken when the results are received.
   e. The signature and title of the person recording the data.
2. Complete an incident report if indicated by facility policy.

Reporting

1. Notify provider, infection preventionist, and oncoming shift of type of culture sent and results.

IV. MEDICATION ORDERING, RECEIVING AND STORAGE

Table of Contents

MEDICATION ORDERING, RECEIVING AND STORAGE

A. PROVIDER ORDERS FOR INFUSION THERAPY

Policy

The purpose of this policy is to provide guidelines for infusion therapy orders to be consistent with principles of safe and effective order writing so that all prescribed medications are administered safely and accurately.

General Guidelines

1. Only authorized, licensed healthcare providers or individuals who are authorized to take verbal or telephone orders from providers, shall be allowed to write orders in the medical record. The pharmacy staff shall verify that individuals who prescribe medications are legally authorized to do so.
2. Only approved abbreviations and symbols shall be used when ordering and/or charting. Prescribing, nursing and pharmacy staff shall be given a list of approved abbreviations to be used when writing medication orders.
3. Each facility, in conjunction with the Consultant Pharmacist and the Medical Director, shall identify and approve appropriate order writing practices and related policies. They shall also approve any modifications to the list of approved abbreviations.
4. Providers shall provide timely, accurate, and complete orders.
5. Verbal or telephone orders in the facility:
    a. Verbal or telephone orders shall be given in an emergency situation or when the attending provider is not immediately available to write or sign the order.
    b. Verbal or telephone orders shall always be based on a conversation with the prescribing provider or on approved written protocols.
    c. Verbal or telephone orders will be transcribed by the person receiving the order, and recorded in the resident's medical record. Documentation on the provider's order sheet shall include "v.o." (verbal order) or "t.o." (telephone order).
    d. Documentation shall include the instructions from the provider, date, time and the signature and title of the person transcribing the information.
    e. Unless otherwise prohibited by law, verbal or telephone orders for Schedule II medications are permitted in accordance with facility policy.

Procedure

1. Orders for IV medication shall be verified by the nurse prior to administering.
2. The nurse shall verify medication orders with the provider when there is a question. Any dose or order that appears inappropriate considering the resident's age, allergy history, condition or diagnosis shall be verified with the attending provider.
3. Orders for infusion or IV medications should include the following elements:
    a. Resident name.
    b. Date ordered.
    c. Name of medication.
    d. Type of solution, as appropriate for IV medication orders.
    e. Strength of medication, where indicated.
    f. Dosage.

g. Route of administration, including type of access device.
h. Time, frequency or rate of IV administration.
i. Quantity or duration/length of therapy.
j. Indication for use.
k. Provider name.
l. Signature of nurse noting order.

4. Additional resident information the nurse should have on hand includes:
   a. Allergies;
   b. Age;
   c. Height and weight; and
   d. Pertinent laboratory results.
5. Orders to "Keep Vein Open" (KVO) will not be accepted.
6. Stat orders should be communicated from the facility to the pharmacy immediately upon receipt from the provider. Stat infusion medications and supplies will be delivered to the facility within a timely manner whether during the pharmacy's regular business hours or after hours/emergency times.
7. Orders for flushing protocols should also be written at the time of IV medication order writing if not already present in the resident's medical record.

B. DISCONTINUATION ORDERS

Policy

The purpose of this policy is to provide guidelines for new IV medication orders subject to automatic stop orders and for discontinuation orders for infusion therapy.

Procedure

Automatic Stop Orders:

1. The following classes of infusion medications are stopped automatically after the indicated number of days, unless the provider specifies a different number of doses or duration of therapy.
    a. Anti-infectives for acute conditions, including antibiotics, antifungals and antivirals: **10 days.**
    b. Controlled substance analgesics for acute conditions: **10 days.**
2. When the provider creates the order for a medication covered by this policy, the nurse should request a specific duration of therapy for the order. This then supersedes the *Automatic Stop and Discontinuation Orders* policy.
3. When implementing the *Automatic Stop and Discontinuation Orders* policy, the provider shall be notified of the discontinuation prior to the administration of the last dose. This allows the provider to continue the medication if desired.
4. Any remaining medication should be removed from the resident's supply and disposed of appropriately to avoid a medication administration error.

Discontinuation Orders:

1. Upon receipt of a provider's order for discontinuation of infusion therapy, the nurse shall communicate in the order to the pharmacy.
2. Upon receipt of a provider's order for discontinuation of infusion therapy, the pharmacist or technician shall discontinue the order in the pharmacy's computer system and on the resident's *IV Medication Profile.*
3. Any remaining medication should be removed from the resident's supply and disposed of appropriately to avoid a medication administration error.

C. ACCEPTING DELIVERY OF MEDICATIONS

Policy

All staff shall follow a consistent procedure in accepting medications.

Any errors noted in receiving medications shall be brought to the attention of the pharmacist and director of nursing services.

General Guidelines

1. A licensed nurse shall receive medications delivered to the facility.
2. Before signing to accept the delivery, the nurse will:
    a. Reconcile the type, number, form and strength of medications in the package with the delivery ticket/order receipt; and
    b. verify that directions for use accompany each medication.
3. If an error is identified when receiving medications from the pharmacy, the nurse verifying the order shall:
    a. inform the delivery agent of any discrepancies and note them on the delivery ticket;
    b. Return incorrect medications (e.g., wrong strength, form, etc.) to the dispensing pharmacy and reorder the correct medication;
    c. if the number of a medication or packages of medications is incorrect, and the medication is not an emergency order, return the order to the pharmacy; and
    d. if the number of a medication or packages of medications is incorrect, and the medication is an emergency order, the order may be accepted and the accepting nurse shall write that information onto the delivery ticket/order receipt.
4. A nurse shall sign the delivery ticket, indicating review and acceptance of the delivery, and shall keep a copy of the delivery ticket. Both the receiving nurse and the delivery agent must sign any notations about errors.
5. The delivery ticket shall be archived in a designated location.
6. The dispensing pharmacy, Consultant Pharmacist, and Director of Nursing services shall be notified of medication order errors.

D. CONTROLLED SUBSTANCES

Policy

The facility shall comply with all laws, regulations, and other requirements related to handling, storage, disposal, and documentation of Schedule II and other controlled substances.

General Guidelines

Handling Controlled Substances

1. Only authorized licensed nursing and/or pharmacy personnel have access to Schedule II controlled substances maintained on premises.
2. The director of nursing services will identify staff members who are authorized to handle controlled substances.
3. Controlled substances will be counted upon delivery. The nurse receiving the medication, along with the person delivering the medication, must count the controlled substances together. Both individuals will sign the designated controlled substance record.
4. If the count is correct, an individual resident controlled substance record must be made for each resident who will be receiving a controlled substance. Do not enter more than one (1) prescription per page. This record will contain:
    a. Name of the resident;
    b. Name and strength of the medication;
    c. Quantity received;
    d. Number on hand;
    e. Name of the prescriber;
    f. Prescription number;
    g. Name of issuing pharmacy;
    h. Date and time received;
    i. Time of administration;
    j. Method of administration;
    k. Signature of person receiving medication; and
    l. Signature of nurse administering medication.

Storing Controlled Substances

1. Controlled substances must be stored in the medcart/ medication room in a locked container, separate from containers for any non-controlled medications, or per state regulation. This container will remain locked at all times, except when it is accessed with key or access code to obtain medications for residents.
2. All keys to controlled substance containers shall be on a single key ring that is different from any other keys.
3. The charge nurse on duty will maintain the keys to controlled substance containers. The director of nursing services will maintain a set of back-up keys for all medication storage areas including keys to controlled substance containers.

Counting and Dispensing Controlled Substances

1. Unless otherwise instructed by the director of nursing services, when a resident refuses a non-unit dose medication (or it is not given), or a resident receives partial tablets or single dose ampules (or it is not given) the medication shall be destroyed, and may not be returned to the container. (see state regulations for destruction)
2. Nursing staff must count controlled medications at the end of each shift. The nurse coming on duty and the nurse going off duty will make the count together. They must document and report any discrepancies to the director of nursing services.
3. The director of nursing services documents irreconcilable discrepancies in a report to the administrator.
    a. If a major discrepancy or a pattern of discrepancies occurs, or if there is apparent criminal activity, the director of nursing notifies the administrator and consultant pharmacist immediately.
    b. The administrator, consultant pharmacist, and/or director of nursing determine whether other action(s) are needed, e.g., notification of police or other enforcement personnel.
    c. The medication regimen of residents using medications that have such discrepancies are reviewed to assure the resident has received all medications ordered and the goal of therapy is met (example: a resident receiving a pain medication complains of unrelieved pain).
    d. The director of nursing services shall consult with the provider pharmacy and the administrator to determine whether any further legal action is indicated.
4. Controlled substances are not surrendered to anyone, including the resident's provider, other than releasing controlled medications for a resident on pass or therapeutic leave, to a resident or responsible party upon discharge from the facility, or to the DEA or other law enforcement officials functioning in a professional capacity in exchange for a receipt documenting the transaction.
5. Controlled substances remaining in the facility after the order has been discontinued or the resident has been discharged are retained in the facility in a securely locked area with restricted access until destroyed.
6. Accountability records for discontinued controlled substances are maintained with the unused supply until it is destroyed or disposed of, and then stored as required by applicable law or regulation.
7. The consultant pharmacist or designee routinely monitors controlled substance storage records.
8. The director of nursing services shall maintain and disseminate to appropriate individuals a list of staff who have access to medication storage areas and controlled substance containers.
9. For guidelines pertaining to disposing of controlled substances, see *Discarding and Destroying Medication* policy.

E. EMERGENCY PHARMACY SERVICE AND EMERGENCY KITS

Policy

The purpose of this policy is to ensure that adequate emergency infusion medications are available to meet the needs of residents.

General Guidelines

1. Emergency pharmacy service is available on a 24-hour basis. Telephone numbers for emergency pharmacy services are posted at each facility nursing station.
2. Emergency needs for infusion medications are met by using the facility's approved emergency medication supply, which may be limited quantities packaged as "kits" or stored in automated dispensing systems in accordance with state laws, or by special order from the pharmacy.
3. Automated medication dispensing systems may be used as approved by the State Board of Pharmacy or state laws for emergency medication use in the facility. Automated medication systems store, package, dispense and distribute medications or supplies. Examples of automated dispensing machines include ScriptPro®[1], Pyxis®[2], PHARMAssist®[3], AutoMed®[4], and BakerAPS®[5].
4. Attending providers and prescribers will be informed as to the availability of emergency medications in the facility.
5. Medications and supplies deemed appropriate for emergency kits and storage shall be kept secure within the facility.
6. The medications contained in emergency kits and machines shall be checked periodically for integrity and expiration dating.
7. Emergency medications are only administered after a valid provider's order. The resident's allergy history should also be checked prior to medication administration.
8. Use of emergency medications is documented. The *Emergency Kit Tracking Log* may be used in conjunction with emergency kits for documentation purposes.
9. Due to potentially serious adverse effects attributed to the use of concentration potassium chloride (KCl), only premixed, diluted IV KCl solutions shall be stored in emergency kits.

Procedure

1. A list of medications and supplies approved for inclusion in the emergency kit or system shall be posted on the kit/system as well as available to facility and pharmacy staffs. This list should include:
    a. Medication or supply name;
    b. Quantity of item;
    c. Expiration date of item; and
    d. Pharmacy's name and phone number.

[1] ScriptPro® is a trademark (or registered trademark) of ScriptPro LLC (www.scriptpro.com).
[2] Pyxis® is a trademark (or registered trademark) of Cardinal Health (www.cardinal.com).
[3] PHARMAssist® is a trademark (or registered trademark) of Innovation (www.innovat.com).
[4] AutoMed® is a trademark (or registered trademark) of Amerisource Bergen Technology Group (www.automedrx.com).
[5] BakerAPS® is a trademark (or registered trademark) of McKesson (www.mckesson.com).

2. A method of recording use of items from the emergency kit/system shall be in place. The *Emergency Drug Kit Slip* forms may be added to kits or available for nurses to complete as items are removed from kits.
3. Emergency kits/systems shall be sealed or locked, whether by physical seal, key or code access.
4. Medications used from emergency kit/system or an entire kit shall be replaced per state laws.
5. If exchanging kits, the pharmacy shall deliver a sealed kit to the facility and pick up the opened and re-sealed kit within 72 hours of opening.
6. If replacing used doses of medication, the nurse or pharmacy staff is instructed to replace the medication in the appropriate area of the kit/system within 72 hours of opening. A new seal is placed on the kit after the replacement medication has been added.
7. The kits/systems are inventoried by the pharmacy staff at least every thirty (30) days for completeness and expiration dating of the contents. The date of inventory is noted on the outside of the kit.
8. If emergency orders are not available in emergency kits/systems, the pharmacist:
    a. Determines that the order is a true emergency and that the order cannot be delayed until the next scheduled pharmacy delivery; and
    b. Will arrange to provide the emergency medication as soon as possible if the medication is not available.

Documentation

1. An *Emergency Drug Kit Slip* may be stocked by the pharmacy and/or the facility for facility nurses to use indicating items used from the emergency kit for billing purposes.
2. An *Emergency Kit Tracking Log* may be utilized by the pharmacy to keep track of kit locations, expiration dates and seal numbers.

F. MEDICATION STORAGE

Policy

The facility shall store all medications and biologicals in a safe, secure, and orderly manner.

General Guidelines

1. Medications and biologicals shall be stored in the packaging, containers or other dispensing systems in which they are received. Only the issuing pharmacy is authorized to transfer medications between containers.
2. The nursing staff shall be responsible for maintaining medication storage AND preparation areas in a clean, safe, and sanitary manner.
3. If medication containers have missing, incomplete, improper or incorrect labels, contact the dispensing pharmacy for instructions regarding returning or destroying these items.
4. If the facility has discontinued, outdated or deteriorated medications or biologicals, contact the dispensing pharmacy for instructions regarding returning or destroying these items.
5. Medications for external use, as well as poisons, shall be clearly marked as such, and shall be stored separately from other medications.
6. Antiseptics, disinfectants, and germicides used in any aspect of resident care must have legible, distinctive labels that identify the contents and the directions for use, and shall be stored separately from regular medications.
7. Compartments (including, but not limited to, drawers, cabinets, rooms, refrigerators, carts, and boxes) containing medications and biologicals shall be locked when not in use, and trays or carts used to transport such items shall not be left unattended if open or otherwise potentially available to others.
8. Medications shall be stored in an orderly manner in cabinets, drawers, carts, or automatic dispensing systems. Each resident's medications shall be assigned to an individual cubicle, drawer, or other holding area to prevent the possibility of mixing medications of several residents.
9. Medications requiring refrigeration must be stored in a refrigerator located in the medication room at the nurses' station or other secured location. Medications must be stored separately from food and must be labeled accordingly.

G. MEDICATION STABILITY

Policy

The nurse administering IV medication shall be aware of conditions of stability before using the medication.

Definition

Medication stability refers to the length of time that a medication/solution retains its original physical, chemical and therapeutic properties.

General Guidelines

1. Medication may arrive from the pharmacy as:
    a. Premixed (ready to use);
    b. Refrigerated premixed;
    c. Vial that must be reconstituted and added to fluid bag; or
    d. Medication attached to fluid bag that must be mixed just before being administered.
2. If the stability or condition of the medication has been compromised in any way, the medication will not be used.

Factors Affecting Medication Stability

1. Type of container: glass or plastic may affect medication stability.
2. Number and type of additives: the more medications/additives that are mixed in a container, the less stable the compound.
3. Dilution: the dose and concentration of medication that is mixed in solution can affect stability.
4. Time:
    a. The longer a medication remains in the solution, the less stable it is.
    b. Once the medication is mixed, it should be used within 2 hours (1 hour for compounded sterile preparations).
    c. See *Medication Beyond-Use Dating*.
5. Temperature:
    a. Medication stability is affected by heat: refrigeration improves stability.
    b. If a medication arrives from the pharmacy refrigerated, it must stay refrigerated.
    c. Remove medication from refrigerator approximately 30 minutes before use.
    d. Allow the medication to come up to room temperature naturally. Do not put in the microwave, run under hot water, put in a sunny window, on a heating pad, or on a heating vent. These methods may destroy the medication.
    e. If the medication is found outside of the refrigerator and there is no way to know how long it has been out of refrigeration, discard it.
    f. Do not put back in the refrigerator OR return to the pharmacy.
6. Light:
    a. Some medications are light sensitive (stable in natural room light, but not in sunlight).

b. These medications will be covered in a brown plastic bag for protection from light.
c. Once the medication is infused through the tubing, it becomes exposed to the light.
d. When infusing these medications, do not hang the bag close to a window or allow the resident outside while medication is infusing.

7. Solution:
   a. The pH of the solution can affect stability of the medications: infusion medications usually are more stable in slightly acidic solutions.
   b. Not all medications can be mixed in normal saline or dextrose.
   c. Contact pharmacy to ask about mixing instructions if none are available with medication.

USP <797> Compliance

1. Medications that are reconstituted and/or added to an infusion solution at the bedside or in the nursing station without sterile conditions or engineering controls are considered to be at high risk for microbial contamination.
2. These preparations are classified as "immediate-use category" in the *United States Pharmacopeia* Chapter 797 (USP<797>) pharmacy compounding risk level assessment.
3. Immediate-use preparations are exempt from USP chapter <797> requirements for *Compounding Sterile Preparations* as long as the following criteria are met:
   a. The compounded sterile preparation (CSP) must be for emergent use or for situations where a delay associated with lower-risk compounding would add risk for the resident.
   b. The preparation involves the simple transfer of not more than three commercially manufactured packages of sterile, non-hazardous drugs or diagnostic radiopharmaceuticals in their original containers.
   c. The transfer of substances does not involve more than two entries into any one container or package of sterile infusion solution or administration container (e.g., bag or vial).
   d. Process must utilize aseptic technique.
   e. The compounding process must last less than one continuous hour.
   f. The CSP must be administered less than one hour after preparation begins, or it must be properly discarded.
   g. The CSP must be administered immediately and completely (or the administration witnessed) by the person who prepared it, OR the CSP must be labeled with:
      (1) The resident/patient identification information;
      (2) The names and amount of all ingredients;
      (3) The name or initials of the person who prepared the CSP; and
      (4) The exact 1-hour beyond-use date (BUD) and time.
   h. The CSP not be compounded in batches or stored.
4. Single-dose containers (bags, bottles, vials, syringes) of sterile products and CSPs must be used within one hour of opening or needle-puncturing if opened in less than ISO Class 5 air quality (immediate-use CSPs).
5. Opened single-dose ampules will not be stored for any length of time.
6. Once entered or opened (needle-punctured), multi-dose vials must be labeled with a BUD of not more than 28 days, unless otherwise specified by the manufacturer.

Signs of Medication Instability

Instability of medication is not always visible; therefore stability guidelines and beyond-use dating will be the determining factor of medication usability.

H. RESIDENT DISCHARGE OR TRANSFER

Policy

The purpose of this policy is to provide guidelines to facilitate the continuity of pharmaceutical and infusion care and services throughout the discharge or transfer process.

General Guidelines

1. Information about medications may be provided to residents at discharge according to procedures and in compliance with applicable laws and regulations for request of Protected Health Information (PHI).
2. Resident information may be provided upon request to the resident, their responsible party and to the pharmacy or other treatment provider to which the resident transfers following completion of appropriate HIPAA request for information. Pharmacy staff work with the facility staff in coordination of care and information.

Procedure

1. Infusion medications and supplies previously dispensed may be sent with the resident upon discharge or transfer to another healthcare institution with authorization from the provider and the payment source per their policies.
2. Information that may be appropriate to communicate to the receiving facility nurse upon resident transfer or discharge includes:
    a. Medication history and profile;
    b. Allergy history;
    c. Infusion medication order;
    d. Pharmacokinetic dosing information, if applicable; and
    e. Pharmacy contact information.
3. The facility nursing staff shall educate the resident/responsible party on how the medication is to be used, possible adverse reactions, special precautions and proper storage of medications. If the directions for use are not the same as those on a prescription label, the nurse should communicate this to the resident/responsible party.
4. Pharmacists are available for questions regarding medications upon discharge or transfer.

MEDICATION ORDERING, RECEIVING AND STORAGE

I. DISCONTINUED MEDICATIONS

Policy

Staff shall destroy discontinued medications or shall return them to the dispensing pharmacy in accordance with facility policy.

General Guidelines

1. A provider's order to discontinue a resident's medication will be documented in the resident's clinical record and on the medication administration record (MAR).
2. The nurse receiving the order to discontinue a medication is responsible for recording the information (e.g., writing discontinued date, dating and initialing MAR) and notifying the dispensing pharmacy of the discontinuation.
3. Discontinued medications will be destroyed or returned to the issuing pharmacy in accordance with facility policy and state regulations. (See *Discarding and Destroying Medications* policy.)

J. DISCARDING AND DESTROYING MEDICATIONS

Policy

Medications that cannot be returned to the dispensing pharmacy (e.g., non unit-dose medications, IV medication, controlled medications, medications refused by the resident, and/or medications left by residents upon discharge) will be disposed of in accordance with federal, state and local regulations governing management of non-hazardous pharmaceuticals, hazardous waste and controlled substances.

Policy Interpretation and Implementation

1. All unused controlled substances shall be retained in a securely locked area with restricted access until disposed of.
2. Non-controlled and Schedule V (non-hazardous) controlled substances will be disposed of in accordance with state regulations and federal guidelines regarding disposition of non-hazardous medications.
3. Unless otherwise prohibited under applicable federal or state laws, individual resident medications supplied in sealed unopened containers may be returned to the issuing pharmacy for disposition provided that:
    a. No medications covered under the Federal Comprehensive Drug Abuse Prevention and Control Act of 1976 are returned;
    b. All such medications are identified as to lot or control number; and
    c. The receiving pharmacist and a registered nurse employed by the facility sign a separate log that lists the resident's name; the name, strength, prescription number (if applicable) and amount of the medication returned, and the date the medication was returned.
4. Schedule II, III, and IV (non-hazardous) controlled substances will be disposed of in accordance with state regulations and federal guidelines regarding disposition of non-hazardous controlled medications.
    a. For unused, non-hazardous controlled substances that cannot be accepted by a reverse distributor or pharmacy, the EPA recommends disposal of the substance with other solid waste following the steps below:
        (1) Take the medication out of the original containers.
        (2) Mix medication, either liquid or solid, with an undesirable substance. Undesirable substances include sand, coffee grounds, kitty litter, or other absorbent materials.
        (3) Place the waste mixture in a sealable bag, empty can, or other container to prevent leakage.
        (4) Dispose with the solid waste (i.e., regular trash) in the presence of two witnesses.
        (5) Document the disposal on the medication disposition record.
        (6) Include the signature(s) of at least two witnesses.
4. Any controlled substance that is considered hazardous waste will be managed in accordance with federal, state and local hazardous waste regulations, as well as the Controlled Substance Act and DEA regulations.

6. The medication disposition record must contain, as a minimum, the following information:
    a. The resident's name.
    b. Date medication destroyed.
    c. The name and strength of the medication.
    d. The prescription number (if any).
    e. The name of the dispensing pharmacy.
    f. The quantity destroyed.
    g. Method of destruction.
    h. Reason for destruction.
    i. Signature of witnesses.
7. Completed medication disposition records shall be kept on file in the facility for at least three (3) years, or as mandated by state law governing the retention and storage of such records.
8. For emergency kit controlled substances disposal, complete the appropriate portions of the controlled medication accountability form.
9. Staff shall contact the provider pharmacy if they are unsure of proper disposal methods for a medication.

K. MEDICATION RECALLS

Policy

The facility shall honor medication recall notifications.

General Guidelines

1. The dispensing pharmacy and/or consultant pharmacist will notify the facility of any medication recalls.
2. Upon receiving a medication recall notification from any reliable source:
    a. The director of nursing services or the consultant pharmacist will inspect the facility's medical supplies for the recalled item; and
    b. If the recall item is in stock, it will be removed from the inventory and returned to the supplier in accordance with the recall notice.
3. The director of nursing services, or designee, will document inventory records concerning removal of such supplies.
4. In conjunction with the consultant pharmacist, the director of nursing services and medical director will ensure that all nurses and attending providers are informed that a medication has been recalled, and will identify any specific precautions that should be followed, or symptoms that might result from the medication.
5. Nursing staff will withhold known recalled medications and will notify the provider promptly. They will ask the provider for an order to discontinue the medication, and discuss whether another medication is indicated and whether they should take any measures (e.g., intensified monitoring, lab tests, etc.) related to the recalled medication.
6. The nursing staff will closely monitor individuals who have been taking a recalled medication for problematic signs and symptoms for at least 24 hours after the last dose is given, or longer if indicated by the recall notice or the anticipated duration of effects or side effects of the recalled medication.

V. CATHETER INSERTION AND CARE

Table of Contents

CATHETER INSERTION AND CARE

A. DISINFECTION OF CATHETER INSERTION SITE

Policy

Prior to inserting an intravenous catheter, the insertion site will be prepared with antiseptic solution using aseptic technique for peripheral catheters and sterile technique for central vascular access devices.

General Guidelines

1. Antiseptic solutions should be in a single-unit package.
2. If the intended insertion site is visibly soiled, the site should be cleaned with soap and water prior to the application of antiseptic solution.
3. Clipping of hair in insertion area should be done with sterile scissors or disposable head surgical clippers before cleaning the site.
4. Chlorhexidine solution (>0.5% chlorhexidine in alcohol) is preferred for skin cleaning.
5. If there is a contraindication to chlorhexidine solution, the following antiseptic agents are acceptable:
    a. Iodine tincture;
    b. Povidone iodine; or
    c. 70% alcohol.
6. Allow antiseptic solution to fully AIR DRY before placing any dressings on skin or doing a procedure.

Equipment and Supplies

1. Antiseptic solution.
2. Sterile/non-sterile gloves, as indicated.
3. Equipment and supplies needed for device insertion.
   (Dressing change kit)

Procedure

1. Wash hands, wear non-sterile or sterile gloves, as indicated.
2. If areas are visibly soiled or contaminated, wash with soap/water or alcohol first to remove dirt. Allow to air dry then clean with antiseptic solution.
3. Remove antiseptic solution from package.
4. Use a back and forth mild scrubbing action to clean skin for 30 seconds.
5. Any type of antiseptic cleansing device is for single use only. After use, dispose of in trash container.

Documentation

Document time and date of skin cleaning, stating what type of antiseptic was used on the skin, and type of catheter inserted.

Reporting

Report to provider (if needed) or oncoming shift regarding the condition of the skin and/or catheter site.

CATHETER INSERTION AND CARE

B. USE OF STABILIZATION DEVICES

Policy

Catheter stabilization can be used to preserve the integrity and position of the infusion catheter.

General Guidelines for Device Stabilization

1. Catheter stabilization devices may be used to prevent complications such as migration of the catheter, and subsequent loss of access.
2. Stabilization methods will not interfere with assessment of insertion site, vascular circulation, or infusion of medication or solutions.
3. Determining the best type of device stabilization for the resident will include assessment of:
    a. Skin integrity and turgor.
    b. Prior injury from adhesives.
    c. Whether there is drainage from the insertion site.
4. The following devices may be used to stabilize catheters:
    a. Engineered (manufactured) stabilization devices such as STATLOK or GRIP-LOK
    b. Sterile tape.
    c. Surgical strips.
5. Sutures are not a preferred method because they increase the risk of infection.
6. Dressings (transparent or gauze) alone are not considered adequate stabilization devices.
7. Adhesive-based engineered stabilization devices can be used to secure PICCs.
8. Assess the stabilization device upon each dressing change.
    a. Remove and replace adhesive stabilization devices with each dressing change.
    b. Change engineered stabilization devices with each dressing change.
9. Assess the skin for adhesive injury during dressing change and skin antisepsis. Use skin barrier products as needed.

General Guidelines for Joint Stabilization

1. Arm boards, splints, and other devices designed to stabilize joints and prevent catheter complications are not considered restraints.
2. Joint stabilization devices will be applied only as necessary and in a way that:
    a. Maximizes resident comfort.
    b. Allows for full visual access of the catheter insertion site.
    c. Does not cause circulatory constriction, skin damage, or nerve damage.
3. The device will be removed regularly and the resident assessed for the following:
    a. Circulation.
    b. Skin integrity.
    c. Catheter functionality.
    d. Range of motion.

C. USE OF SCISSORS IN INFUSION THERAPY

Policy

The use of scissors in the presence of vascular or non-vascular access devices will be limited to suture removal, for which specially curved, sterile scissors will be used.

General Guidelines

1. Single-resident use scissors may be used to clip hair from the insertion site, as part of the access site preparation and before device placement.
2. Never use scissors to remove dressings, tape or stabilization devices or to clip hair after catheter is inserted.
3. Using scissors in the same proximity of vascular or non-vascular access devices greatly increases the risk of cutting the catheter or administration set, or causing injury to resident.
4. Use only sterile, specially curved scissors for removing sutures.

CATHETER INSERTION AND CARE

D. INSERTION OF PERIPHERAL IV CATHETER

Policy

Peripheral IV catheters will be inserted by nurses with demonstrated competency in IV therapy.

Definition

1. A peripheral short catheter is defined as a catheter that is less than 3 inches (7.5cm) in length.
2. The tip of a peripheral short catheter ends in the peripheral vein.
3. A peripheral catheter can be winged or non-winged, or over the needle.

General Guidelines

Use of Peripheral Catheters:

1. Selection of peripheral short catheters is based on prescribed therapies, duration of treatments (typically less than one week), and availability of peripheral access sites, diagnosis, potential complications, and staff experience.
2. Therapies not appropriate for peripheral short catheters include continuous vesicant therapy, parenteral nutrition, or osmolarity >900 mOsm/L.
3. The size of the catheter should be the smallest gauge and shortest length that will accommodate the therapy. This allows blood to circulate around catheter and helps to prevent phlebitis.

Site Selection:

1. Initiate site selection in the distal areas of the upper extremities. Subsequent catheter insertions should be made proximal to previous catheter site.
2. Sites that are generally considered for peripheral catheters are the veins of the arm (metacarpal, cephalic, basilic, and median cubital).
3. When selecting insertion site avoid areas of flexion around wrist (within 4-5 inches) and antecubital areas. The back of the wrist is not an acceptable site of insertion.
4. Do not use lower extremities routinely in adults due to risk of tissue damage, embolism, ulceration and thrombophlebitis.
5. Avoid inserting the catheter in the right or left arm if that side of the body has been affected by the following:
    a. History of breast surgery (e.g., mastectomy) with axillary node dissection.
    b. Radiation therapy.
    c. Lymphedema.
    d. Flaccidity related to CVA.
    e. Existing or previous AV dialysis fistula (consult with nephrologist before inserting catheter in the same arm).
6. Also avoid the following areas:
    a. Previous venipuncture site.
    b. Infiltrated, phlebitis, bruised areas.
    c. Areas of pain on palpation.
    d. Areas of planned procedures.
    e. Flexion areas.
    f. Bony prominences.

CATHETER INSERTION AND CARE

Hair Removal:

1. Avoid shaving the site with a razor. Shaving can cause micro-abrasions or cuts in the skin, which can cause an increased risk of infection, bacterial growth, cellulitis, or phlebitis.
2. Hair may be clipped with aseptic, single-resident use safety scissors or electric clippers.
3. Remove hair only with resident consent prior to site preparation and catheter insertion.
4. Do not use depilatories, which may cause skin irritation.

Catheter Insertion:

1. Catheter insertion is an aseptic procedure.
2. No more than a total of 3 unsuccessful catheter insertion attempts shall be permitted by the trained facility nurse(s). After 2 unsuccessful attempts by a nurse, another nurse will attempt 1 final venipuncture. If the 2 nurses are unsuccessful on the third and final attempt they will notify his or her immediate supervisor/Director of Nursing, the physician, or the pharmacy infusion department for further assistance.
3. Use one catheter for each insertion attempt.
4. Methods to enlarge vein for easier visualization:
    a. Place upper extremity below heart level to have more blood flow to area.
    b. Place warm compress to area to dilate vein.
    c. Have resident pump (open and close) the hand to make vein come closer to surface.
    d. Lightly stroke the vein downward.
    e. Do not slap the vein.
5. Apply tourniquet (single-resident use):
    a. Should stay on less than 2 minutes to avoid vascular damage.
    b. Should be snug-fitting, not tight.
    c. Place 4 to 6 inches above insertion site to avoid too much pressure on the vein.

Dressings:

1. Use sterile dressings (transparent or gauze, as appropriate) to cover insertion site.
2. Label on dressing should include date and time of dressing placement, initials, gauge size, and length of catheter.

Flushing:

1. Use a syringe barrel size of 10 mL or larger when assessing patency of a peripheral short catheter.
2. Use normal saline for flushing a peripheral short catheter.
4. Flush a peripheral short catheter with 5 mL of normal saline before and after infusion.

Catheter Removal:

1. The decision to remove or replace the catheter should be based on an assessment of the resident and the situation, including:
    a. Site.
    b. Skin and vein integrity.
    c. Length and type of therapy prescribed.
    d. Integrity and patency of device.
    e. Dressing.
    f. Stabilization device.
2. Remove the peripheral catheter if:
    a. It has not been used for 24 hours.

   b. There is suspected contamination.
   c. There is an unresolved complication.
   d. Therapy is discontinued.
3. If infection is suspected, notify the provider. Do not remove catheter until the need for culture or sampling is determined.
4. If the catheter was placed under emergency or suboptimal aseptic conditions, replace within 24-48 hours.
5. Rotate site every 72-96 hours.

Equipment and Supplies

1. **To start IV:**
   a. Peripheral short catheter (gauge and size per assessment).
   b. IV start kit (non-sterile gloves, tourniquet, cleaning solution, tape, sterile gauze, transparent dressing, and label).
   c. Extension tubing with needleless connection device (primed with normal saline).
   d. 10 mL syringe with normal saline.
   e. Absorbent pad.

2. **If starting infusion:**
   a. Prescribed IV solution/medication, IV pole, tubing, pump (if necessary).
   b. Non-sterile gloves.
   c. Alcohol wipes.
   d. Tape.

Procedure

Note: There are several techniques for starting a catheter. All techniques include aseptic technique, using the best vein, smallest gauge and shortest length of catheter possible, proper securing of catheter, and using a sterile dressing. The steps that are listed below are to be used as a guide only.

1. Verify with state nurse practice act for LPN/RN function and competency requirements.
2. A provider's order is necessary for this procedure.
3. Review the order and type of solution/medication to be infused.
4. Assemble equipment, open packages, prime extension tubing with normal saline (leave at least 3 mL of normal saline in syringe), tear tape, open catheter, and open cleaning solution packages.
5. Position resident for comfort and ease of catheter insertion and insure adequate lighting.
6. Perform hand hygiene. Don gloves.
7. Apply tourniquet 4-6 inches above intended insertion site.
8. Assess and select vein.
9. Prepare insertion site with cleansing agent (e.g., chlorhexidine solution, 70% alcohol, or 1 to 2% tincture of iodine, or approved combination solution) using proper technique per type of cleansing agent. Allow to air dry.
10. Apply traction to skin and vein with non-dominant hand.
11. Perform Venipuncture:
    a. Using dominant hand, enter the skin over the vein by inserting catheter bevel up at an angle appropriate to the vein (25-30 degree angle)
    b. Lower the back end of the catheter.

c. Advance slightly entering the lumen of the vein.
d. Observe for flashback into the catheter.
e. Immediately second advance to ensure needle and catheter tip are in vein.

12. Stabilize catheter either using adhesive tape or a stabilization device. If using tape, there are two ways of stabilizing:
    a. If catheter has wings, a chevron (v-shaped tape) should be used. Slide a thin piece of tape with sticky side up under the wings. Fold tape over wings in a v-shape.
    b. If catheter does not have wings, a cross shape may be used over the hub. Do not cover the insertion site with tape.
13. Remove tourniquet
14. Place gloved finger over tip of catheter (which is now under the skin) with slight pressure to prevent retrograde bleeding.
15. Attach primed extension tubing to open end on hub of catheter. Flush with normal saline.
16. Observe insertion site for swelling (infiltration).
    a. If site swells, IV is unsuccessful and must be removed.
    b. Monitor resident for pain.
17. Place dressing over insertion site.
18. Coil the extension tubing on the side of catheter to prevent pulling on the catheter. Tape in place.
19. Discard stylet and syringes in sharps container. Discard gloves and other equipment properly. Wash hands.
20. Place another piece of tape on extension tubing just behind the hub.
21. Place label on one side of catheter (not over insertion site). Include the date and time of catheter insertion, initials, length and gauge of catheter on the label.
22. If immediately infusing fluids or medications, place primed IV tubing into the needleless connection device on extension tubing. Start flow rate per provider orders. Use pump if stated per facility protocol.
23. Observe for patency of catheter and proper infusion rate.

Documentation

The following information should be recorded in the resident's medical record:

1. The date and time of the procedure.
2. The number of venipuncture attempts (maximum of two).
3. The type, length and gauge of catheter, and type of cleansing agent used.
4. The site of insertion (be specific to name of vein, area of arm).
5. The type of solution or medication infusing (if being used at this time).
6. The amount of solution or medication to be infused (if being used at this time).
7. The rate of infusion (if being used at this time).
8. The condition of the IV site.
9. Notification of the provider (if any complications).
10. Resident's response to procedure.
11. The signature and title of the person recording the data.

Reporting

1. Notify the Supervisor if the resident refuses the procedure or if procedure is unsuccessful.
2. Report other information in accordance with facility policy and professional standards of practice.

E. INSERTION OF PERIPHERAL MIDLINE OR PERIPHERALLY INSERTED CENTRAL CATHETERS (PICCs)

Policy

Placement of peripheral midline or PICC catheters is restricted to specially trained clinicians.

General Guidelines

1. The nurse or clinician will be specially trained and qualified to perform this procedure.
    a. Qualification or certification of nurses and other clinicians requires specialized education beyond standard intravenous catheter placement.
2. Midlines and PICC catheters may be placed at the bedside by qualified nurses and clinicians.
3. Therapies that are not appropriate for midline catheters include:
    a. Vesicant therapies.
    b. Parenteral nutrition.
    c. Infusates with an osmolarity of greater than 900 mOsm/L.
3. Placing a midline or PICC requires a provider order and a written consent from resident or legal guardian.

CATHETER INSERTION AND CARE

F. IMPLANTED VENOUS PORT - ACCESSING

Policy

The medical personnel who access or de-access an implanted venous port must have additional training and proven clinical competency before performing this procedure.

Definition

1. An implanted venous port is a surgically placed and surgically removed catheter that is placed in the subcutaneous layer of the skin in the mid chest area or upper arm.
2. The catheter tubing ends in the vena cava.
3. The catheter consists of three parts – a self-sealing septum, reservoir, and tubing.

General Guidelines

1. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
2. **Use only a non-coring needle** to access the port.
    a. The needle can be different gauges and lengths according to the amount of subcutaneous tissue over port.
    b. The wings of the needle, when inserted, should be even (flush) with the septum of the port.
3. Ports may be single or double lumen. Each port is a separate catheter that must be flushed daily when accessed but not infusing.
4. Other types of ports may be placed (subdural, arterial, epidural, peritoneal) and are used per manufacturer instructions.
5. Topical anesthetic may be applied to skin access site per order to numb area before needle insertion.
6. Power injection capability should be verified before using the port for CT injection dye. CT injection dye requires a power port.
7. There must be positive blood return with aspiration before port can be used for infusion.
8. Preparing the insertion site and placing the non-coring needle is an aseptic procedure.

Equipment and Supplies

1. Central line dressing change kit or the following:
    a. Sterile gloves;
    b. Mask;
    c. Cleaning solution (chlorhexidine/alcohol or alcohol wipes); and
    d. Transparent sterile dressing.
2. Access kit or the following:
    a. Non-coring needle with attached extension set with clamp;
    b. Needleless access device;
    c. Two normal saline flushes;
    d. One heparin flush syringe (100 unit/ml)
    e. Topical anesthesia if ordered.

CATHETER INSERTION AND CARE

Procedure

1. Explain procedure to resident or legal representative.
2. Position resident for comfort and expose port site. (Note: Most ports are accessed easier by placing the resident in a semi-fowler's or supine position.)
3. Apply topical anesthetic if prescribed.
    a. Wait about 15 to 20 minutes for the anesthetic to take effect.
    b. Remove residual with normal saline before cleaning.
4. Wash hands and assemble equipment on clean surface near resident.
5. Place a mask on yourself and on the resident.
6. Apply non-sterile gloves.
7. Palpate port under skin by locating between thumb, index and middle fingers of dominant hand.
8. Remove gloves.
9. Wash hands.
10. Open central line dressing kit and access kit and prepare a sterile field.
11. Apply sterile gloves.
12. Flush air out of non-coring needle.
13. Hold normal saline syringe with sterile gauze (to preserve sterile gloves), attach syringe to needleless connection device and prime tubing and non-coring needle with normal saline.
14. Clean port area with antiseptic cleaning solution. Allow to air dry.
15. With non-dominant hand, palpate port.
16. While holding port steady in place, insert non-coring needle perpendicular (straight, not at an angle) into the center of the septum until it goes no further. You will feel slight resistance and "drag" until needle hits the bottom of the reservoir.
17. While holding needle steady, check for blood return by pulling back on the syringe plunger. If no blood return, attempt the following:
    a. Pull needle up just slightly (needle may be "jammed" into the reservoir floor) and attempt aspiration again.
    b. If there is still no blood return and you have ensured the needle is in the center of the port, have the resident perform a Valsalva maneuver, lift arms above head, cough, or reposition.
    c. If there is still no blood return, attempt access again using a new needle. Maintain aseptic procedure.
18. After blood return is established, flush with normal saline followed by heparin (100 units/ml). Always leave the last 0.5 mL of fluid in syringe to avoid pushing air into catheter.
19. Clamp the tubing, remove normal saline syringe and connect the needless connector.
20. Cover needle with transparent sterile dressing, making sure that edges of the dressing are firm against the skin. Use skin protectant on skin first, if necessary, and let dry before placing dressing on skin.
    a. A folded 2 x 2 sterile gauze may be placed under the wings of the non-coring needle if it does not obscure the insertion site. This would be done if needle is not at same level as port to stabilize it, or for protection of the skin. This is not considered to be a gauze dressing and can stay in place for up to 7 days.
21. Label dressing with date, time, and initials of person who is performing procedure.
22. Secure extension set to skin with sterile tape from dressing kit.
23. Connect the IV medication/solution to the needleless connector and infuse as ordered.
24. When infusion is finished, flush according to protocol.

CATHETER INSERTION AND CARE

Documentation

1. Document the following in the resident's medical record:
    a. Date and time of procedure.
    b. Resident education.
    c. Needle size (length and gauge).
    d. Blood return.
    e. Whether implanted venous access port flushed with ease.
    f. Resident's response to procedure.
2. Document the flushing agent(s) and amount(s), medication or solution infused, and any topical anesthetic in the medication administration record.
3. If this is an access for flush only, mark on treatment administration record.

CATHETER INSERTION AND CARE

G. IMPLANTED VENOUS PORT – DE-ACCESSING

Policy

Staff who access or de-access an implanted venous port will have additional training and proven clinical competency before performing this procedure.

General Guidelines

1. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
2. De-accessing (taking the needle out of the port) is an aseptic procedure. Accessing the port is a sterile procedure.
3. Replace the non-coring needle every 7 days if port is being used for infusion therapy.
4. Replace the non-coring needle immediately if considered to be compromised.
5. Flush the port before the needle is removed.
6. The septum in the port is self-sealing. Resistance upon removal is normal.

Equipment and Supplies

1. Non-sterile gloves;
2. One 10 mL syringe with 5ml normal saline;
3. One 10 ml syringe with 5ml Heparin 100units/ml
4. Chlorhexidine/alcohol or alcohol wipes; and
5. Sterile 2 x 2 gauze and tape, or adhesive bandage.

Procedure

1. Explain the procedure to the resident or legal representative.
2. Position resident as flat as tolerated. Expose port.
3. Perform hand antisepsis. Place equipment on clean surface near resident.
4. Don non-sterile gloves.
5. Discontinue any running IV fluids.
6. Clamp extension tubing on non-coring needle.
7. Clean end of needleless access device with chlorhexidine/alcohol or alcohol wipe.
8. Flush using push-pause technique.
9. If treatment is being discontinued flush with 5ml of normal saline and 5ml of 100unit/ml heparin. If non-coring needle is being replaced for continuing treatment use 5ml of normal saline only.
10. Remove syringe and clamp tubing.
11. Remove old dressing from distal to proximal (toward the head) being careful not to pull on non-coring needle. If the dressing cannot be removed completely without pulling on the needle, then gather the remainder on the top of the non-coring needle. The port should be free of any adhesive dressing.
12. Discard stabilizing gauze or bio-patch and gloves.
13. Stabilize port with thumb and index finger on sides of port.
14. With other hand, pull the non-coring needle straight upward out of port using a steady upward motion.
15. Non-coring needle will have a safety device covering the needle (see manufacture instructions). Discard with needle and dressing in sharps container.
16. Clean insertion site with chlorhexidine/alcohol or alcohol wipe.
17. Cover with sterile 2 x 2 gauze transparent dressing or adhesive bandage per protocol. Leave dressing in place for 24 hours.

CATHETER INSERTION AND CARE

Documentation

1. Document date and time that port was de-accessed, flushing agent, flush amounts and condition of site on the appropriate nursing document.

CATHETER INSERTION AND CARE

H. FLUSHING CENTRAL VENOUS AND MIDLINE CATHETERS

Policy

Midline and central line access devices (CVADs) will be flushed to maintain patency; to prevent mixing of incompatible medications and solutions; and to ensure entire dose of solution or medication is administered into the venous system.

General Guidelines

1. No provider order is needed for this procedure.
2. The preferred choice for flushing and locking is single-use systems, such as prefilled syringes.
3. Consult state nurse practice act for RN/LPN scope of practice and functions.

Flushing Protocol

1. Flush catheters at regular intervals to maintain patency AND before and after the following:
    a. Administration of intermittent solutions;
    b. Administration of medication;
    c. Administration of blood or blood products;
    d. Obtaining blood samples; and/or
    e. Converting from continuous to intermittent therapies.
2. For multi-lumen access devices, each lumen is considered a separate catheter and must be flushed at least once every 24 hours to prevent occlusion. Some catheters (per manufacturer guidelines or organization policy) may need to be flushed more often.

Flushing Technique

1. Use a syringe barrel size of 10 mL or greater when flushing an infusion catheter to avoid excessive pressure inside the catheter, to prevent potential rupture of the catheter, and to prevent dislodgement of clots.
2. Use a push-pause or pulsing motion for flushing technique.
3. Aspirate the CVAD catheter for blood return to confirm patency prior to flushing catheter and solutions.

Locking

1. Flush OPEN ENDED (non-valved) catheters with normal saline and heparin. (Note: These catheters have clamps)
2. Flush CLOSED ENDED (valved) catheters with normal saline. Heparin is not necessary, but will not damage catheter. (Note: These catheters do not have clamps)
3. Use the SASH method (saline, administer medication, saline, heparin) for intermittent treatments for open-ended catheters. These catheters will have a clamp on the outside lumen. Use SAS for closed-ended catheters.
4. Use 10 unit/ml heparin for flushing midline, tunneled, non-tunneled and PICCs.

Complications

1. If resistance or lack of blood return arises at any time during flushing, STOP the flush and consult IV nurse specialist or provider.

2. Insertion site assessment should be done as part of flushing process to monitor for complications.

Equipment and Supplies

1. Normal saline syringes (prefilled);
2. Heparin (prefilled);
3. Non-sterile gloves; and
4. Alcohol wipes.

Procedure

1. Perform hand antisepsis. Don non-sterile gloves.
2. Disinfect needleless connection device with antiseptic solution.

Flushing to maintain patency of catheter:

1. Disinfect needleless access device with alcohol wipe.
2. Remove air bubbles from syringe.
3. Connect 10 mL barrel size syringe containing normal saline (amount as ordered or per facility protocol) to catheter via needleless connection device.
4. Aspirate slowly for blood return to ensure patency of catheter. Blood return may be difficult to obtain on small gauge catheters.
5. Slowly administer appropriate amount of normal saline flush (per pharmacy or facility protocol) using the push-pause technique. Leave 0.5 mL of flush in syringe to avoid pushing air into catheter.
6. Disconnect syringe from needleless access device.
7. LOCK with heparin or normal saline, as ordered.
8. Disinfect needleless connection device with alcohol wipe.
9. Repeat process on each lumen of multi-lumen catheter.

Flushing when giving medications:

1. Disinfect access device with alcohol wipe.
2. Remove air bubbles from syringe.
3. Disinfect needleless connection device with alcohol wipe.
4. Connect 10 mL syringe containing normal saline (amount as ordered or per facility protocol) to catheter.
5. Unclamp catheter or lumen.
6. Aspirate slowly for blood return to ensure patency of catheter.
7. Flush with normal saline (amount established by pharmacy or facility protocol) using push-pause method.
8. Remove syringe.
9. Disinfect needleless connection device with alcohol wipe.
10. Connect primed medication tubing to injection/access device.
11. Administer medication.
12. Disconnect medication from access device.
13. Disinfect needleless connection device with alcohol wipe.

14. Connect another 10 mL syringe containing normal saline (amount and/or concentration as ordered or per facility protocol) to catheter via injection or access device.
15. Flush with normal saline (amount established by pharmacy or facility protocol).
16. Disconnect syringe.
17. LOCK with heparin or normal saline, as ordered.
18. Clamp catheter or lumen.
19. Monitor resident's response.
20. Monitor resident for any signs and symptoms of IV complications.
21. Discard used supplies in appropriate waste container.
22. Remove gloves.
23. Wash hands.
24. Document procedure in resident's medical record.

Documentation

The following information should be recorded in the resident's medical record:

1. The date and time the medication was administered.
2. Type of solution used for flushing and amount administered.
3. The route and rate of medication administration.
4. The condition of the IV site before and after administration.
5. Notification of provider, if there are any complications.
6. Resident's response.
7. The signature and title of the person recording the data.

Reporting

1. Notify the supervisor, provider, and oncoming shift of any complications.
2. Report other information in accordance with facility policy and professional standards of practice.

CATHETER INSERTION AND CARE

I. FLUSHING PROTOCOL FOR IMPLANTED VENOUS PORT

Policy

Implanted venous ports will be flushed to maintain patency; to prevent mixing of incompatible medications and solutions; and to ensure entire dose of solution or medication is administered into the venous system.

General Guidelines

1. Verify with state nurse practice act for RN/LPN scope of practice and function.
2. The implanted venous port is a central line.
3. Use aseptic technique when accessing an implanted port.
4. Use a syringe barrel size of 10 mL or greater when flushing an infusion catheter to avoid excessive pressure inside the catheter, to prevent potential rupture of the catheter, and to prevent dislodgement of clots.
5. When the port is accessed but not infusing, flush once a day with normal saline.
6. When the port is used intermittently for medication administration, flush with normal saline before and after medication administration in addition to daily maintenance.
7. If the port is not accessed, flush monthly with 5ml normal saline and 5ml 100 unit/ml heparin.
8. Only specially designed non-coring safety needles are to be used when accessing an implanted port.
9. Use the smallest gauge non-coring needle that will accommodate the prescribed therapy.
10. A non-coring needle does not need to stay in place if no medications/solutions are being given.
11. When the non-coring needle is to stay in place, a sterile transparent semi-permeable dressing should be used to cover the needle and port area.
12. If contamination of the dressing is suspected, the dressing and needle must be changed.

Equipment and Supplies

1. For daily maintenance:
    a. One prefilled 10 mL barrel size syringes of normal saline;
    b. One prefilled 10 mL barrel size syringes of heparin 100units/ml
    c. Chlorhexidine/alcohol or alcohol wipes; and
    d. Gloves.
2. For intermittent medications: One prefilled 10 mL barrel size syringes of
    a. Two prefilled 10 mL barrel size syringes of normal saline;
    b. One prefilled 10 mL barrel size syringes of heparin 100units/ml
    c. Chlorhexidine/alcohol or alcohol wipes; and
    d. Gloves.
3. Removal of needle at end of therapy:
    a. One prefilled 10 mL barrel size syringe with 5 mL normal saline;
    b. One prefilled 10 mL barrel size syringes of heparin 100units/ml
    c. Gloves;
    d. Sharps container; and
    e. Alcohol wipes.

Procedure

1. Assemble supplies.
2. Perform hand antisepsis.
3. Explain procedure to resident.

4. Prime syringes.
5. For daily maintenance (accessed but not infusing):
    a. Unclamp catheter.
    b. Apply gloves.
    c. Clean needleless access device with chlorhexidine or alcohol wipe.
    d. Connect normal saline-filled syringe.
    e. Check for catheter patency:
        (1) Aspirate for blood return.
        (2) If resistance is felt or there is no blood return, check for closed clamp.
    f. Flush using push-pause technique. Remove normal saline syringe and repeat with heparin 100units/ml. Dispose of syringe in sharps container.
    g. Clamp catheter.
6. For intermittent medications (in addition to daily maintenance):
    a. Unclamp catheter.
    b. Apply gloves.
    c. Clean needleless access device with chlorhexidine or alcohol wipe.
    d. Connect first normal saline-filled syringe.
    e. Check for catheter patency:
        (1) Aspirate for blood return.
        (2) If resistance is felt or there is no blood return, check for closed clamp.
    f. Flush with normal saline.
    g. Administer medication.
    h. Connect second normal saline-filled syringe.
    i. Flush with normal saline followed by heparin 100units/ml
    j. Clamp catheter.
    k. Dispose of syringes in sharps container.
    l. Remove gloves.
7. Removal of non-coring needle at end of therapy: See *Implanted Venous Port – De-accessing.*

Documentation

1. Document the following in the resident's medical record:
    a. Location of the catheter, type and amount of flush used.
    b. Result of blood return, any resistance felt.
    c. Condition of insertion site and condition of dressing (if present).
    d. Any complications and interventions necessary.
    e. Resident tolerance of procedure.
    f. Any communication with provider, supervisor, or oncoming shift.
    g. Any change in size of non-coring needle that was used.

Reporting

1. Report any complications/interventions.
2. Report any communication with provider, supervisor, or oncoming shift.

CATHETER INSERTION AND CARE

J. FLUSHING A PERIPHERAL CATHETER

Policy

Peripheral IV catheters will be flushed prior to each infusion to assess catheter patency and function, and after each infusion to clear the catheter lumen of medication and to prevent contact between incompatible medications.

General Guidelines

1. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
2. A provider's order is not needed to flush a peripheral short catheter.
3. Use normal saline for flushing a peripheral catheter.
4. Flush and lock the peripheral catheter used for intermittent infusion at least every shift.
5. Do not flush or lock a peripheral catheter with heparin.
6. Use a syringe barrel size of 10 mL or greater when flushing to avoid excessive pressure inside the catheter, prevent potential rupture of the catheter, and prevent dislodgement of clots.
7. Apply the push-pause technique to flush catheter.
8. Leave 0.5 mL of normal saline in the syringe to avoid pushing air into catheter.
9. If there is resistance or difficulty during flushing procedure, evaluate need for site rotation.
10. Monitor for infiltration of the vein during flushing procedure.

Equipment and Supplies

1. 10 mL barrel syringe with normal saline
2. Alcohol wipes.
3. Non-sterile gloves.

Procedure

Flushing to maintain patency of catheter:

1. Assemble supplies. Prime syringe.
2. Perform hand antisepsis. Don non-sterile gloves.
3. Clean end of needleless access device (end cap, access port) with alcohol wipe.
4. Attach prefilled normal saline syringe to access device.
5. Use push-pause technique to instill normal saline amount (per protocol). Leave 0.5 mL of normal saline in syringe.
6. Clamp catheter and remove syringe.
7. Remove gloves. Dispose of syringe in sharps container.

CATHETER INSERTION AND CARE

Flushing before and after medication or fluid administration

1. Repeat steps 1-5 above.
2. Attach medication/fluid and infuse as prescribed.
3. When medication/fluid is completed, flush with normal saline. Leave 0.5 mL normal saline in syringe.
4. Clamp catheter and remove syringe
5. Remove gloves. Dispose of syringes in sharps container.

Documentation

1. Document procedure in the resident's medical record.
2. Note location of catheter, condition of insertion site, and dressing in nurse's notes.
3. Record any complications and/or communications with the provider in nurse's notes.

Reporting

1. Report any complications to supervisor, oncoming shift, and provider (if necessary).
2. Report any other information per facility protocol.

CATHETER INSERTION AND CARE

K. PERIPHERAL IV DRESSING CHANGES

Policy

Peripheral IV dressings will be changed when needed to prevent catheter-related infections associated with contaminated, loosened or soiled catheter-site dressings.

General Guidelines

1. Apply and maintain transparent semi-permeable membrane (TSM) dressing or sterile gauze for all peripheral intravenous catheter sites.
2. Change the dressing with each site rotation every 72-96 hours or immediately upon observing that the integrity of the dressing has been compromised. Change dressing and perform site care if signs and symptoms of site infection are present.
3. Use clean technique when performing this procedure.

Equipment and Supplies

1. Transparent semi-permeable membrane (TSM) dressing;
2. Label and pen;
3. Alcohol wipe; and
4. Non-sterile gloves.

Procedure

1. Assemble equipment.
2. Perform hand antisepsis.
3. Apply gloves.
4. Remove old dressing from distal to proximal (towards the head) while placing pressure on the catheter to prevent dislodgement.
5. Clean insertion site with antiseptic solution per protocol.
6. Allow area to air dry while visually inspecting the catheter insertion site for signs of infection or other complications.
7. Place new TSM dressing (with or without gauze) over insertion site. Smooth out dressing.
8. Label dressing with date, time, and initials.

Documentation

1. The following should be documented in the resident's medical record:
    a. Date, time, type of dressing, and reason for dressing change.
    b. Any complications/interventions related to insertion site or surrounding area.
    c. Resident's response to procedure.

Reporting

1. Notify provider, supervisor, and/or oncoming shift of any complications/interventions that were done.
2. Report other information in accordance with facility policy or professional standards of practice.

CATHETER INSERTION AND CARE

L. MIDLINE DRESSING CHANGES

Policy

Midline catheter dressings will be changed at specified intervals, or when needed, to prevent catheter-related infections associated with contaminated, loosened or soiled catheter-site dressings.

General Guidelines

1. Change midline catheter dressing within 24 hours after catheter insertion, every 7 days, or if it is wet, dirty, not intact, or compromised in any way.
2. Use sterile technique when changing a midline catheter dressing.
3. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
4. Use a sterile, transparent, semi-permeable membrane (TSM) or gauze dressing. If gauze dressing is used, cover the gauze with a TSM dressing and change the dressing every 48 hours.

Equipment and Supplies

To place new dressing:

1. Sterile dressing kit for catheters (sterile gloves, mask, TSM dressing, antiseptic cleaning solution, tape, label, gauze).

To remove old dressing:

1. Non-sterile gloves.
2. Alcohol wipes.
3. Approved antiseptic solution.

Procedure

To remove old dressing:

1. Clean the over the bed table with soap and water, or alcohol.
2. Place equipment on table.
3. Perform hand hygiene. Wear non-sterile gloves.
4. Resident should be positioned with head facing away from dressing site. If resident is coughing or has a tracheostomy, apply mask to resident if he or she can tolerate it.
5. Ask resident to keep arms at side of body or have someone help him or her to do this.
6. The dressing can be rubbed with alcohol wipes to help dissolve the adhesive and loosen the dressing. NEVER USE SCISSORS NEAR THE CATHETER.
7. Remove any tape on the dressing.
8. While stabilizing the catheter, remove the dressing in the direction of the catheter insertion (from the hub of the catheter toward the head) to avoid dislodging the catheter.
9. Discard dressing and gloves in appropriate container.
10. Perform hand hygiene.

CATHETER INSERTION AND CARE

To apply sterile dressing:

1. Open sterile dressing kit.
2. Apply sterile gloves. Do not pick up the catheter with the sterile gloves. The outside of the catheter is not sterile. Use sterile gauze to pick up catheter when cleaning underneath the catheter to preserve the sterile gloves.
3. Clean catheter insertion site with approved antiseptic solution.
4. If the resident has hair on the dressing site:
    a. DO NOT SHAVE WITH A RAZOR OR CUT THE HAIR WITH SCISSORS, as this may cut the skin and/or damage the catheter.
    b. Instead, apply a skin protecting agent after the area has been cleaned with antimicrobial agents.
    c. Apply skin protectant only around the perimeter of the insertion site where the dressing will be placed. Do not apply directly to the insertion site.
    d. Allow skin protectant to dry completely before applying dressing.
5. Apply sterile transparent or gauze with transparent dressing to area, making sure to center the dressing over the insertion site. Starting at the catheter, smooth dressing outward toward the edges to remove air. While removing the paper around edges of dressing, press down on the edges of the dressing. Label with initials, date and time.
6. The sterile tape from the kit may be used to secure edges if needed. Placing a piece of tape across the bottom of the dressing can help secure the catheter in place and keep the catheter from pulling on the dressing. The tape should not cover the insertion site.
7. If catheter is inserted in area of flexion, place the sterile TSM dressing over the insertion site. Then, cut another sterile TSM dressing in two pieces and reinforce the edges of the original dressing with cut pieces of the second.
8. Dispose of gloves and supplies in appropriate containers.
9. Perform hand hygiene.
10. Reposition resident for comfort.

Documentation

1. The following information should be recorded in the resident's medical record:
    a. Date and time dressing was changed.
    b. Location and objective description of insertion site.
    c. Any complications, interventions that were done.
    d. Condition of sutures (if present).
    e. Type of dressing placed (TSM or gauze).
    f. Any questions, education given to resident, resident's statement regarding IV therapy and response to procedure.
    g. Signature and title of the person recording the data.

Reporting

1. Report any signs and symptoms of complications to provider, supervisor and oncoming shift.
2. Intervene as necessary.

CATHETER INSERTION AND CARE

M. CENTRAL VENOUS CATHETER DRESSING CHANGES

Policy

Central venous catheter dressings will be changed at specific intervals, or when needed, to prevent catheter-related infections that are associated with contaminated, loosened, soiled, or wet dressings.

Preparation

1. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
2. A provider's order is not needed for this procedure.

General Guidelines

1. Dressings must stay clean, dry, and intact. Explain to the resident that the dressing should not get wet.
2. Change transparent semi-permeable membrane (TSM) dressings at least every 7 days and PRN (when wet, soiled, or not intact).
3. If gauze is used, it must be changed every 2 days.
4. Change dressings if any suspicion of contamination is suspected.
5. After original insertion of CVAD, the dressing will consist of gauze and TSM. This will be changed within 24 hours.
    a. Replace with sterile transparent dressing.
6. Approved antiseptic solutions for cleaning insertion site area include:
    a. Alcohol and > 0.5% chlorhexidine solution.
    b. Alcohol.
    c. Povidone-iodine.
    d. Chlorhexidine gluconate.
    e. Tincture of iodine.
7. Catheter site care and dressing changes will include:
    a. Removal of the old dressing;
    b. Observation and evaluation of the catheter-skin junction and surrounding tissue;
    c. Cleansing with an approved antiseptic solution (e.g., chlorhexidine solution);
    d. Replacement of any stabilization device; and
    e. Application of a sterile dressing.
8. Removal of old dressing is an aseptic, non-sterile procedure.

Equipment and Supplies

To remove dressing:

1. Non-sterile gloves.
2. Alcohol wipes.

CATHETER INSERTION AND CARE

To replace sterile dressing:

1. Sterile central venous catheter dressing change kit.
2. Plastic Chux® or clean towel.
3. Extension tubing (if being used) or sterile needleless connection device.
4. Stabilization device (if being used).
5. Normal saline/heparin flush if catheter will be flushed during procedure.

Assessment

Observe insertion site and surrounding area for complications with each dressing change. Tenderness at the insertion site, fever without obvious cause, or other symptoms that suggest local or bloodstream infection should be assessed thoroughly and documented.

Procedure

Procedure to remove old dressing:

1. Clean the over the bed table with soap and water, or alcohol.
2. Place equipment on table.
3. Perform hand hygiene. Wear non-sterile gloves.
4. Resident should be lying on bed, with head facing opposite direction from dressing site. If resident is coughing or has a tracheostomy, apply mask to resident if he or she can tolerate it.
5. Ask resident to keep arms at side of body or have someone help him or her to do this.
6. The dressing can be rubbed with alcohol wipes to help dissolve the adhesive and loosen the dressing. Never use scissors near the catheter.
7. Remove any tape on the dressing.
8. While stabilizing the catheter, remove the dressing in the direction of the catheter insertion (from the hub of the catheter toward the head) to avoid dislodging the catheter.
9. Dispose of catheter and gloves in appropriate container.
10. Perform hand hygiene.

Procedure to apply sterile dressing:

1. Open sterile dressing kit.
2. Apply mask.
3. Apply sterile gloves.
    a. Once the gloves are on, only the contents of the kit can be touched.
    b. Do not pick up the catheter with the sterile gloves. The outside of the catheter is not sterile.
    c. Use sterile gauze to pick up catheter when cleaning underneath the catheter to preserve the sterile gloves.
4. Clean catheter insertion site with approved antiseptic solution.
5. Allow antiseptic solution to air dry on skin. Do not blow or wave over site.
6. Apply sterile transparent dressing (with or without gauze) to area:
    a. Center the dressing over the insertion site.
    b. Starting at the catheter, smooth dressing outward toward the edges to remove air.
    c. While removing the paper around edges of dressing, press down on the edges of the dressing.
    d. Label with initials, date and time.

7. The sterile tape from the kit may be used to secure edges if needed.
    a. Placing a piece of tape across the bottom of the dressing can help secure the catheter in place and keep the catheter from pulling on the dressing.
    b. The tape should not cover the insertion site.
8. If the resident has hair on the dressing site:
    a. Shaving with a razor or cutting the hair with scissors is not permitted, as this may cut the skin and/or damage the catheter.
    b. Instead, apply a skin protecting agent after the area has been cleaned with antimicrobial agents.
    c. Apply only around the perimeter of the insertion site where the dressing will be placed. Do not apply directly to the insertion site.
    d. Allow skin protectant to dry completely before applying transparent dressing.
9. If catheter is inserted in neck or other area of flexion, place the dressing over the insertion site. Then, cut another TSM dressing in two pieces and reinforce the edges of the original dressing with cut pieces of the second dressing.
10. Dispose of gloves and supplies in appropriate containers.
11. Perform hand hygiene.
12. Reposition resident for comfort.

Documentation

The following information should be recorded in the resident's medical record:

1. Date and time dressing was changed.
2. Location and objective description of insertion site.
3. Any complications/interventions that were done.
4. Condition of sutures (if present).
5. Any questions, education given to resident, resident's statement regarding IV therapy and response to procedure.
6. Signature and title of the person recording the data.

Reporting

1. Report any signs and symptoms of complications to provider, supervisor and oncoming shift.
2. Intervene as necessary.

CATHETER INSERTION AND CARE

N. OBTAINING BLOOD SPECIMENS FROM A CENTRAL VENOUS CATHETER

Policy

The purpose of this procedure is to provide guidelines for the safe and aseptic sampling of the resident's blood from a central venous catheter.

Preparation

1. A provider order is required to obtain blood samples.
2. Verify in state nurse practice act regarding scope of practice for this procedure.

General Guidelines

1. All four types of central catheters (tunneled, non-tunneled, implanted port, PICC) can be used to draw blood.
2. Always use needleless systems and aseptic technique when drawing and transferring blood.
3. Replace the needleless connection device after blood draws to prevent infection.
4. Use only 10 mL or larger barrel size syringes to draw blood from a central venous catheter to avoid too much pressure on catheter.
5. Do not attach blood collection tubes directly onto a catheter, as this may cause increased pressure and damage the catheter.
6. Keep the needleless connection device in place while drawing blood to avoid the possibility of air embolus while changing syringes.
7. Prior to blood sampling, verify the identity of the resident by at least two means of identification.
8. Do not obtain blood sample through an infusion administration set (IV tubing).
9. Use the pull-stop technique when obtaining blood samples from a central venous catheter.
10. For blood sampling through a multi-lumen catheter use the largest lumen and the lumen farthest from the heart.
11. Draw blood from a dedicated lumen, if possible.
12. Do not draw blood for therapeutic drug monitoring through the same lumen used to administer the medication, if possible.
13. Do not draw blood from a lumen that is being used for parenteral nutrition.
14. Do not use central lines for obtaining cultures unless there is limited peripheral vein access or the culture is to determine a catheter-related blood stream infection.

Equipment and Supplies

1. Three 10 mL barrel size syringes prefilled with normal saline;
2. One 10 ml barrel size syringe prefilled with heparin 10units/ml- for Open Ended Catheters
3. One or more sterile syringes (10 mL or larger barrel size);
4. Chlorhexidine or alcohol wipes;
5. Sterile end cap/injection device/needleless connection device
6. Blood transfer kit (needleless);
7. Blood collection tubes, (Vacutainer)
8. Non-sterile gloves.

CATHETER INSERTION AND CARE

Helpful Tips When Drawing Blood

1. All central lines can be used to draw blood. When using a PICC line, at least a 4 FR size catheter is recommended.
2. To facilitate blood return, gently reposition the resident to a sitting or lying down position, or ask him/her to cough. If using a PICC line, ask the resident to straighten his/her arm.

Procedure

1. Stop any infusions for at least 2 minutes prior to accessing the catheter.
2. Assemble supplies. Remove any air bubbles from syringes.
3. Perform hand hygiene. Apply non-sterile gloves.
4. Attach primed normal saline syringe to new needleless access device (end cap, valve). Prime with 0.5 mL flush and place in clean area for use after blood draw.
5. Leave needleless access device on end of catheter. Clean end of access device with alcohol wipe.
6. Only use syringes to draw blood from catheter. Do not attach vacuum tube.
7. Attach normal saline syringe to end of catheter and use push-pause flush method to infuse 10 mL normal saline. Stop flushing when there is 0.5 mL of normal saline in the syringe.
8. With same normal saline syringe attached, withdraw 5 mL of blood (for waste) using pull-stop method. (Note: For cultures, do not waste initial blood sample.)
9. Disconnect syringe with blood waste from catheter (clamp catheter if necessary).
10. Discard blood waste syringe in sharps container. Do not re-infuse blood into resident.
11. Attach 10 mL (or larger) sterile empty syringe to access device. Withdraw necessary amount of blood for samples. This process may be repeated with as many sterile syringes as necessary to get needed amount of blood. Place filled syringes in clean area.
12. Post blood draw, flush with 10-20 mL of normal saline using push-pause flush technique. Be sure to clamp catheter before removing syringe.
13. Attach new, primed needleless connection device (end cap, valve) to catheter hub:
    a. Clamp or kink catheter;
    b. Ask resident to hold his/her breath;
    c. Remove old access device;
    d. Place new access device (screw into place);
    e. Ask resident to release breath; and
    f. Unclamp catheter.
14. Finish flushing with normal saline followed by heparin 10units/ml if Open Ended (non-valved) catheter.
15. Clamp catheter (if necessary) and remove syringe
16. Dispose of flush syringes in sharps container.
17. Transfer blood sample into tubes to send to lab (see below).

Transferring Blood Sample into Laboratory Tubes:

1. NEVER USE A NEEDLE TO TRANSFER BLOOD. Use a needleless transfer device (according to manufacturer's instructions).
2. Transfer blood into tubes in a sequence according to lab protocol.
    a. Contact lab to see what sequence the tubes are to be filled.
    b. Some tubes have additives that could be transferred into other tubes through the transfer system and interfere with lab results.

c. Label tubes with resident's information (per lab requirements), date, time, and initials of person drawing blood.
d. Place lab paperwork and tubes into lab biohazard transport bag.
e. Send to lab.

Documentation

The following information should be recorded in the resident's medical record:

1. Date, time of specimen collection, type of tests.
2. Site of collection.
3. Condition of resident post blood draw.
4. Laboratory results and notification of provider of results.
5. Signature and title of person who is recording/reporting data.

Reporting

1. Notify provider, supervisor, and oncoming shift of any problems or inability to get blood sample.
2. Report other information in accordance with facility policy and professional standards of practice.

CATHETER INSERTION AND CARE

O. OBTAINING BLOOD SPECIMENS FROM A PERIPHERAL CATHETER

Purpose

The purpose of this procedure is to provide guidelines for the safe and aseptic sampling of the resident's blood from a peripheral catheter.

Preparation

1. A provider order is required to obtain blood samples.
2. Verify in state nurse practice act regarding scope of practice for this procedure.

General Guidelines

1. Always use needleless systems and aseptic technique when drawing and transferring blood.
2. Replace the needleless connection device after blood draws to prevent infection.
3. Use only 10 mL or larger barrel size syringes to draw blood from a peripheral catheter to avoid too much pressure on catheter.
4. Do not attach vacuum blood collection tubes directly onto a catheter hub, as this may cause increased pressure and damage the catheter.
5. Keep the needleless connection device in place while drawing blood to avoid the possibility of air embolus while changing syringes.
6. Prior to blood sampling, verify the identity of the resident by at least two means of identification.
7. Do not obtain blood sample through an infusion administration set (IV tubing).
8. Do not obtain blood for cultures through a peripheral catheter, either at insertion or while indwelling.
9. Do not obtain a blood sample for any purpose at the time of catheter insertion.
10. Use the pull-stop technique when obtaining blood samples.

Equipment and Supplies

1. Two 10 mL syringes prefilled with normal saline;
2. One or more sterile syringes (10 mL or larger barrel size);
3. Chlorhexidine or alcohol wipes;
4. Sterile end cap/injection device;
5. Blood transfer kit (needleless);
6. Vacuum tubes; and
7. Non-sterile gloves.

Steps in the Procedure

1. Stop any infusions for at least 2 minutes prior to accessing the catheter.
2. Assemble supplies. Remove any air bubbles from syringes.
3. Perform hand hygiene. Apply non-sterile gloves.
4. Attach primed normal saline syringe to new needleless access device (end cap, valve). Prime with 0.5 mL flush and place in clean area for use after blood draw.

5. Leave needleless access device on end of catheter. Clean end of access device with alcohol wipe.
6. Only use syringes to draw blood from catheter. Do not attach vacuum tube.
7. Attach normal saline syringe to end of catheter and use push-pause flush method to infuse 10 mL normal saline. Stop flushing when there is 0.5 mL of normal saline in the syringe.
8. With same normal saline syringe attached, withdraw 1-2 mL of blood (for waste) using pull-stop method.
9. Disconnect syringe with blood waste from catheter (clamp catheter if necessary).
10. Discard blood waste syringe in sharps container. Do not re-infuse blood into resident.
11. Attach 10 mL (or larger) sterile empty syringe to access device. Withdraw necessary amount of blood for samples. This process may be repeated with as many sterile syringes as necessary to get needed amount of blood. Place filled syringes in clean area.
12. Post blood draw, flush with 10-20 mL of normal saline using push-pause flush technique.
13. Attach new needleless connection device (end cap, valve) to catheter hub:
    a. Clamp or kink catheter;
    b. Remove old access device;
    c. Place new access device (screw into place); and
    d. Unclamp catheter.
14. Finish flushing with normal saline.
15. Clamp catheter (if necessary). Remove syringe.
16. Dispose of flush syringes in sharps container.
17. Transfer blood sample into tubes to send to lab (see below).

Transferring Blood Sample into Laboratory Tubes

1. Never use a needle to transfer blood. Use a needleless transfer device (according to manufacturer's instructions).
2. Transfer blood into tubes in a sequence according to lab protocol. Contact lab to see what sequence the tubes are to be filled. Some tubes have additives that could be transferred into other tubes through the transfer system and interfere with lab results.
3. Label tubes with resident's information (per lab requirements), date, time, and initials of person drawing blood.
4. Place lab paperwork and tubes into lab biohazard transport bag. Send to lab.

Documentation

The following information should be recorded in the resident's medical record:

1. Date, time of specimen collection, type of tests.
2. Site of collection.
3. Condition of resident post blood draw.
4. Laboratory results and notification of provider of results.
5. Signature and title of person who is recording/reporting data.

Reporting

1. Notify provider, supervisor, and oncoming shift of any problems or inability to get blood sample.
2. Report other information in accordance with facility policy and professional standards of practice.

CATHETER INSERTION AND CARE

P. OBTAINING BLOOD SPECIMENS FROM A DIRECT VENIPUNCTURE

Purpose

The purpose of this procedure is to provide guidelines for the safe and aseptic sampling of the resident's blood via direct venipuncture.

Preparation

1. A provider order is required to obtain blood samples.
2. Verify in state nurse practice act regarding scope of practice for this procedure.

General Guidelines

1. If the resident has an intravenous catheter, perform venipuncture on the opposite extremity.
2. If upper extremity is edematous, paralyzed, or affected by a stroke, or has poor circulation due to radiation therapy, avoid venipuncture at this site.
3. Use the dorsum of the hand in residents with a dialysis fistula or graft.
4. Use a straight or winged needle for phlebotomy at the antecubital fossa.
5. When obtaining venipuncture blood specimen for culture, consider using a phlebotomy team or individual(s) specially trained to reduce contamination of the specimen.

Equipment and Supplies

1. Straight or winged needle;
2. Chlorhexidine or alcohol wipes;
3. Tourniquet;
4. Blood collection tubes; and
5. Non-sterile gloves.

Steps in the Procedure

1. Disinfect venipuncture site with anti-microbial solution. Repeat two more times.
2. Allow to air dry.
3. Apply tourniquet proximal to venipuncture site.
4. Perform venipuncture:
    a. Position resident with arm extended, in dependent position.
    b. Select vein (antecubital fossa is preferred for blood specimen collection).
    c. Insert phlebotomy needle (butterfly) in vein. The needle should be connected to a sterile syringe to collect blood.
    d. If obtaining blood for culture, withdraw 5 mL of blood for waste.
    e. Collect blood specimen into blood collection tube attached directly to winged needle, or collect by aspirating into syringe and then transferring to collection tubes.
5. Remove tourniquet.

6. Remove needle and apply pressure to exit site.
7. Apply sterile dressing to venipuncture site.

Transferring Blood Sample into Laboratory Tubes

1. Never use a needle to transfer blood. Use a needleless transfer device (according to manufacturer's instructions).
2. Transfer blood into tubes in a sequence according to lab protocol.
    a. Contact lab to see what sequence the tubes are to be filled.
    b. Some tubes have additives that could be transferred into other tubes through the transfer system and interfere with lab results.
    c. Label tubes with resident's information (per lab requirements), date, time, and initials of person drawing blood.
    d. Place lab paperwork and tubes into lab biohazard transport bag.
    e. Send to lab.

Documentation

The following information should be recorded in the resident's medical record:

1. Date, time of specimen collection, type of tests.
2. Site of collection.
3. Condition of resident post blood draw.
4. Laboratory results and notification of provider of results.
5. Signature and title of person who is recording/reporting data.

Reporting

1. Notify provider, supervisor, and oncoming shift of any problems or inability to get blood sample.
2. Report other information in accordance with facility policy and professional standards of practice.

CATHETER INSERTION AND CARE

Q. HEMODIALYSIS CATHETERS – ACCESS AND CARE OF

Policy

Hemodialysis catheters will only be accessed by medical staff who have received training and demonstrated clinical competency regarding use of this catheter.

General Guidelines

1. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure. (Note: As a general rule, flushing, drawing blood or administering medications via hemodialysis catheter requires specialized training and/or certification of an RN.)
2. Hemodialysis catheters are surgically placed in the jugular, subclavian, or femoral veins and end in the vena cava. Removal of the catheter is a surgical procedure.
3. Dialysis catheters should be marked "for dialysis use only" so they are not confused with central venous access devices.
4. Dialysis catheters are recognized by the following characteristics:
    a. The hub ends of the catheter are usually RED and BLUE. This is to designate the arterial catheter and venous catheter.

Types of Hemodialysis Catheters

Vascular access may be accomplished in one of three ways:

1. Arterio-venous fistula (AVF):
    a. AVF is the preferred method of vascular access.
    b. Access is created by surgically connecting an artery and a vein.
    c. The AVF is usually placed in the arm.
    d. The use of an AVF creates a lower risk of complications from clotting or infections.
    e. An AVF provides longer lasting and better blood flow than grafts.
    f. Sometimes veins are too weak for this access.
2. Arterio-venous graft (AVG):
    a. The AVG uses a synthetic or animal-derived tubing to connect the artery and vein.
    b. The arm is the preferred site but the graft may also be placed in the leg.
3. Central catheters
    a. Central catheters for hemodialysis are generally inserted in the neck, chest or groin area.
    b. This is not the preferred site for long-term placement. There is more risk of clotting and infection than with either fistulas or grafts. Central dialysis catheters are used for short term dialysis (less than three weeks) while AVF or AVG is healing.
    c. Central dialysis catheters are recognized by the following characteristics:
        (1) There are two catheters exiting from the insertion site. The lumen of the arterial catheter is usually RED and the lumen of the venous catheter is usually BLUE.
        (2) The lumens are short and made from heavy thick rubber. This is so they can withstand high pressure volumes from the dialysis machine.
        (3) There are clamps on the lumens.

Care of AVFs and AVGS

1. After placement of the fistula or graft, the site cannot be accessed until it matures. This may take 2-3 weeks for a graft and 6-12 weeks for a fistula.
2. The site may not be used for dialysis until a written order is received from the nephrologist or surgeon.

3. Care involves the primary goals of preventing infection and maintaining patency of the catheter (preventing clots).
4. To prevent infection and/or clotting:
    a. Keep the access site clean at all times.
    b. Do not use the access site arm to take blood samples, administer IV fluids or give injections.
    c. Needle access for hemodialysis should be rotated (alert the DNS if it is noted that the same site is accessed repeatedly).
    d. Check for signs of infection (warmth, redness, tenderness or edema) at the access site when performing routine care and at regular intervals.
    e. Do not use the access arm to take blood pressure.
    f. Advise the resident not to sleep on, wear tight jewelry or lift heavy objects with the access arm.
    g. Check the color and temperature of the fingers, and the radial pulse of the access arm when performing routine care and at regular intervals.
    h. Check patency of the site at regular intervals. Palpate the site to feel the "thrill," or use a stethoscope to hear the "whoosh" or "bruit" of blood flow through the access.

Care Immediately Following Dialysis Treatment

1. The dressing change is done in the dialysis center post-treatment.
2. If dressing becomes wet, dirty, or not intact, the dressing shall be changed by a licensed nurse trained in this procedure. (Note: Check with state nurse practice act to determine licensure and competency requirements.)
3. Mild bleeding from site (post-dialysis) can be expected. Apply pressure to insertion site and contact dialysis center for instructions.
4. If there is major bleeding from site (post-dialysis), apply pressure to insertion site and contact emergency services and dialysis center. Verify that clamps are closed on lumens. This is a medical emergency. Do not leave resident alone until emergency services arrive.

Care of Central Dialysis Catheters

1. The central catheter site must be kept clean and dry at all times. Bathing and showering are not permitted with this device.
2. Catheter lumens should be capped and clamped when not in use.
3. Dialysis catheters should be marked for dialysis use only so they are not confused with central venous access devices.
4. Flushing, drawing blood or administering medications via central hemodialysis catheters require specialized training and/or certification of an RN. Do not allow non-dialysis personnel to access the catheter.
5. Those caring for the catheter site must wear a mask and gloves when doing so. Dressing changes, if ordered, should be done using sterile technique.
6. Never pull or tug on the catheter. Do not use scissors near the catheter.

Documentation

The Nurse should document in the resident's medical record every shift as follows:

1. Location of catheter.
2. Condition of dressing (interventions if needed).
3. If dialysis was done during shift.
4. Any part of report from dialysis nurse post-dialysis being given.
5. Observations post-dialysis.

CATHETER INSERTION AND CARE

R. ADMINISTRATION SET/TUBING CHANGES

Policy

Administration sets and tubing will be changed at specific intervals in order to prevent infections associated with contaminated IV therapy equipment.

General Guidelines

1. Manage all IV equipment, including administration sets, using aseptic technique and observing standard precautions.
2. Always perform hand hygiene and apply non-sterile gloves while working with IV equipment.
3. The schedule for changing the administration set is determined by the type of solution that is being administered (see below).
4. Assess all equipment for sterility and product integrity when opening packaging.
5. Change devices that are added to tubing such as extension sets, filters, stopcocks, end caps, or any other devices when tubing is changed. Use only needleless equipment.
6. Label all tubing with start and change date and time. Change and then label accordingly any tubing that is observed not to have a label.
7. Apply a sterile end cap to the end of primary tubing when it is disconnected from the catheter. Discard the sterile end cap when tubing is reconnected to catheter.
8. Use the following guidelines for administration set changes.

Primary and secondary <u>continuous</u> infusion administration sets:

1. Change no more frequently than every 96 hours, or whenever suspected contamination has occurred.
2. Change administration sets used for infusing lipid every 24 hours or with new bag.
3. Change primary set if a new catheter is placed.
4. Once a secondary set is detached from the primary administration set, the secondary set is considered a primary intermittent administration set (changed every 24 hours).

Primary or secondary <u>intermittent</u> infusion administration sets:

1. Change every 24 hours, or if suspected contamination of tubing or catheter has occurred.
2. Blunt cannulas that are used to access needleless connection devices should be removed immediately after each use, and a new blunt cannula should be aseptically attached.
3. Sterile end caps are to be placed on the end of the intermittent tubing between uses of the tubing. The sterile end cap is to be discarded when tubing is reattached to catheter.

Parenteral nutrition administration sets:

1. Parenteral nutrition (PN) containing amino acids/dextrose formulations – change tubing and 1.2 micron filter every 24 hours.
2. Lipids which contain intravenous fat emulsion – change tubing every 12 hours or with each new container.
3. Any tubing that is suspected to have been contaminated or compromised should be changed immediately.

CATHETER INSERTION AND CARE

.Equipment and Supplies

1. Non-sterile gloves.
2. Infusion administration sets (tubing and add-on devices).
3. Add-on devices:
    a. Needleless connection device.
    b. Filters (if necessary).
    c. Stopcock.
    d. Extension tubing.
4. Infusate solution.
5. Alcohol wipes.

Assessment

Inspect intravenous catheter for any signs/symptoms of IV related complications at scheduled intervals. Observe equipment for sterility or problems.

Procedure

1. Perform hand hygiene.
2. Inspect new equipment (infusate, add-on devices and administration set).
3. Prepare equipment:
    a. Attach add-on devices to administration set.
    b. Clamp new administration tubing.
    c. Spike access site of infusate container with new administration set.
    d. Hang infusate from IV pole.
4. Prime new administration set, including add-on devices and tubing:
    a. Squeeze drip chamber to fill according to manufacturer's instructions ($^1/_3$ to $^1/_2$ full).
    b. Remove cap from tubing, open roller clamp to prime tubing. Hold distal end of tubing over sink or trash can (keep tip sterile) and allow all of the air bubbles to leave tubing.
    c. Ensure that no air bubbles remain in tubing.
    d. When primed, clamp tubing and replace cap.
5. Temporarily stop infusion and disconnect old administration set:
    a. If continuous fluids are running, stop infusion, clamp tubing, and disconnect old set from catheter.
    b. Clamp catheter.
    c. Dispose old tubing in trash receptacle, along with infusate bag.
6. Apply clean non-sterile gloves.
7. Connecting new tubing:

a. Disinfect catheter hub with antiseptic solution (usually alcohol).
b. Remove cap from distal end of new tubing.
c. Attach primed tubing to catheter access cap.
d. Secure connection by screwing tubing into catheter access cap. Tape connections if needed for extra security.

8. Resume infusion:
   a. Unclamp catheter.
   b. Open roller clamp.
   c. Check pump program or flow regulator device for proper rate/volume.
   d. Observe flow rate for 1 to 2 minutes to ensure accuracy.
9. Discard used supplies.
10. Remove gloves and perform hand hygiene.
11. Label administration set and tubing with date, time and initials.
12. Document procedure in resident's medical record.

Documentation

The following information should be recorded in the resident's medical record:

1. The date and time of the administration set change.
2. The type of flow-control device.
3. The type of solution or medication infusing.
4. The amount of solution or medication to be infused.
5. The rate of infusion.
6. The condition of the IV site.
7. Notification of the provider of any intravenous complications.
8. Resident's response to treatment.
9. The signature and title of the person recording the data.

Reporting

1. Notify provider, supervisor and oncoming shift of resident refusal of procedure or any complications.
2. Report other information in accordance with facility policy and professional standards of practice.

CATHETER INSERTION AND CARE

S. CHANGING THE NEEDLELESS CONNECTION DEVICE AND EXTENSION TUBING

Policy

Needleless connection devices and extension tubing will be changed at specific intervals, or when needed, to prevent catheter related infections.

General Guidelines

1. Needleless connection devices may also be referred to as end caps, pressure valves (positive, negative or neutral), or by brand.
2. All lumens of the catheter will have a needleless connection device on the hub to prevent intake of air embolus and/or prevention of outward blood flow.
3. All needleless connectors will have a luer-lock design to ensure a secure connection.
4. Change needleless connection device and extension tubing with every dressing change, every 24 hours when TPN/PPN infusing (with new bag change) before obtaining blood for culture, and after blood draws.
5. For multi-lumen catheters, change needleless connection device every 7 days for lumens not in use.
6. Change needleless connection devices using aseptic technique.
7. Clean the needleless connection device with an antiseptic solution prior to use. The antiseptic solution should be a single use package. Alcohol is the most commonly used solution.
8. Anytime that a needleless connection device is removed, discard and replace with a new sterile device.
9. The extension tubing should always have a needleless connection device on the end of the tubing.
10. Use extension tubing on peripheral catheters to avoid too much pressure on the vein during flushing. Change extension tubing with peripheral catheter site change.
11. Flush needleless connection device/extension tubing with normal saline before attaching to catheter.
12. Only use smooth clamps on catheters. Never use clamps with “teeth” to avoid tearing catheter.

Equipment and Supplies

1. Non-sterile gloves.
2. Needleless connection device or extension tubing.
3. Alcohol wipes.
4. Normal saline to flush needleless or extension tubing.
5. Smooth clamps.

Procedure

1. Stop any fluids that are infusing and disconnect IV tubing. The IV tubing should be replaced when new needleless connection device/extension tubing is placed.
2. Perform hand hygiene. Wear non-sterile gloves.
3. Attach normal saline flush syringe to new needleless connection device/extension tubing. Prime with small amount of normal saline.
4. Clamp with smooth clamp or kink catheter and have resident hold his/her breath while removing and replacing old needleless connection device/extension tubing. Allow resident to breathe after replacement.

5. Place new needleless connection device/extension tubing onto catheter. Unclamp/unkink catheter.
6. Finish flushing catheter with normal saline (and heparin if required).
7. Clamp catheter (open-ended catheter) and remove syringe
8. Extension tubing may need to be coiled on side of catheter and taped in place.
9. Dispose of old equipment properly.
10. Remove gloves and perform hand hygiene.
11. Apply non-sterile gloves to reattach tubing if fluids were running previously.

Documentation

1. Document date and time that the procedure was done.
2. Document in resident's medical record if any complications of IV catheter were present and interventions necessary.
3. Document if provider was made aware of complications.

Reporting

1. Report to provider, supervisor, and oncoming shift any complications with catheter.

CATHETER INSERTION AND CARE

T. INTRAVENOUS CATHETER OCCLUSION

Policy

The registered nurse shall promptly identify and manage catheter occlusions.

General Guidelines

1. Catheter occlusion management is to be performed by registered nurses who have documented/demonstrated clinical competency in this area.
2. A provider's order is required for this procedure and for the specific fibrinolytic agent.
3. Suspect catheter occlusion if there is a loss of catheter patency. Occlusion can be partial or complete.
    a. Partial occlusion is likely if fluids can be infused, but aspiration of blood does not occur.
    b. Total occlusion is likely if fluids cannot be infused and blood cannot be aspirated.
4. Do not attempt to infuse anything through a central venous catheter that appears to be partially or totally occluded.
5. For multi-lumen central venous catheters it is not acceptable to leave a lumen occluded and untreated just because other lumens are functioning.

Types of Occlusions

1. Thrombotic (blood clots, fibrin): fibrin sheath/tail occurs when fibrin adheres to the tip of the catheter. This can allow infusion, but not withdrawal of blood;
2. Mechanical (kinks or closed clamps);
3. Precipitates (medication); or
4. Lipid deposits (parenteral nutrition).

Signs of Occlusion

1. Inability to flush, infuse fluids, or withdraw blood:
    a. Sluggish flow or sluggish blood return;
    b. Frequent occlusion alarms on pumps; or
    c. Visual clots or precipitates in lumen of catheter.
2. Occlusions can lead to:
    a. Delayed treatment;
    b. Increased risk of infection;
    c. Increased cost of care;
    d. Increased risk of losing site; and/or
    e. Increased risk of thrombus related complications.
3. When running multiple medications in sequence or using parenteral nutrition (PN), the catheter should be flushed with normal saline in between medications or when new PN bag is started. This will avoid buildup of precipitates in the lumen.
4. When treating thrombotic occlusions, catheter salvage is preferred over catheter replacement.

Steps in the Procedure

Troubleshooting IV System for Occlusion:

1. Starting at tubing insertion site in fluid chamber of bag, follow tubing down to catheter insertion site checking for kinks and/or closed clamps.

2. Check pump to make sure that tubing is loaded and working properly.
3. When sutures are present, check to see if they are too tight causing pressure on catheter.
4. Check for clogged filter or needleless connector.
5. Check for visible blood in catheter or add-on device.
6. Verify medication compatibility to check for possible interaction precipitates.
7. Obtain chest X-ray for catheter tip position on central venous access catheters (per order).
8. Visually check for clots/precipitates in catheter.

For Thrombotic Occlusion:

1. This treatment is not to be used on peripheral or midline catheters.
2. Take vital signs before and after procedure for baseline in case of any complications during procedure.
3. Explain procedure to the resident.
4. Ask resident to inform staff if any chest pain, shortness of breath, or any unusual symptoms develop. STOP procedure immediately if any of these signs or symptoms occur.
5. Position resident for comfort.
6. Prepare and administer thrombolytic agent according to the manufacturer's instructions and provider/practitioner order.
7. Use at least a 10 mL syringe for administration.
8. Notify the provider or practitioner if catheter patency is not restored.

For Medication Precipitate or Lipid Residue:

1. Explain procedure to the resident.
2. Position resident for comfort.
3. Prepare and administer catheter-clearance agent according to the manufacturer's instructions and provider/practitioner order.
4. Use at least a 10 mL syringe for administration.
5. Notify the provider or practitioner if catheter patency is not restored.

Documentation

1. The following information should be recorded in the resident's medical record:
    a. Start and stop time of procedure.
    b. Pre and post procedure vital signs.
    c. Name of medication and volume infused. Instillation of 2nd dose if given.
    d. Specific times and results of aspiration attempts (positive or negative blood return).
    e. Resident response to procedure and any complications (if occurred).
    f. Amounts of flush.
    g. Any orders received to remove/replace catheter.

Reporting

1. Report to provider if procedure was not successful for restoration of blood return.
2. Report any new orders that are received to remove/replace catheter.
3. Report results of procedure to oncoming shift/supervisor.

CATHETER INSERTION AND CARE

U. REMOVAL OF A PERIPHERAL INTRAVENOUS CATHETER

Policy

Peripheral IV catheters will be removed safely and aseptically by a nurse with demonstrated competency in this procedure.

General Guidelines

1. Verify with state nurse practice act for LPN/RN scope of practice and function and if a provider's order is required.
2. Replace peripheral IV catheter in an adult when there is suspected contamination or complication, or when therapy is discontinued.
3. A peripheral IV catheter is defined as a catheter that is less than 3 inches (7.5cm) in length. It is also referred to as a peripheral short catheter, an over the needle catheter, normal saline lock, and angiocath.
4. Removing the peripheral catheter is an aseptic procedure.

Equipment and Supplies

1. Non-sterile gloves.
2. Alcohol wipes.
3. Sterile 2 x 2 gauze.
4. 1 syringe of normal saline per flushing protocol.
5. Adhesive tape.

Procedure

1. Verify if catheter is to be removed.
2. Assemble equipment.
3. Explain procedure to resident.
4. Perform hand hygiene. Don non-sterile gloves.
5. Clean end of needleless connection device with alcohol wipe.
6. Attach normal saline syringe. Flush catheter leaving 0.5 mL of normal saline in syringe.
7. Remove any tape that is on dressing or tubing.
8. Stabilize catheter hub with a finger.
9. Remove transparent dressing from distal to proximal (towards the head).
10. Place sterile gauze over catheter insertion site. Do not apply pressure over site at this time.
11. Pull catheter and extension tubing straight out of vein in a backward motion.
12. Apply pressure to gauze over insertion site. Hold for approximately one minute or until bleeding stops.
13. Place piece of adhesive tape over dressing.
14. Leave dressing on for 24 hours.
15. Dispose of catheter and extension tubing in sharps container. Dispose of papers and gloves in trash.
16. Perform hand hygiene.
17. Assess resident for tolerance of procedure.

CATHETER INSERTION AND CARE

Documentation

1. The following should be documented in the resident's medical record:
    a. Date, time of procedure, and resident tolerance.
    b. Location of catheter that was removed.
    c. Reason for removal of catheter (end of treatment, complication, rotation of site, etc.).
    d. Any complications/interventions taken.
    e. Any communication with provider or oncoming shift.

Reporting

1. Report to supervisor, provider, and oncoming shift any complications/problems.
2. Report any information per facility protocol.

CATHETER INSERTION AND CARE

V. REMOVAL OF CENTRAL LINE AND MIDLINE CATHETERS

Policy

Central venous access devices (CVADs) and midline catheters are to be removed in a safe and sterile manner by personnel who have demonstrated competency in the procedure. Tunneled and implanted ports are a surgical procedure performed only by a licensed practitioner.

General Guidelines

1. Verify with state nurse practice act for RN/LPN scope of practice and function.
2. A licensed practitioner must write an order for the CVAD to be removed.
3. This procedure must be performed by a person who is certified in the removal procedure and demonstrates clinical competency in removing catheter.
4. The CVAD is removed at the end of the prescribed infusion therapy, when contamination can be proven, or when there are objective signs and symptoms of complications.
5. See Infection Control section for protocols regarding removal of suspected infected CVAD.

CATHETER INSERTION AND CARE

W. PICC INSERTION USING ULTRASOUND

Policy

To establish safe guidelines for PICC placement via Ultrasound.

General Guidelines

1. The insertion of a PICC via Ultrasound shall be performed by an RN and IV certified nurse who successfully meets the agency educational and performance objectives
2. Over the needle peel-away sheath direct approach. The needle is removed from peel-away sheath and the PICC is advanced through the sheath.
3. Needle access for short wire introduction with sheath/dilator combination for PICC threading. Sheath/dilator used with dilator removed to advance PICC into vein.

Procedure

1. Wash hands with thorough scrubbing action, then perform assessment and assemble equipment.
2. Initiate patient education and obtain consent.
3. Select vein using tourniquet and Ultrasound. Consider vein size in comparison to PICC size with and without tourniquet.
4. Measure using external tape measure from selected insertion site to midclavicular region to 3rd intercostal space always to right of the sternum.
5. Open PICC tray folding back outer wrap. Drop extra supply items onto sterile field.
6. Don cap, mask, sterile gown and gloves.
7. Arrange PICC, supplies and probe cover in a sterile, organized fashion for easy reach and access keeping items toward center of the sterile field. Prepare PICC length.
8. Draw up flushing solution. Pre-flush catheter to confirm patency.
9. Prepare anesthetic in 3ml syringe with 25g needle attached.
10. Establish a sterile field around patient using full bed drape and additional drapes under patient's arm according to IHI requirements.
11. Prep large area, 8-10 inches or more, using back and forth frictional scrub 30 seconds or more with chloraprep.
12. Remove gloves.
13. Apply tourniquet.
14. Don sterile gloves.
15. Drape patient's arm with sterile drapes.
16. Inject anesthetic if used.

CATHETER INSERTION AND CARE

OVER THE NEEDLE PEEL AWAY DIRECT APPROACH:

1. Access vein using a shallow angle of insertion (15-30 degrees). Go through the skin, drop your angle slightly, and access the vein. Once blood return is achieved, drop the needle angle flat with the skin; advance the needle a bit more. Thread the peel away sheath into the vein using the needle as a guide. Remove the needle. Engage the protective device.
2. Begin threading the PICC. Continue with slow threading. Turn head toward insertion site when catheter advances into the chest. Complete predetermined advancement; remove sheath and peel away from PICC by swinging the wings up and down then away.
3. Check for blood return through aspiration. Flush all lumens well (5-20 ml).
4. Secure the PICC and apply pressure dressing.
5. Radiographically confirm terminal tip location prior to use.
6. Document in patient record.

MODIFIED SELDINGER TECHNIQUE:

1. Access vein with peripheral cannula. Standards state only one device per access attempt.
2. When using Ultrasound, angle of insertion is acute (60-90 degrees) dependent on depth indicated by Ultrasound assessment.
3. Observe blood return flashback.
4. Thread wire through access device, maintaining control of wire at all times. Insert approximately half the length of the wire.
5. Remove access device by sliding out of the skin and off the wire.

CATHETER INSERTION AND CARE

6. Inject anesthetic subcutaneously into skin either side of the wire if not previously performed. Use blade to nick the skin and expand insertion site.
7. Slide sheath/dilator over wire and all the way into the vein using a firm twisting motion. Remove dilator by unlocking luer connector. Remove the wire. Place thumb over sheath opening to reduce blood loss and prevent air emboli.
8. Thread PICC through the sheath slowly. Turn head toward insertion site as PICC is advanced into chest. Advance PICC to predetermined level.
9. Check for blood return through aspiration. Flush all lumens well (5-20 ml).
10. Secure the PICC and apply pressure dressing.
11. Radiographically confirm terminal tip location prior to use.
12. Document in patient record.

DOCUMENTATION OF PICC INCLUDES:

a. 2 patient identifiers
b. Patient consent
c. Patient location
d. Ordering physician
e. Therapy
f. Vein used
g. PICC length in and out of vein
h. Manufacturer and lot number
i. Number of attempts with any threading problems

CATHETER INSERTION AND CARE

X. PICC INSERTION USING MST

Policy

To establish safe guidelines for PICC insertion using MST.

General Guidelines

To establish safe guidelines for PICC insertion using MST

Procedure

1. Verify physician's order for PICC insertion. Review patient's medical record per general PICC policy.
2. Explain the procedure to the patient and verify signed informed consent.
3. Wash hands for 20 seconds. Clean the bedside table with soap and water or antibacterial wipe, and gather equipment.
4. Place a tourniquet near the axilla of the upper arm, evaluate and select the most appropriate vein.
    a. Observe the anatomical structure and size of each vein. The catheter must be placed in the basilica (preferred), median cubital or cephalic vein.
    b. Palpate and establish the location of the brachial artery to prevent inadvertent puncture of the artery.
5. Release the tourniquet, leaving it in place tied loosely around the arm.
6. Prepare the patient:
    a. Position patient in semi-fowlers, or supine position.
    b. Position arm to be cannulated at a 45 to 90 degree angle to body.
    c. Explain the patient's participation during the procedure and the importance of maintaining sterility. Have patient practice turning head to insertion arm and dropping chin to shoulder.
7. To determine the length of PICC to be inserted, measure the patient with arm at a 45-90 degree angle. Using a non-sterile tape measure, measure from the point of insertion directly over the course of the selected vein as follows.

Left Basilic Insertion: Measure from point of venipuncture to medial groove of bicep along axilla and angle over clavicle to head of right clavicle and angle to first intercostal space at right border of sternum. Measure to the third intercostal space.

CATHETER INSERTION AND CARE

Right Basilic Insertion: Measure from point of venipuncture to medial groove of bicep along axilla and angle over clavicle to the head of the right clavicle and angle to first intercostal space at right border of sternum. Measure to the third intercostal space.

Left Cephalic Insertion: Measure from point of venipuncture to lateral groove of bicep to deltoid intersection to cross deltoid and angle over clavicle to head to right clavicle and angle to first intercostal space at right border of sternum. Measure to the third intercostal space.

Right Cephalic Insertion: Measure from point of venipuncture to lateral groove of bicep to deltoid intersection to cross deltoid and angle over clavicle to head of right clavicle and angle to first intercostal space at right border of sternum. Measure to third intercostal space.

8. Measure the mid-arm circumference to establish a baseline for arm circumference.
9. Don face mask. If applicable, assistant should also wear face mask.
10. Open Sterile Catheter Insertion Tray using the tray wrap as a sterile field, and add extension set if needed, syringes of normal saline, needleless access device, 3ml syringe with 25g needle and MST kit.
11. Open the PICC catheter and drop on sterile field. Don sterile gloves. Attach the needleless access device to the extension set and prime with normal saline. Using the 3ml syringe with the 25g needle, draw up 1-3ml bacteriostatic 0.9% sodium chloride.
12. Apply full bed drapes according to Health Improvement Institute (IHI) standards.

    Subtract the predetermined length for insertion plus an additional 1-3cm to be left outside the skin to position the hub of the PICC away from the bend of the arm.

    Flush the catheter with normal saline and examine for defects.

    If the remaining length is excessive, pull the guidewire back, to avoid cutting it, as this will unravel the guide wire resulting in severing of the PICC. Trim the PICC straight across with sterile scissors. The length of the PICC after trimming must be documented.

13. Vigorously cleanse the selected venipuncture site using crosspatch method with Chloroprep for 30 seconds. Remove gloves and apply tourniquet.
14. Don cap, sterile gown and second pair of sterile gloves.
15. Access vein with peripheral cannula. Standards state only one device per attempt.
16. Observe blood return. Remove needle leaving cannula in place.
17. Thread the MST wire through the cannula, maintaining control of the wire at all times. Insert approximately one half the length.

18. Remove the cannula by sliding out of the skin and off the wire.
19. Using the 3ml syringe with the 25g needle, inject the bacteriostatic sodium chloride either side of the wire subcutaneously. Lay the scalpel on the wire with the blade facing upwards, then nick the skin and expand the insertion site.
20. Slide the sheath/dilator over the wire all the way into the vein using a firm twisting motion. Remove the dilator by turning left or right and unlocking the luer connector then slide off the wire. Remove the wire. Place thumb over the sheath opening to reduce blood loss and prevent air emboli.
21. Thread the PICC through the sheath slowly. Instruct the patient to turn his/her head toward the cannulated arm and drop his/her chin to his/her chest. This decreases the angle to the jugular vein which will facilitate movement of the catheter past this junction and into the SVC.
22. Continue to advance the catheter to its final position. Changing the position of the patient's arm may also facilitate threading. Check for blood return by attaching a syringe and pulling back. If an easy flowing 3ml of blood is pulled back, you most likely are in the SVC.
23. Connect the extension tubing with attached needleless access. Flush all lumens with 10-20mls normal saline.
24. Secure the PICC with a Stat-lock, Steri-strip or tape to the hub of the PICC then apply a bio-occlusive pressure dressing using a folded sterile 2x2 gauze pad over the insertion site as a wick if bleeding should occur.
    a. Apply skin protectant swab to skin so dressing edges will adhere.
    b. Place the bio-occlusive dressing over the area so that the dressing extends over the connection of the catheter to the extension. The extension becomes an integral part of the PICC. This dressing will remain in place for 24 hours and then be changed.
25. Monitor for signs and symptoms of complications.
26. Obtain X-ray to verify tip placement. Instruct the facility nurse not to use PICC until placement is verified.
27. Document in detail on the Nursing Visit Record for Line Placement or the IV Nurse Activity Record for Long Term Care Facilities.

CATHETER INSERTION AND CARE

CONSENT FORM

CONSENT FOR PERIPHERALLY INSERTED CATHETERS GREATER THAN 3 INCHES IN LENGTH AND CENTRAL LINE

Patient Name: _____ Facility Name: _____

My physician, Dr._____ has ordered the placement of a peripherally inserted catheter that is greater than 3 inches in length. I have been advised of my need to have this catheter inserted.

A. Benefits:
   - Administration of intravenous medication and solutions without repeated venipuncture.
   - Placement of this catheter should not interfere with daily activities.
   - This catheter may possibly be used for blood sampling.

B. Potential Risks:
   - Bleeding or clotting of catheter.
   - Inability to place catheter.
   - Catheter breakage with possible migration of fragment to the heart or lung, possibly causing death.
   - Malposition of catheter.
   - Tendon or nerve damage from needle insertion.
   - Phlebitis (inflammation of the vein).

C. Possible Alternatives Include:
   - Central Venous Access Device insertion by physician in the hospital.
   - Refusal of infusion therapy.
   - Other: _____

I have been informed of the specifics of the insertion procedure and have had the opportunity to discuss my questions and concerns and have had these questions answered to my satisfaction.

I hereby consent to having a peripherally inserted catheter of greater than 3 inches un length inserted by a nurse specially trained in this procedure.

Signatures:

Date: _____ Patient's Signature: _____

Legal Guardian/Sponsor Signature: _____

Witness to Signature: _____

V. CATHETER INSERTION AND CARE

Z. Hypodermoclysis (Clysis) Therapy

Policy

Hypodermoclysis (Clysis) therapy may be used to provide symptom control and/or fluid and electrolyte replacement by administering fluids subcutaneously.

Clysis therapy is administered into the supra supra scapular area, upper chest, abdomen or upper thigh.

Clysis therapy will be initiated by an MD/NP/PA or a trained registered nurse and maintained by appropriately trained licensed nurses. A physician order including solution, rate, route and duration of therapy is required. The dressing, needle and tubing will be changed at least every seventy two (72) hours and at first sign of local infection.

Equipment and Supplies

a. Non-sterile gloves
b. Clysis solution
c. IV tubing set
d. 25-27 gauge subcutaneous needle (i.e. AQUA-C Hydration System)
e. IV pole and/or infusion pump
f. Chloraprep or alcohol wipes
g. Transparent dressing
h. Tape
i. 2 x 2 gauze pad, if indicated

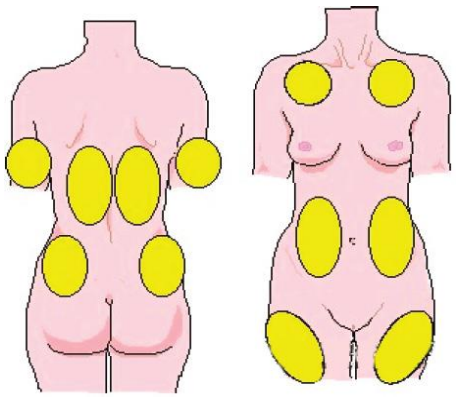
Procedure

1. A provider's order is necessary for this procedure.
2. Review the order and type of solution to be infused.
3. Identify the resident.
4. Explain the procedure to the resident.
5. Place equipment at bedside.
6. Wash hands thoroughly.
7. Apply non-sterile gloves.
8. Set up administration set/tubing, close clamp, spike and hang solution bag.
9. Carefully remove the Aqua-C needle set from the plastic tube.
10. Connect the Aqua-C to the IV tubing/administration set
11. Fill IV tubing chamber half way and prime tubing along with Aqua-C, until you see drops coming from both needles of Aqua-C. Maintain aseptic technique.
12. Close the dial-a-flow.
13. Remove the needle guards on the Aqua-C prior to placement.
14. Choose site to insert subcutaneous needle.
    Suggested sites incude:
    a. Supra scapular
    b. Upper chest (most common) – Avoid breast tissue and axilla as may result in decreased absorption and discomfort.
    c. Abdomen – Sites placed too low (below umbilicus) may cause scrotal edema. In the abdomen, direct laterally to prevent pinching or grabbing when resident sits or bends.
    d. Upper thigh – Avoid if it will impede mobility. Sites placed high on the thigh may cause scrotal edema.

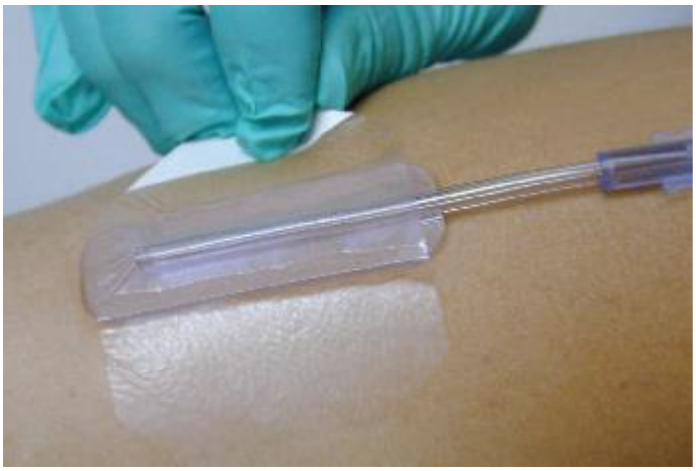
15. Cleanse site with chloraprep or alcohol wipe in a circular motion, beginning at the center of the site. Allow to dry at least 10 seconds.
16. Insert the Aqua-C into the patient at the chosen site.
17. Apply the transparent dressing.
18. Set the dial-a-flow controller to the desired flow rate
19. If fluid accumulation under the skin is observed, slow flow rate to allow for fluid dispersion.

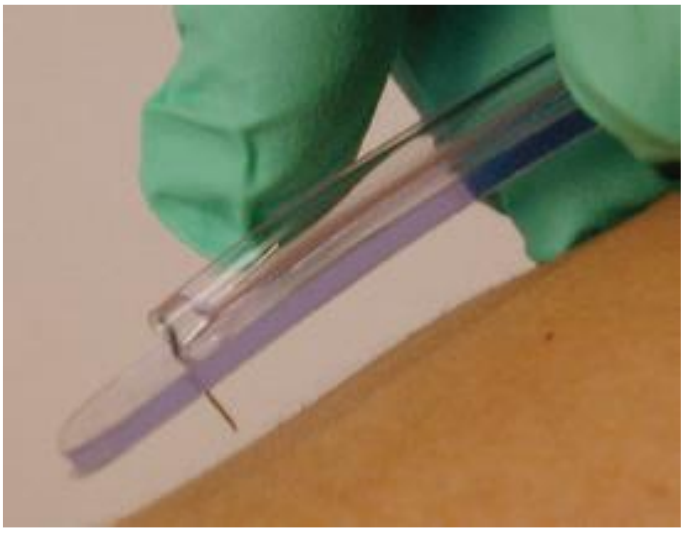
Sites suitable for Hypodermoclysis include:

- Posterior aspect of upper arms
- Upper chest, avoiding breast tissue
- Abdomen
- Anterior or Lateral thigh
- Infraclavicular area.

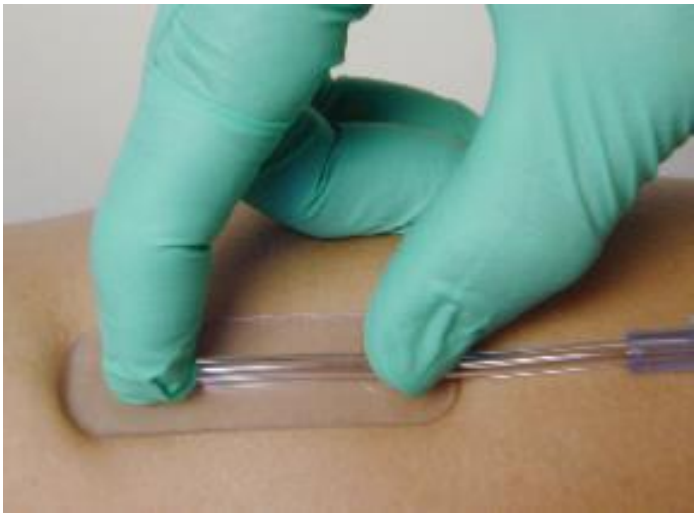


Insert Aqua-C needle set into chosen site





Apply dressing



VI. MEDICATION ADMINISTRATION

Table of Contents

MEDICATION ADMINISTRATION

A. WITHDRAWAL AND TRANSFER OF FLUID FROM A VIAL

Policy

Staff will be knowledgeable regarding proper medication withdrawal and transfer from a vial.

General Guidelines

1. Injectable medication vials are containers with a rubber stopper secured to its top by an aluminum band. A cap or aluminum cover usually protects the rubber stopper. Most protective caps do not ensure sterility of the rubber closure.
2. Vials with noted or suspected contaminants or abnormal properties will be discarded.
3. After initial opening, the beyond-use date of multiple-dose medication vials is 28 days unless otherwise specified by the manufacturer.
4. Vials labeled as "single dose" or "single use" will not be used on multiple residents. Such vials will be used only for one resident in a single procedure.
5. Single-dose vials may be used for up to one hour after initial puncture.

Equipment and Supplies

1. Medication vial;
2. Alcohol wipes;
3. Syringe of appropriate size;
4. Needle of appropriate gauge; and
5. Sterile cap, if applicable.

Procedure

1. Assemble equipment and supplies.
2. Inspect the vial's protective cap and rubber stopper for physical integrity. Remove the vial's protective cap.
3. Disinfect by wiping the rubber stopper with alcohol wipe, leaving no excess on top of the closure.
4. Attach a needle with a luer-lock connection to a syringe of appropriate size. An 18-gauge needle is a common size.
5. Pull the syringe plunger back to approximately 2 to 3 mL less than the required volume of medication, not touching any part of the plunger except the flat portion at the end.
6. Remove the needle's protective cover by pulling straight off. Do not twist.
7. Grasp the vial base with one hand.
8. With the other hand hold the syringe barrel and place the needle at a 45 degree angle to the rubber stopper.
9. Insert the needle with the bevel facing upward and with a slight pressure away from the bevel, applying lateral and downward pressure.
10. Once the needle has penetrated the rubber closure, bring the needle and syringe to a vertical position and complete the penetration.
11. Keeping the needle inserted into the vial, invert the vial and syringe so that the vial is now above the syringe.

12. Gradually inject the air in the syringe barrel into the vial in small increments.
13. Avoid injecting all the air at once to prevent unnecessary foaming and ultimately excessive build-up of pressure inside the vial to avoid a potential blowout.
14. Holding the index finger on the lip of the syringe, gently pull the plunger with the thumb and middle finger to withdraw fluid.
15. Remove air bubbles from the inside walls of the syringes by keeping the needle inserted in the vial and gently tapping the barrel of the syringe using "flicking" motion with thumb and index finger.
16. Determine the final medication volume and remove the needle from the rubber stopper of the vial. The vial is left with a slightly negative pressure to prevent "spitting" of solution from around the puncture site as the needle is withdrawn.
17. Remove the needle and syringe from the rubber stopper with a quick straight pull. This can be done with the vial inverted, but slightly tilted; making sure that the rubber stopper is not being bathed with the solution or rest the vial right side up on the work surface and withdraw.
18. The syringe is turned upward after withdrawal to prevent leakage out of the needle.
19. If the syringe volume needs to be adjusted after the needle has been withdrawn from the vial, pull back a short distance on the plunger before pushing the plunger forward to clear the needle and hub of fluid and minimize release of medication onto the work surface area.
20. Remove the needle and place a sterile Luer Lok cap at the end of the syringe for transportation to the resident's room or place of medication administration.

B. WITHDRAWAL AND TRANSFER OF FLUID FROM AN AMPULE

Policy

Staff will be knowledgeable regarding proper withdrawal and transfer of medication from an ampule.

General Guidelines

1. Ampules with noted or suspected contaminants or abnormal properties will be discarded.
2. Single dose ampules will be discarded after opening and not stored for any time period.

Equipment and Supplies

1. Medication ampule;
2. Alcohol wipes;
3. 5-micron filter straw;
4. Syringe of appropriate size;
5. Needle of appropriate gauge; and
6. Sterile cap if applicable.

Procedure

1. Assemble equipment and supplies needed.
2. Disinfect the neck of the ampule completely with an alcohol wipe.
3. Ensure no liquid remains in the neck of the top of the ampule. Hold the ampule upright and tap or "flick" the top of the ampule to remove any liquid trapped in the area in order to minimize the formation of aerosols upon opening.
4. Wrap an alcohol wipe around the neck of the ampule and grasp the ampule on each side with the thumb and index finger of each hand.
5. Attach a 5-micron filter straw to an appropriate size syringe, leaving the plastic protective covering in place.
6. Press the plunger down towards the tip of the barrel to expel air and loosen plunger.
7. Remove the protective covering from the filter straw.
8. With one hand, tilt the ampule slightly and insert the filter straw through the opening of the ampule.
9. Withdraw the required volume by pulling the plunger away from the barrel of the syringe using the thumb and index finger of the hand in which the syringe is being held. Do not touch the plunger around the mid-portion when withdrawing the fluid.
10. The tip of the filter straw should be below the fluid surface but not touching the bottom of the ampule to avoid areas of glass concentration. This will avoid aspirating any glass particles floating on the surface or laying on the bottom of the ampule.
11. After obtaining the desired volume from the ampule, remove the filter straw from the ampule.
12. Tap the barrel of the syringe and remove any excess air bubbles.
13. Return the protective covering onto the filter straw and remove from the hub of the syringe.
14. Place a sterile cap at the end of the syringe for transportation to the resident's room or place of medication administration.

C. RECONSTITUTION OF A MEDICATION FROM A VIAL

Policy

Staff will be knowledgeable regarding guidelines for the reconstitution of a medication provided in a vial (bottle).

General Guidelines

1. Injectable medication vials are containers with a rubber stopper secured to its top by an aluminum band. A cap or aluminum cover usually protects the rubber stopper. Most protective caps do not ensure sterility of the rubber closure.
2. Vials with noted or suspected contaminants or abnormal properties will be discarded.
3. Reconstitution will be done in accordance with manufacturer's recommendations.
4. After initial opening, the beyond-use date of multiple-dose medication vials is 28 days unless otherwise specified by the manufacturer.
5. Single-dose vials may be used for up to one hour after initial puncture.
6. Vials labeled as "single dose" or "single use" will not be used on multiple residents. Such vials will be used only for one resident in a single procedure.
7. Refer to the *Withdrawal and Transfer of Fluid from a Vial* policy for general guidelines on medication withdrawal from a vial.

Equipment and Supplies

1. Powdered medication in vial;
2. Diluent;
3. Alcohol wipes;
4. Syringe of appropriate size;
5. Needle of appropriate gauge; and
6. Filter, if necessary.

Procedure

1. Read medication package literature, medication label, or other appropriate reference to determine the correct diluent and quantity of diluent to be used.
2. Note any special steps required (such as shaking and for how long to completely dissolve powder).
3. Wash hands thoroughly.
4. Break and remove seal from vial of medication.
5. Break and remove seal from both diluent and medication vials and wipe rubber stoppers with alcohol swab.
6. Inject into diluent bottle with syringe an amount of air equal to the amount of fluid to be withdrawn for reconstitution of medication.
7. Do not allow needle to touch any surface other than stopper.
8. Withdraw the appropriate amount of diluent into syringe.
9. Inject diluent into medication vial slowly and observe resulting solution or suspension for clarity, unusual color, or large particles, such as precipitation. Follow manufacturer's instructions for completing the

dissolution (shaking sharply or gently, waiting period for dissolving powder, color changes to note, etc.). If there appears to be a problem, do not administer medication without consulting pharmacist for further information.

10. Administer medication or add to intravenous solution as directed and complete documentation.
11. Discard unused medication and diluent according to facility disposal policy. If not labeled as "SINGLE USE VIAL", record date opened on the diluent vial and store appropriately for the next use.

USP <797> Compliance

1. Medications that are reconstituted and/or added to an infusion solution at the bedside or in the nursing station without sterile conditions or engineering controls are considered to be at high risk for microbial contamination.
2. These preparations are classified as "immediate-use category" in the *United States Pharmacopeia* Chapter 797 (USP<797>) pharmacy compounding risk level assessment.
3. Immediate-use preparations are exempt from USP chapter <797> requirements for *Compounding Sterile Preparations* as long as the following criteria are met:
   a. The compounded sterile preparation (CSP) must be for emergent use or for situations where a delay associated with lower-risk compounding would add risk for the resident.
   b. The preparation involves the simple transfer of not more than three commercially manufactured packages of sterile, non-hazardous drugs or diagnostic radiopharmaceuticals in their original containers.
   c. The transfer of substances does not involve more than two entries into any one container or package of sterile infusion solution or administration container (e.g., bag or vial).
   d. Process must utilize aseptic technique.
   e. The compounding process must last less than one continuous hour.
   f. The CSP must be administered less than one hour after preparation begins, or it must be properly discarded.
   g. The CSP must be administered immediately and completely (or the administration witnessed) by the person who prepared it, OR the CSP must be labeled with:
      (1) The resident/patient identification information;
      (2) The names and amount of all ingredients;
      (3) The name or initials of the person who prepared the CSP; and
      (4) The exact 1-hour beyond-use date (BUD) and time.
   h. The CSP cannot be compounded in batches or stored.

D. ELECTRONIC INFUSION DEVICES/PUMPS

Policy

1. Electronic infusion devices or pumps will be selected to best meet the needs of the resident with regard to pharmaceutical considerations and effectiveness of medication administration.
2. Administration sets with anti-free-flow mechanisms are used with electronic infusion devices.
3. Devices supplied by the pharmacy will be cared for and maintained by facility staff.

General Guidelines

1. Intravenous therapies shall be administered via the system that best meets the resident needs, based on factors including but not limited to:
    a. Age;
    b. Disease process;
    c. Ambulatory status;
    d. Cognitive and physical abilities;
    e. Medication and diluent ordered;
    f. Education and training required for staff;
    g. Safety issues related to use in facility; and
    h. Payor source.
2. A wide range of pumps are available from several manufacturers. The products offer various programmable features. Factors that play an important role in the decision to use a particular type of pump as the delivery system of choice include, but are not limited to:
    a. Syringe pumps:
        (1) Volume of medication is less than 50 mL.
        (2) Dosing is one (1) to four (4) times a day.
        (3) Resident is mobile or active.
        (4) Refrigerator space is limited.
    b. Ambulatory pumps for small volume infusions:
        (1) Pain management (bolus, continuous or both).
        (2) Chemotherapy.
        (3) Anticoagulant therapy.
        (4) Inotropic therapy.
        (5) Antibiotic therapy, if stable, every four (4) hours or every six (6) hours.
        (6) Resident has impaired cognitive or learning abilities.
        (7) Ambulatory residents on parenteral nutrition during the day.
        (8) Parenteral nutrition.
        (9) Continuous hydration.
    c. Pole-mounted or stationary pumps:
        (1) Hydration, especially those with higher concentrations of potassium.
        (2) Parenteral nutrition.
        (3) Antibiotics in fluids over 250 mL volume.
        (4) Steroid therapy.
        (5) Intravenous Immunoglobulin therapy (IVIG).
        (6) Amphotericin.
        (7) All additives, solutions or medications that have narrow therapeutic index levels.

3. Procedures for preparation of intravenous solutions to be administered via pumps shall be conducted in the clean room with appropriate supplies following hand hygiene and protective personal attire procedures.
4. Each pump has specific instructions for use procedures per manufacturer's recommendations.

Procedure

1. The pharmacist and the nurse performing the resident assessment upon new orders for IV therapy determine the most appropriate infusion device. Recommended uses for pumps include, but are not limited to:
    a. Cytotoxic infusions over two (2) hours;
    b. Heparin;
    c. Inotropic therapy;
    d. Pain management therapy;
    e. Potassium chloride (KCl) infusions over 20mEq/L; and
    f. Total parenteral nutrition (TPN).
2. Nurses shall be provided with verbal and written instructions regarding pump operation and care upon initial pump dispensing.
3. Whenever possible, pumps will be plugged into an electrical wall outlet.
4. Pumps are dispensed per resident. Once intravenous therapy is complete, pumps will be returned to the pharmacy for cleaning and inspection between resident uses.
5. Equipment will be secured during transport to prevent damage.
6. Clean and dirty pumps will be stored separately during transport.
7. Administration sets/tubing, medication cassettes or other attachments should be removed and disposed of properly before returning to the pharmacy.
8. Dirty pumps shall be handled with gloves on, placed in plastic bags, and labeled as dirty.
9. While in use in the facility, pumps will be periodically monitored for:
    a. Visual structure (loose or broken parts, cracks, irregularities or other damage);
    b. Alarm functioning;
    c. Power cord and plug functioning;
    d. Battery functioning; and
    e. Volumetric accuracy or flow rate (calibration).
10. When a pump is determined to be faulty, the pharmacy is to be notified and the malfunctioning pump will be returned to the pharmacy for inspection and repair.
11. The malfunctioning pump will be replaced immediately. Facilities geographically distant from the pharmacy may require a backup pump to be available in the facility in the event of pump failure.
12. All pumps will undergo servicing (arranged by the pharmacy) at least once annually, or at the manufacturer's recommendation.
13. Preventative maintenance stickers will be on all pumps.
14. Facilities shall be informed of the pharmacy's 24 hour emergency services for pump problems or replacement.
15. The pharmacy manager shall notify the pharmacy and nursing staffs of equipment hazards, defects and recalls as alerted.

Documentation

1. Documentation of staff training in the proper procedures regarding pump dispensing, care, and maintenance shall be completed and kept in the staff's file. This documentation should indicate that the staff has been trained on the proper use and care procedures for equipment.

E. ADMINISTERING MEDICATIONS THROUGH A SECONDARY TUBING

Policy

Staff will be knowledgeable regarding the safe and aseptic administration of medications intravenously through a secondary ("piggy back") line.

General Guidelines

1. The nurse responsible for administering IV medications shall be knowledgeable of:
    a. Indications for use;
    b. Appropriate routes of administration, doses and diluents;
    c. Side effects;
    d. Toxicities;
    e. Incompatibilities;
    f. Stability;
    g. Storage requirements;
    h. Potential complications; and
    i. Allergies.
2. Administer the first dose of IV medication in a situation in which close observation of the resident and the ability to intervene in the case of complications is possible.
3. Consult manufacturer's recommendations regarding recommended monitoring and potential side effects of medication.
4. Obtain an order for anaphylaxis protocol, or note if there is a standing protocol for intervention.
5. Observe the resident during infusion and for a minimum of one hour after completion of the infusion.
6. Primary and secondary continuous infusion administration sets are changed no more frequently than every 96 hours or upon suspected contamination.
7. Primary intermittent infusion sets are changed every 24 hours.
8. If a secondary administration infusion set is disconnected from a primary administration set, the secondary administration set is considered intermittent and is then changed every 24 hours.

Equipment and Supplies

1. Prescribed medication in IV bag, normal saline flush bag, or prescribed hydration fluid bag;
    a. Medication may need to be reconstituted or mixed first. When diluting or reconstituting medications, follow USP <797> guidelines for compounding sterile preparations.
2. Primary and secondary tubing;
3. Needleless connection device;
4. Gloves;
5. Alcohol wipes; and
6. Tape (optional).

MEDICATION ADMINISTRATION

Assessment

1. Inspect insertion site and catheter for any signs or symptoms of IV-related complications before hanging solution. This should be done at least once a shift and during infusion procedure.
    a. If any complications are noted, intervene as appropriate according to facility protocol.
2. Prior to administering IV solutions, assess the following:
    a. General assessment of resident health status, and cardiac and respiratory status;
    b. Allergies;
    c. Baseline vital signs, weight, height (for pharmacy dosing needs);
    d. The provider's rationale for ordering treatment, laboratory results, and appropriateness of treatment;
    e. Review provider's order, confirm the "5 Rights" of medication administration (right resident, medication name, dose, route, rate). If no rate is ordered, calculate rate according to dose, volume and time ordered;
    f. Check medication bag for leaks, sterility, precipitate, and expiration date;
    g. Ensure compatibility of secondary solution and primary solution; and
    h. If multiple medications are being placed on secondary tubing, check with pharmacy to determine if separate tubing is needed for each medication.

Procedure

1. Perform hand antisepsis and don non-sterile gloves.
2. Connect secondary administration set to piggy back medication solution bag.
3. Prime primary tubing with ordered solution or normal saline. Prime secondary tubing with ordered medication. All air bubbles must be removed from tubing before attaching to resident.
4. Hang both IV bags on the IV pole.
    a. If infusing via gravity: the secondary (smaller) bag is hung higher than the primary bag.
    b. If infusing via pump: both bags can be hung at the same level.
5. Disinfect Y access port.
6. Attach secondary administration line to primary line at the Y port using needleless connection device.
7. Administer medication according to prescribed rate using pump or gravity flow control device.
    a. If infusing via gravity: only the secondary solution should be infusing. The primary solution should start running after the secondary solution has been infused.
    b. If infusing via pump: the primary and secondary solutions should be individually set for rate and volume. This prevents the bag from either running dry or infusing too much fluid.
8. After the secondary infusion is completed, the secondary tubing should be clamped.
    a. If infusing via gravity: primary bag needs to have the rate readjusted after secondary bag has been infused.
    b. If infusing via pump: primary bag will automatically change back to set rates. Monitor pump actions.
9. Leave secondary administration set in place until next medication is scheduled to be administered. If medication is given every 24 hours, the secondary bag should be disconnected and discarded in appropriate receptacle.
10. Discard used supplies in appropriate receptacles.
11. Perform hand antisepsis.

MEDICATION ADMINISTRATION

Documentation

1. Document the following in the resident's medical record.
    a. Medication;
    b. Dose;
    c. Total amount infused;
    d. Total time infused;
    e. Condition of the catheter site; and
    f. Resident's response to the procedure, including any results of the medication (adverse or desired).

Reporting

1. Notify provider (or supervisor per facility policy) and oncoming shift if medication was not infused or refused by resident.
2. Any complications with insertion site and interventions that were done.

F. ADMINISTERING MEDICATIONS BY IV PUSH

Policy

Staff will be knowledgeable regarding the safe and aseptic administration of a medication bolus directly into the venous system through a vascular access device. To be performed by a licensed nurse according to state law and facility policy.

General Guidelines

1. The IV push route of administration directly boluses medications into the venous system through a vascular access device at the recommended guidelines.
2. Many medications may be utilized for the IV push type of administration. Examples include:
    a. Anti-inflammatory
    b. Diuretics (such as furosemide);
    c. Steroids (such as dexamethasone, Solu-Medrol)

3. Medications for IV push MUST be approved by facility protocol;
4. A provider's order is necessary to administer medication via this route.
5. The nurse responsible for IV medications shall be knowledgeable of:
    a. Indications for use;
    b. Appropriate routes of administration, doses and diluents;
    c. Side effects;
    d. Toxicities;
    e. Incompatibilities;
    f. Stability;
    g. Storage requirements;
    h. Potential complications; and
    i. Length of time needed to administer medication.
6. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
7. Administer the first dose of intravenous medication in a situation in which close observation of the resident and the ability to intervene in the case of complications is possible.
8. Obtain anaphylaxis protocols/orders.
9. Follow manufacturer recommendations and pharmacy/facility guidelines for approved routes of medication administration for particular medications. SOME MEDICATIONS CAN NOT BE ADMINISTERED VIA IV PUSH.

Equipment and Supplies

1. Medication vial or ampule;
2. Medication labels for syringe;
3. Normal saline or heparin for flush per facility protocol;
4. Needleless connection device/adapter, if needed;
5. Sterile syringe to withdraw medication;
6. Filter straw if withdrawing medicine from glass ampule;
7. Non-sterile gloves;
8. Alcohol wipes, tape

MEDICATION ADMINISTRATION

Assessment

1. Inspect intravenous catheter site for signs of complications at scheduled intervals, upon routine site care and during administration set changes.
2. Prior to administration of intravenous medications assess resident's:
    a. Overall health status;
    b. Cardiovascular status;
    c. History of allergies;
    d. Baseline vital signs, height and weight; and
    e. Laboratory/test results and appropriateness of therapy.
3. Review provider's order to confirm type of medication, amount, route, and rate of administration.
4. Verify the identity of the resident.
5. Inspect medication label and verify against the order.
6. Check vial for leaks, cracks, precipitate and expiration date.
7. Use a separate syringe for each medication. Give one medicine at a time, flushing with normal saline in between medications.

Procedure

1. Perform hand antisepsis. Apply non-sterile gloves.
2. Withdraw medication from vial or glass ampule (use filter straw to withdraw medication from glass ampule).
    a. Vials labeled as "single dose" or "single use" will not be used on multiple residents. Such vials will be used only for one resident in a single procedure.
3. Dilute medication with appropriate diluent (follow manufacturer guidelines or consult pharmacy).
    a. When diluting or reconstituting medications, follow USP <797> guidelines for compounding sterile preparations.
4. To administer medication directly through an IV catheter:
    a. Disinfect needleless connection device;
    b. Attach normal saline-filled syringe and flush the catheter;
    c. Disinfect needleless connection device again;
    d. Attach medication-filled syringe and administer medication according to administration guidelines.
    e. Monitor time with second hand on watch (it is important to push at a controlled rate to avoid too high of a concentration of medication in a short period of time);
    f. Disinfect catheter connection device;

g. Flush catheter with appropriate flush (normal saline or dextrose) at the same rate that medication had been given to avoid giving a fast bolus dose;
h. Observe to make sure that medication has cleared the catheter; and
i. finish flushing catheter with normal saline, and heparin (if required).

5. To administer through the side (Y) port of the administration set tubing:
   a. Open IV clamp and allow primary solution to flow freely;
   b. Disinfect the Y port;
   c. Attach medication-filled syringe to Y port and administer medication per calculated rate. Stop intermittently to allow primary solution to flow;
   d. After medication is administered, allow the IV solution to flush the tubing and catheter; and
   e. Return infusion to prescribed rate.
6. Discard used supplies in appropriate receptacle.
7. Perform hand antisepsis.

Documentation

1. Document the following in the resident's medical record:
   a. Date and time
   b. Medication;
   c. Dose;
   d. Total amount infused;
   e. Total time infused;
   f. Condition of the catheter site; and
   g. Resident's response to the procedure, including any results of the medication (adverse or desired).

Reporting

1. Report to provider, supervisor and the oncoming shift any results, problems or complications (if any) that occurred during the medication administration.

MEDICATION ADMINISTRATION

IV PUSH MEDICATION ADMINISTRATION GUIDELINES

MEDICATION	ACTION	INDICATION	METHOD OF ADMINITRATION	SIDE EFFECTS	MONITORING
Dexamethasone Sodium Phosphate (Decadron)	Anti-inflammatory	Rheumatic disorders, endocrine disorders, collagen diseases, allergic states, respiratory diseases, cerebral edema	**Adult Dose** and intervals vary for each use. **General range:** 0.5mg-20mg for initial dose. (administer undiluted) **Administration Rate:** Over 1 minute	Rapid injection can produce premature ventricular contractions. Long Term Therapy may produce: • Hypokalemia • Hypertension • Steroid myophathy • Osteoporosis • Cushing's syndrome • Latent diabetes	• Monitor blood pressure • Water/Sodium retention • Observe for signs of hypokalemia with long term use • Weakness • Myalgia • Cramps
Furosemide (Lasix)	Loop diuretic	Edema associated with CHF, hepatic or renal disease, Adjuvant therapy for acute pulmonary edema and hypertension	**Initial adult dose:** 20-40mg with a second dose two hours later depending on response upon physician order. If a higher dose is ordered give as a controlled infusion not to exceed 4mg/min. **Administration rate:** 10mg per minute.	Profound Diuresis with fluid and electrolyte depletion Dehydration Reduced blood volume, use with caution in patients who are allergic to sulfonamides . Rapid administration may lead to ototoxicity	Urine output **Observe for:** Dehydration Blood pressure Electrolyte imbalance Tinnitis-ringing in the ears Use caution in patients receiving digitalis or potassium depleting steroids
Hydrocortisone Sodium Succinate (Solu-Cortef)	Anti-inflammatory (Adreno-corticoid/glucocorticoid)	Endocrine disorders, allergic states, respiratory disease, many other conditions	**Administration Rate:** Each 500mg or friction there of over 30 seconds to 1 minute. Extend to 10 minutes for larger doses	Fluid & electrolyte imbalance, GI discomfort, Glucose intolerance, Psychosis exacerbation	Blood pressure every 2-4 hours, Blood glucose, if diabetic Behavioral changes Nausea or muscle cramps
Methylprednisolone Sodium Succinate (Solu-Medrol)	Anti-inflammatory (adrenocorticoid/glucocorticoid)	Endocrine disorders, allergic states, respiratory disease, many other conditions	**Administration Rate:** **Adult Dose:** 10-40mg infused over 3 minutes	Fluid & electrolyte imbalance GI discomfort Glucose intolerance	Blood pressure every 2-4 hours Blood glucose, if diabetic

G. ADMIXTURES (NEEDLE AND SYRINGE TRANSFER OF MEDICATIONS)

Policy

1. Admixture of medications should only be done when the pharmacy is unable to do procedure in a timely manner for resident need.
2. All admixture medications will be prepared aseptically.

General Guidelines

1. Verify with state nurse practice act regarding RN/LPN scope of practice for this procedure.
2. IV admixtures are routinely prepared in the pharmacy.
3. Admixtures are prepared by nurses in the following situations:
    a. Medication instability requires addition of medication to bag immediately prior to administration.
    b. Immediate administration of medication is required according to clinical situation.
    c. The medication is required after regular business hours and the supplies are available in the facility.
4. Most admixtures can be done using needleless system bags with attached medications. These are mixed just before administering the medication.
5. Use appropriate diluent when preparing medication.
6. Consult pharmacist or pharmacy information books when unfamiliar with the medication or mixing the medication. This includes diluent and dosage of medication to be given to resident.
7. Label the admixture medication bag with:
    a. Name, dose, route of medication;
    b. Resident's name, room number;
    c. Name of person who prepared medication; and
    d. Date and time when medication was mixed.
8. Follow manufacturer recommendations for storage and expiration of admixture medications.

Equipment and Supplies

1. Prescribed medication;
2. Syringe with 1 inch needle;
3. Label for bag;
4. Alcohol wipe;
5. Non-sterile gloves;
6. Clean work area; and
7. Filter needle/straw for glass vial medications.

Procedure

1. Verify provider order for medication.
2. Work area should be a clean, draft free environment away from unit traffic.
3. Clean work area with soap and water, 70% alcohol or antibacterial cleaner. Allow to air dry.

4. Wash hands, wear non-sterile gloves.
5. Inspect medication and diluent for any signs of problems. If any irregularities are noted, do not use the medication and contact the pharmacy.
6. Cleanse the top and neck of medication bottle with alcohol wipe for at least 15 seconds. Allow to air dry before placing needle in bottle. Also clean end of diluent bag where medication needle will be placed.
7. If using a glass vial, clean around neck of vial with alcohol wipe before breaking vial. Use a filter straw on sterile syringe to withdraw medication, then remove filter straw and place sterile needle on medicine syringe.
8. For powdered medication that requires reconstitution:
    a. Draw up the appropriate amount of diluent into the syringe using needle or needleless system.
    b. Transfer diluent into medication container.
    c. Gently rotate medication vial to thoroughly mix additive (check medication insert for specific instructions).
    d. Repeat this procedure until the required number of vials is reconstituted. Discard unused medication.
    e. Withdraw reconstituted medication into syringe with needle or filter straw (if medicine is drawn from glass ampule).
    f. Transfer medication to IV solution container or administer by ordered route.
    g. Inspect solution for any interactions or problems. Do not use if there are any problems.
    h. Label bag.
9. For reconstituted or premixed medications:
    a. Calculate the amount of medication that should be withdrawn from bottle. Verify with pharmacist if necessary.
    b. Place sterile needle on sterile syringe to withdraw medication. Use filter straw if drawing from a glass vial, then replace filter straw with needle on syringe.
    c. Withdraw ordered dosage of medication, transfer medication into mini-bag.
    d. Rotate bag back and forth – DO NOT SHAKE, until medication is mixed. If multiple bottles of medication are to be used to achieve the ordered dosage, repeat steps as described above.
    e. Observe for any interactions or problems with solution.
    f. Label solution.
    g. Discard any unused portion of medication.
    h. Dispose of sharps in sharps container, other supplies as appropriate.

USP <797> Compliance

1. Medications that are reconstituted and/or added to an infusion solution at the bedside or in the nursing station without sterile conditions or engineering controls are considered to be at high risk for microbial contamination.
2. These preparations are classified as “immediate-use category” in the *United States Pharmacopeia* Chapter 797 (USP<797>) pharmacy compounding risk level assessment.
3. Immediate-use preparations are exempt from USP chapter <797> requirements for *Compounding Sterile Preparations* as long as the following criteria are met:
    a. The compounded sterile preparation (CSP) must be for emergent use or for situations where a delay associated with lower-risk compounding would add risk for the resident.

b. The preparation involves the simple transfer of not more than three commercially manufactured packages of sterile, non-hazardous drugs or diagnostic radiopharmaceuticals in their original containers.
c. The transfer of substances does not involve more than two entries into any one container or package of sterile infusion solution or administration container (e.g., bag or vial).
d. Process must utilize aseptic technique.
e. The compounding process must last less than one continuous hour.
f. The CSP must be administered less than one hour after preparation begins, or it must be properly discarded.
g. The CSP must be administered immediately and completely (or the administration witnessed) by the person who prepared it, OR the CSP must be labeled with:
    (1) The resident/patient identification information;
    (2) The names and amount of all ingredients;
    (3) The name or initials of the person who prepared the CSP; and
    (4) The exact 1-hour beyond-use date (BUD) and time.
h. The CSP cannot be compounded in batches or stored.

Documentation

The following information should be recorded in the resident's medical record.

1. Time medication was given and by whom.
2. Medication, diluent, dosage, route, and who prepared solution.
3. Assessments of resident tolerance or problem with medication treatment.
4. Any complications with catheter or infusion process.
5. Any communication with pharmacy or provider.

Reporting

Report any problems with infusion to provider and supervisor. Report to oncoming shift nurses as to specifics of procedure, and that orders were faxed to pharmacy for future doses (if needed).

H. MEDICATION BEYOND-USE DATING

Policy

All medications will have a beyond-use (expiration) date on the medication container or on a label if the medication is premixed.

General Guidelines

1. A beyond-use date (BUD) is defined as the date or time after which a medication shall not be stored, transported or administered.
2. The date is determined by the pharmacy for compounded sterile preparations, or by the manufacturer for packaged ready-to-dispense medications.
3. Medications will not be used beyond the expiration date. If the medication was dispensed after the beyond-use date, contact the pharmacy. Otherwise, discard the medication.
4. The person who is administering the medication/solution is responsible for checking the expiration date prior to administering.

MEDICATION ADMINISTRATION

I. INTRAVENOUS ADMINISTRATION OF FLUIDS AND ELECTROLYTES

Policy

Staff will be knowledgeable regarding the safe and aseptic administration of intravenous fluids and electrolytes for hydration.

General Guidelines

1. A provider's order is necessary to give intravenous fluids and electrolytes.
2. Assess resident's lung and heart status and vital signs before and during therapy to assess for fluid overload.
3. The nurse responsible for administering the fluids and electrolytes shall be knowledgeable of:
    a. Indications for use;
    b. Side effects;
    c. Toxicities;
    d. Incompatibilities;
    e. Stability;
    f. Storage requirements;
    g. Potential complications; and
    h. Appropriate rates, doses and routes of administration.
4. Administer the first dose of IV medication in a situation in which close observation of the resident and the ability to intervene in the case of complications is possible.
5. Obtain order for anaphylaxis protocol, or note if there is a standing protocol for intervention.
6. Resident should be monitored frequently when continuous fluids are infusing. Monitor for signs and symptoms of fluid overload, catheter and insertion site complications, and the resident's tolerance of procedure. Fluids may be stopped by a nurse if signs of a problem are present.

Equipment and Supplies

1. Infusion solution;
2. Administration set;
3. Normal saline or heparin for flush, if appropriate;
4. Needleless connection device;
5. Electronic infusion pump or flow control device;
6. Gloves;
7. Alcohol wipes; and
8. Tape.

Assessment

1. Inspect intravenous catheter and insertion site for signs and symptoms of complications at scheduled intervals (per facility policy), during routine site care and when changing administration sets.
2. Prior to administration of intravenous fluids and electrolytes assess resident's:
    a. Overall health status;

   b. Cardiovascular and respiratory status;
   c. History of allergies;
   d. Baseline vital signs, height and weight; and
   e. Laboratory results and appropriateness of therapy.
3. Review provider's order. Confirm type, volume of solution, route, and rate of administration.
4. Verify the identity of the resident.
5. Inspect solution for leaks, cracks, precipitate, and expiration date.

Procedure

1. Perform hand antisepsis and apply non-sterile gloves.
2. Prime tubing of administration set.
3. Disinfect needleless connection device with alcohol wipe.
4. Flush catheter using normal saline per facility protocol.
5. Connect primed administration set to needleless connection device.
6. Open roller clamp.
7. Establish prescribed rate of flow:
   If infusing via gravity:
      a. Check orders for amount to be infused and duration.
      b. Calculate drops per minute.
      c. Adjust clamp to achieve desired flow rate.
   If infusing via pump:
      a. Check orders for amount to be infused and duration.
      b. Follow manufacturer's directions to program pump.
      c. Program to achieve desired flow rate.
8. When infusion is complete:
   For intermittent therapy:
      a. Clamp tubing and disconnect from catheter.
      b. If tubing will be reused, replace sterile cap.
      c. Flush catheter per protocol.
   For continuous therapy:
      a. Mark solution container with label that states when bag was started and approximate time of completion.
      b. Never write directly on the bag with ink or marker; always use a label or tape.
9. Document procedure in the resident's medical record and on the intake/output record.

Documentation

The following information should be recorded in the resident's medical record:

1. The date and time the infusion was administered.
2. The type of solution administered.
3. The amount of solution administered.
4. The route of administration.
5. The rate of administration.
6. The condition of the IV site before and after administration.
7. Notification of the provider if there are any complications.

8. Quote from resident stating how they tolerated the procedure.
9. The signature and title of the person recording the data.

Reporting

1. Notify provider, supervisor, and oncoming shift of complications or resident refusal of treatment.
2. Report other information in accordance with facility policy and professional standards of practice.

J. INTRAVENOUS PAIN MANAGEMENT

Policy

Staff will be knowledgeable regarding the safe and aseptic administration of intravenous (IV) pain medication.

General Guidelines

1. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
2. A provider's order is necessary for this procedure.
3. The nurse responsible for administering IV pain therapy shall be knowledgeable of:
    a. Indications for use;
    b. Appropriate doses and diluents;
    c. Side effects;
    d. Contraindications;
    e. Toxicities;
    f. Incompatibilities;
    g. Stability;
    h. Storage requirements;
    i. Potential complications; and
    j. Conventional and alternative methods of pain control.
4. Common indications for use of intravenous pain management include, but are not limited to:
    a. Residents with advanced stages of disease experiencing chronic, severe pain due to tumor recurrence or metastatic disease and unrelieved by conventional means of pain control due to one or more of the following reasons:
        (1) Emesis or difficulty swallowing negates oral analgesia.
        (2) Suppositories are contraindicated or ineffective.
        (3) Refuses other routes of administration.
        (4) Chronic pain makes intramuscular dosing impractical.
5. Verify anaphylaxis and naloxone medication protocols/orders/medications prior to the administration of IV opioids.
6. Do not store controlled medications or cassettes in an unsecured area when not in use for resident infusion.
7. Administer the first dose of intravenous medication in a situation in which close observation of resident and the ability to intervene in the case of complications is possible.
8. Frequently observe and monitor the resident when IV pain medication is being administered. Monitor for pain control, change in vital signs, mental status, breathing status, nausea/vomiting, rash, or intolerance of medication.
9. Use a separate administration set for each medication.
10. When administering pain medication, use electronic infusion device to monitor rate of infusion.

Equipment and Supplies

1. Prescribed medication;
2. Administration set;
3. Normal saline or heparin for flush, as appropriate;

4. Needleless connection device;
5. Electronic infusion pump;
6. Gloves;
7. Alcohol wipes; and
8. Tape.

Assessment

1. Inspect intravenous catheter site for signs of complications at scheduled intervals and upon routine site care and administration set changes.
2. Prior to administration of pain medications assess resident's:
    a. Level of pain using appropriate pain scale;
    b. Level of consciousness;
    c. History of allergies; and
    d. Baseline vital signs, height and weight.
3. Prior to administration of intravenous pain medication, asses the resident for risk factors for respiratory depression and other adverse events, including:
    a. Age;
    b. Morbid obesity;
    c. Obstructive sleep apnea;
    d. COPD; and/or
    e. Renal insufficiency.
4. Monitor resident during administration of pain medication for signs of:
    a. Respiratory depression;
    b. Level of consciousness/confusion;
    c. Unsteady gait, risk of falling;
    d. Nausea and vomiting;
    e. Pruritus;
    f. Constipation;
    g. Urinary retention; and/or
    h. Hypotension or hypertension.
5. Review provider's order. Confirm type and amount of medication, route, and rate of administration.
6. Verify the identity of the resident.
7. Check medication label and verify against the order.
8. Inspect medication for any leaks, cracks, precipitate and expiration date.

Procedure

1. Perform hand antisepsis and don non-sterile gloves.
2. Prime tubing of administration set.
3. Disinfect needleless connection device.
4. Flush catheter.
5. Connect primed administration set to needleless connection device.
6. Open clamp on tubing.
7. Establish prescribed rate of flow using an electronic infusion pump.

   a. Follow orders for amount to be infused and duration.
   b. Follow manufacturer's directions to program pump.
   c. Program to achieve desired flow rate.
8. Begin infusion.
9. Instruct resident on expected outcomes and potential side effects.
10. Use pulse oximeter to monitor for respiratory depression. Monitor resident closely. Assess and re-assess the resident for:
   a. Current level of pain;
   b. Side effects of pain medications; and
   c. Adverse reactions to pain medication.
11. When infusion is complete, clamp tubing and disconnect from catheter.
12. If tubing will be reused, replace sterile end cap on tubing.
13. Flush catheter per protocol.
14. Document procedure in the resident's medical record.

Documentation

1. The following should be documented in the resident's medical record, and/or narcotic control record.
   a. Results of the initial and/or follow-up pain assessments.
   b. Any complications, side effects, problems with infusion, change in dose, refusal of medication.
   c. Any communication with provider, supervisor, or oncoming shift.
   d. Any disposal of excess narcotic (waste) when treatment is finished.
   e. Effectiveness of pain treatment, per resident statement or use of scale.
   f. Any changes in orders.
   g. Condition of catheter and any complications/interventions.
2. Document narcotic administration in appropriate controlled medication record.

Reporting

The following should be reported to provider, supervisor, and oncoming shift as per facility policy.

1. Resident refusal of treatment.
2. New onset or worsening of assessed or resident-reported pain level.
3. Effectiveness of treatment.
4. Any side effects or complications from treatment/interventions.
5. Resident's statement regarding tolerance of treatment.

K. PATIENT-CONTROLLED ANALGESIA

Purpose

The purpose of this procedure is to provide guidelines for safe and effective administration of intravenous pain medication through patient-controlled analgesia (PCA). Therapy can be administered via intravenous or subcutaneous site.

Preparation

1. Verify with state nurse practice act LPN/RN scope of practice for this procedure.
2. A provider's order is necessary for this procedure. The provider's order will include:
    a. Medication;
    b. Medication concentration;
    c. IV solution and infusion rate;
    d. Mode of delivery;
    e. Loading dose;
    f. PCA dose;
    g. Basal rate; and
    h. Lockout interval.
3. Review the care plan to assess for any special needs.
4. Assemble the equipment and supplies as needed.

Definitions

1. **Loading dose** – the initial dose given prior to initiating PCA therapy.
2. **PCA dose** – the amount of medication delivered by activating the PCA pump.
3. **Basal rate** – an amount delivered continuously during PCA therapy. (Note: This is not typically prescribed unless the patient is opioid tolerant.)
4. **Lockout interval** – the period of time during which the patient cannot self-administer medication through the PCA pump.
5. **Opioid tolerance** – patients who have taken at least 60 mg of morphine (or 30 mg of oxycodone; or 8 mg of oral hydromorphone; or the equivalent dose of another opioid) daily for a week or longer. Patients who do not meet the criteria for opioid tolerance are considered *opiate naïve*.
6. **Authorized agent-controlled analgesia (AACA)** – a consistently available and competent individual is given authorization and training by the provider to activate the dosing button on the PCA for residents who are unable to utilize PCA independently. This individual may be a family member, nurse or caregiver.

General Guidelines

1. Follow facility policy regarding orders, clinical competency and monitoring of residents on PCA.
2. The IDT will assess the resident to determine if he or she is an appropriate candidate for PCA.
3. Upon initial setup, after a pump refill, or after a programming change, have two clinicians double-check the following:
    a. The name of the patient;

   b. The drug;
   c. The concentration (standardized concentrations from the pharmacy);
   d. PCA pump settings; and
   e. The line attachment.
4. Have supplemental oxygen and an opioid antagonist (naloxone) on hand, as ordered.
5. Assess the IV or subcutaneous site per facility protocol.

Equipment and Supplies

1. Prescribed medication cartridge, syringe, or bag;
2. PCA pump and key;
3. Pain and sedation assessment tools; and
4. Medication administration record.

Assessment

1. Inspect intravenous catheter site for signs of complications at scheduled intervals and upon routine site care and administration set changes.
2. Prior to administration of intravenous pain medications assess resident's:
   a. Appropriateness of PCA therapy, including the resident's ability to comprehend instructions and participate in therapy;
   b. The availability of an authorized agent for AACA, if appropriate;
   c. Level of pain using approved pain scale;
   d. Level of agitation and/or sedation;
   e. Respirations (rate and quality);
   f. Oxygen saturation;
   g. Ventilation ($ETCO_2$, if available); and
   h. Allergies.
3. Prior to administration of intravenous pain medication, assess the resident for risk factors for respiratory depression and other adverse events, including:
   a. Age;
   b. Morbid obesity;
   c. Obstructive sleep apnea;
   d. COPD; and
   e. Renal insufficiency.

Patient/Family Education

1. The nurse will provide patient and family education before PCA is administered.
2. Written educational materials will be provided to reinforce verbal teaching.
3. Education will include the following:
   a. A description of PCA;
   b. The patient, AACA and family roles in pain management;
   c. The goals of pain management;
   d. Pump operation;

e. How to activate a PCA dose;
f. The importance of not administering "unauthorized" PCA doses (PCA by proxy);
g. Safety features of the pump, including lockout intervals and time-dose limits;
h. What to expect in terms of patient monitoring and frequent assessments;
i. Potential side effects of narcotic analgesia; and
j. When to alert the nurse.

Changing the PCA Cartridge/Syringe

1. Review provider's order. Confirm type and amount of medication, route, rate of administration and PCA pump parameters.
2. Have another nurse check and sign off on the medication and pump parameters (see General Guidelines).
3. Wash hands.
4. Verify the identity of the resident.
5. Check the patient's established primary IV line.
6. Make sure the PCA medication is compatible with any medication in the primary IV line.
7. Remove the PCA medication from the narcotics cabinet and sign out on the controlled medication record.
8. Inspect medication for leaks, cracks, precipitate and expiration date.
9. Open the door to the PCA pump with the key and insert the cartridge/syringe.
10. Close and lock pump door.
11. Follow the prompts on the pump to establish PCA settings. (Note: the key may need to remain in the lock in order to change pump settings.)
12. Have another nurse verify the settings.
13. Start infusion.

Monitoring

1. Monitor resident during administration of pain medication for the following:
   a. Level of pain;
   b. Respiratory rate and quality (depth, effort and sound);
   c. Sedation;
   d. Oxygen saturation (SpO_2 on room air);
   e. Unsteady gait, risk of falling;
   f. Nausea and vomiting;
   g. Pruritis;
   h. Constipation;
   i. Urinary retention; and
   j. Hypotension or hypertension.
2. Monitoring frequency will be based on facility-approved PCA monitoring protocol (see below for example).

Documentation

1. Document narcotic administration in appropriate medication administration record.
2. Document results of monitoring on flow-sheet.

3. Document PCA doses on flow sheet.
4. The following should be documented in the resident's medical record, and/or narcotic control record if applicable:
    a. Results of the initial and/or follow-up pain assessments;
    b. Complications, side effects, problems with infusion, change in dose, refusal of medication;
    c. Communication with provider, supervisor, or oncoming shift;
    d. Waste of narcotic when treatment is finished;
    e. Effectiveness of pain treatment, per resident statement or use of scale;
    f. Changes in orders; and
    g. Condition of catheter and any complications/interventions.

Reporting

The following should be reported to provider, supervisor, and oncoming shift as per facility policy.

1. Resident refusal of treatment.
2. New onset or worsening of assessed or resident-reported pain level.
3. Increased sedation.
4. Respiratory depression.
5. Other side effects or complications from treatment/interventions.

L. DEXTROSE 50 PERCENT INJECTION/INFUSION

Policy

Dextrose 50% will only be administered by a nurse.

General Guidelines

1. Verify with state nurse practice act the scope of practice for RNs and LPNs regarding this procedure.
2. Fifty percent dextrose injection is a sterile, non-pyrogenic, hypertonic solution of dextrose in water for intravenous injection.
3. It can be used to provide a rapid source of carbohydrate calories and to restore blood glucose levels in severe hypoglycemia.
4. Each mL of fluid contains 0.5 gram dextrose (osmolarity of 2.53, pH of 4.2) and provides 3.4 kcal per gram of dextrose.
5. The standard dosage is 25 to 50 grams dextrose (IV push) or 250 to 500 mL of D10W combined with 10 units of regular insulin administered over 30 to 60 minutes (infusion).
6. Hypertonic solutions (greater than 10% dextrose) may cause thrombosis if given through peripheral veins. USE A CENTRAL VENOUS CATHETER for infusion except in the emergency treatment of severe hypoglycemia.
7. If administered via catheter into a peripheral vein for emergency use:
    a. Administer slowly (3 mL/min);
    b. Administer through a small gauge catheter into a large vein; and
    c. Monitor for extravasation and phlebitis; stop infusion if this occurs.
8. Never inject through subcutaneous or intramuscular routes.
9. For central venous catheter infusions:
    a. Infuse at a maximum rate of 200 mg/kg over 1 minute.
    b. Continuous infusion rates range from 4.5 to 15 mg/kg/minute.
10. Monitor glucose levels after administration: treatment can cause hyperglycemia/rebound hypoglycemia.
11. Dextrose 50% is CONTRAINDICATED in the presence of intracranial or intraspinal hemorrhage or in residents with delirium related to dehydration.
12. Store at room temperature, discard unused portion after treatment.

Procedure

1. Review provider's order.
2. Place small gauge catheter in large vein or use central venous catheter if in place.
3. Obtain dextrose 50% syringe from emergency kit.
4. Inject solution slowly into catheter.
5. Monitor resident's response: glucose monitoring during and post treatment; vital signs pre/post treatment.
6. Keep catheter in place for further potential needs.

MEDICATION ADMINISTRATION

Documentation

The following information should be documented in the resident's medical record.

1. Objective assessment of signs/symptoms before treatment (vital signs, glucometer readings, mental status, physical symptoms).
2. Date, time of assessment, orders received.
3. Assessment of resident during treatment (objective information for response of dextrose 50% injection such as vital signs, glucometer readings, mental status, physical symptoms).
4. Length of time that injection lasted, amount of dextrose 50% given.
5. Condition of peripheral vein if used for injection, any complications, interventions.
6. Final objective results of treatment (vital signs, glucometer readings, mental status, physical assessment).
7. Contact provider with final results for resident.
8. Received orders to adjust dietary, fluid intake, glucometer testing, or activity levels.

Reporting

Report final results to provider and oncoming shift.

M. PARENTERAL NUTRITION

Policy

All nursing staff caring for a resident receiving parenteral nutrition (PN) will receive training and demonstrate competency regarding parenteral nutrition to ensure proper assessment and monitoring of resident for complications.

Definitions

Definition – parenteral nutrition is a sterile pharmacy-prepared form of nutrition that is delivered through an intravenous route. It can be in the form of partial (PPN) or total (TPN) nutrition. It may or may not include lipids.

Partial Parenteral Nutrition (PPN) – may be referred to as peripheral parenteral nutrition. Final dextrose concentration less than 10%, protein less than 5%, pH greater than 5 or less than 9, and osmolarity less than 900 mOsm/L.

1. May be administered through large gauge peripheral over the needle catheter (20 gauge or larger). Central lines are preferred.
2. Short term treatment (usually 7 to 10 days).
3. Must be regulated by an electronic pump.

Total Parenteral Nutrition (TPN) – final dextrose concentration greater than 10% to 70%, and osmolarity greater than 900 mOsm/L.

1. Must be given through a central line.
2. Must be regulated by an electronic pump.
3. Treatment for short or long term therapy.

General Guidelines

Preparation

1. A provider's order is necessary for this treatment. The PN order should include the formula or a list of all individual ingredients/nutrients in the base solution, total volume and rate of administration as well as orders for monitoring laboratory results on a routine basis.
2. Verify with state nurse practice act the role of the nurse and requirements for RN coverage on the unit while PN is infusing.
3. Parenteral nutrition should be started in a hospital setting due to a high risk of complications.
4. Residents will have had stable glucose levels and no complications before being transferred to long-term care.
5. The assessment and management of PN residents is a multidisciplinary function involving the dietitian, provider, nursing and pharmacist.
6. The provider may write orders for the pharmacist to monitor and change the PN solution orders, in accordance with state practice laws.

MEDICATION ADMINISTRATION

Handling and Storage

1. PN bags will not be accepted from any other facility due to the uncertainty of how it may have been handled and/or whether refrigeration has been maintained.
2. PN bags are to stay refrigerated and protected from light until shortly before use.
3. PN must be allowed to come up to room temperature naturally (~ 1 hour per liter out of the refrigerator to come up to room temperature). It cannot be placed in a microwave, under hot water, in a sunny window, on a heat register, or heating pad. Rapid warming will destroy the contents of PN.

Safety Precautions

1. Parenteral nutrition orders will include an order for dextrose 10% IV to run at the same rate as PN, in case the PN has to be stopped or discontinued suddenly.
2. The orders for PN and the PN bag labels must match. Otherwise, contact the pharmacy.
3. Avoid unplanned interruptions of PN.
4. Parenteral nutrition (PPN or TPN) must be administered via an electronic pump equipped with anti-free-flow controls. The solution must be filtered.
5. The size of the filter on the end of the IV tubing is determined by the type of solution:
    a. 0.2 micron filter is used if solution does not contain intravenous fat emulsion (lipids).
    b. 1.2 micron filters are used if lipids are in solution.
6. Use strict aseptic technique when handling PN.
7. For multi-lumen catheters, specify/label one lumen for PN use only. Do not use this lumen for other infusions or blood sampling.
8. Avoid using single-lumen catheters for blood sampling. If blood sampling is necessary, venipuncture is preferred for residents with a single-lumen catheter dedicated to PN.
9. Use only administration sets that are free of diethylhexyl-phthalate (DEHP) to administer PN.

Infusions

1. Change PN bags at least every 24 hours.
2. Change administration set, filter, and needleless connection device with every new bag that is administered (at least every 24 hours).
3. Change fat emulsions (lipids) at least every 12 hours. If part of TNA, change every 24 hours.
4. Do not administer medications via “piggyback” or IV push through the PN tubing/lumen.
5. Do not disconnect tubing to administer another medication. The system must stay intact to maintain sterile system.
6. Only mix and administer additives with PN per facility/pharmacy protocol.

Monitoring

1. Routinely monitor residents receiving TPN/PPN per facility protocol for the following signs and symptoms of complications, including:
    a. Hypo/hyperglycemia.
    b. Fluid/electrolyte imbalance.
    c. Infection.
    d. Malnutrition.
    e. Catheter complication.
    f. Change of mental status.
    g. Other potential complications associated with PN therapy.
10. Include the following clinical monitoring at regular intervals (per provider or pharmacy order):
    a. Vital signs;

b. Intake/output;
c. Glucose levels;
d. Urinalysis;
e. Electrolytes; and
f. Laboratory values (CBC, chemistry) or other labs per orders.

Equipment and Supplies

1. Parenteral nutrition solution*;
2. Fat emulsion (lipid) solution*;
3. Administration sets with in-line (or add-on) filtration systems;
4. Normal saline or heparin for flush, as appropriate;
5. Needleless connection device;
6. Electronic infusion pump;
7. Gloves;
8. Alcohol wipes; and
9. Tape.

*These may be in a 3 in 1 mixture.

Procedure

1. Keep PN solution refrigerated and protected from light until shortly before administration.
2. Verify orders. Compare orders to bag label. Verify with second nurse if required by facility protocol.
3. Assess IV catheter to make sure it is without complications.
4. Check resident chart for any allergies or special considerations.
5. Check lab results for appropriate use of therapy.
6. Do physical assessment, especially heart, lungs, and extremities, to determine if resident can tolerate large amounts of continuous fluids.
7. Check vital signs for any signs of complications.
8. Verify if there are any additives to be put in bag. If so, add before starting PN (See *Parenteral Nutrition – Placement of Additives*).
9. Verify identity of resident.
10. Inspect bag and equipment sterility, precipitate, expiration date, any separation of PN and lipids (if present). Call pharmacy if any problems are noted.
11. Perform hand hygiene. Apply non-sterile gloves.
12. Clean end of needleless connection device on catheter with alcohol wipe.
13. Attach syringe pre-filled with normal saline. Flush catheter with normal saline.
14. Attach tubing with filter to PN bag. Prime tubing and filter by opening roller clamp. Prime, then clamp tubing. Place sterile end cap on tubing.
15. Set pump with prescribed rate and volume.
16. Connect end of filter (or tubing if filter is attached to catheter) into needleless connection device.
17. Check connections. Secure tubing to resident with tape.
18. Start infusion and monitor for proper flow and any complications.
19. Educate resident that he or she should notify the nurse if any problems develop such as shortness of breath, heart palpitations, catheter-related pain, or signs/symptoms of hypoglycemia/hyperglycemia.
20. Monitor resident, insertion site, and flow at regular intervals (at least every 2 hours).

21. Dispose of flush syringes and equipment packaging properly.
22. Document procedure in resident's medical record.

Documentation

The following should be documented in the resident's medical record:

1. Date and time of administration.
2. Signature and title of nurse(s) checking and hanging PN bag and person monitoring infusion.
3. Rate and volume infused.
4. Additives: document in the medicine administration record.
5. Infusion rate, and changing of PN bag, tubing, needleless connection device, filter, and flushes.
6. Any complications, interventions, the condition of insertion site/dressing/catheter, any changes in PN formula, lab results, and the resident's response to procedure.

Reporting

1. Report any complications with PN infusion to provider and oncoming shift.
2. Report any changes in PN formula and lab results.

N. PARENTERAL NUTRITION – PLACEMENT OF ADDITIVES

Policy

Nursing staff will follow established guidelines for placing additives in the parenteral nutrition (PN) mixture.

Preparation

1. Verify with state nurse practice act the role of the nurse and requirements for RN coverage on the unit while PN is infusing.
2. The nurse placing the additives into the PN bag will receive training and demonstrate competency related to the handling of PN prior to performing this procedure.
3. Maintain aseptic technique when working with PN. The room where the additives are placed in PN bag must be clean and away from general traffic.
4. Check expiration dates on additive bottles/vials and inspect the PN solution for deterioration or breakdown before placing additives.
5. Check additives for compatibility before adding to the PN solution.

General Guidelines

1. Additives are medications or supplements that are added to the PN solution just before infusing the PN. Examples of additives include multi-vitamins, vitamin K, H_2 blockers and regular insulin.
2. Medications added to PN are stable for less than or equal to 24 hours. Parenteral nutrition solutions may be delivered from the pharmacy in quantities that last 3 to 4 days. Therefore, medications are added to the PN at the facility rather than at the pharmacy.
3. Place additives in PN bag before the bag is connected to the resident. Never add medications while PN is infusing; this could result in a bolus dose of medication.
4. Place additives in the PN mixture immediately before administering the PN to the resident.
5. Add medications to the PN bag one at a time using a new syringe for each medication.
6. When additive is placed in bag, rotate bag back and forth. DO NOT SHAKE BAG.

USP <797> Compliance

1. Medications that are reconstituted and/or added to an infusion solution at the bedside or in the nursing station without sterile conditions or engineering controls are considered to be at high risk for microbial contamination.
2. These preparations are classified as "immediate-use category" in the *United States Pharmacopeia* Chapter 797 (USP<797>) pharmacy compounding risk level assessment.
3. Immediate-use preparations are exempt from USP chapter <797> requirements for *Compounding Sterile Preparations* as long as the following criteria are met:
    a. The compounded sterile preparation (CSP) must be for emergent use, or for situations where a delay associated with lower-risk compounding would add risk for the resident.

b. The preparation involves the simple transfer of not more than three commercially manufactured packages of sterile, non-hazardous drugs or diagnostic radiopharmaceuticals in their original containers.
c. The transfer of substances does not involve more than two entries into any one container or package of sterile infusion solution or administration container (e.g., bag or vial).
d. Process must utilize aseptic technique.
e. The compounding process must last less than one continuous hour.
f. The CSP must be administered less than one hour after preparation begins, or it must be properly discarded.
g. The CSP must be administered immediately and completely (or the administration witnessed) by the person who prepared it, OR the CSP must be labeled with:
    (1) The resident/patient identification information;
    (2) The names and amount of all ingredients;
    (3) The name or initials of the person who prepared the CSP; and
    (4) The exact 1-hour beyond-use date (BUD) and time.
h. The CSP cannot be compounded in batches or stored.

4. Single-dose containers (bags, bottles, vials, syringes) of sterile products and CSPs must be used within one hour of opening or needle-puncturing if opened in less than ISO Class 5 air quality (immediate-use CSPs).
5. Opened single-dose ampules will not be stored for any length of time.

Equipment and Supplies

1. Parenteral nutrition solution;
2. Alcohol wipes;
3. Filter straw for glass medication ampules;
4. Sterile syringe for each additive;
5. Sterile injection needle(s) or needleless system to access medication containers and injection port of bag;
6. Sharps container;
7. Non-sterile gloves; and
8. Waterproof barrier for counter top.

Procedure

1. Verify orders for PN. Check orders against PN bag label. If they do not match, call pharmacy and verify.
2. Verify orders for additives.
3. Check compatibility of medications.
4. Clean countertop with alcohol, soap and water, or antimicrobial solution. Allow to air dry.
5. Perform hand antisepsis. Don non-sterile gloves.
6. Assemble equipment and medication additives.
7. Clean injection port of PN bag with alcohol wipes.
8. Draw up additives one at a time in separate sterile syringes. Use filter straw to draw up medications from glass ampules.
9. Place additives into PN bag one at a time. Rotate bag back and forth gently in between medications to mix medicines. DO NOT SHAKE BAG.
10. Wipe needleless connection device with alcohol in between each additive.

11. Document medications added to the PN solution on a label affixed to the PN bag.
12. Prepare bag to be hung after the addition of additives.
13. Discard used equipment according to facility procedure.

Documentation

The following should be documented in the resident's medical record:

1. Additives (document on label affixed to PN bag AND medication administration record).
2. If there was any visible deterioration in the PN solution and notification of the pharmacy.
3. Any communication with provider, supervisor, or oncoming shift (document in the nurses' notes).

Reporting

1. Report any problems or complications with the PN solution or the additives to the pharmacy.
2. Report any complications with the procedure to the director of nursing services or the provider.
3. Report any changes in the resident's condition to the provider.
4. Any changes in PN formula.

O. PARENTERAL LIPID ADMINISTRATION

Policy

Staff will have training and demonstrated clinical competency prior to administering lipids through a venous access device.

General Guidelines

1. Lipid administration requires a provider's order. Lipid strength, volume, rate and frequency must be included in provider's order.
2. Lipids are commonly ordered in conjunction with TPN/PPN or TNA solutions.
3. Lipids are used to provide calories and/or essential fatty acids to residents who are not able to get sufficient oral intake.
4. Lipids may be administered mixed with parenteral nutrition or separately.
5. An electronic infusion pump must be used with lipids and/or parenteral nutrition (PN).
6. When lipids are administered concurrently with TPN, the lipid solution may be connected to primary tubing via "piggyback" attached below the filter if possible. A 1.2 micron filter is attached to the primary administration set (tubing) when lipids are administered.
7. Administration sets used to administer lipid – based infusates such as intravenous fat emulsions (IVFE), total nutrient admixture (TNA), or total parenteral nutrition (TPN), should be free of diethylhexyl-phthalate (DEHP).
8. The pharmacy may mix a 3 in 1 solution of PN with lipids which is delivered and administered as one bag.
9. Lipids are administered through central catheters.
10. Aseptic technique should be used at all times when administering lipids.
11. Lipids that are not mixed with PN solutions expire 12 hours after being started. If part of TNA, lipids expire 24 hours after being started.
12. Lipids that are not mixed with PN solutions do not require refrigeration.
13. Lipids must be inspected for signs of instability and deterioration prior to administration. Signs of instability include discoloration (other than white color), separation, oily appearance, and/or inconsistent texture.
14. NEVER SHAKE LIPID CONTAINER or add anything to lipids; this could cause aggregation of fat globules.
15. No other medications or fluids are to be attached or added to the lipid solution.
16. Lipid administration is contraindicated in residents with:
    a. Allergy to egg yolk;
    b. Hepatic disease;
    c. Hyperlipidemia; or
    d. Blood coagulation defect caused by a depressed platelet count.
17. Monitor the resident receiving lipids for:
    a. Signs/symptoms of adverse reactions such as fluid overload, chest pain, nausea, shortness of breath, abdominal pain, or wheezing;
    b. Lab results for levels of triglycerides, cholesterol, and liver enzymes; and
    c. Any signs/symptoms of catheter or resident infection.
18. Administration set (tubing), needleless connection device, and container must be changed every 24 hours and with each new container.

MEDICATION ADMINISTRATION

Equipment and Supplies

1. Lipid (or 3 in 1) solution;
2. Needleless connection device;
3. Electronic infusion pump;
4. Administration set (tubing);
5. Non-sterile gloves;
6. Alcohol wipes;
7. 1.2 micron filter; and
8. Normal saline flushes (1-2).

Procedure

1. Inspect lipid solution for discoloration or other signs of breakdown (separation, oily appearance, inconsistent texture). Do not administer if any signs of problems are observed.
2. Verify resident name, type of solution, rate, route and time.
3. Assemble solution, tubing, needleless connection device, normal saline flushes, and alcohol wipes.
4. Perform hand antisepsis. Don non-sterile gloves.
5. Place tubing in container and prime tubing.
6. Close clamp on tubing, replace needleless connection device, and flush catheter with normal saline (per protocol).
7. To run "piggyback" into primary PN tubing, place at most distal side port (Y site) after cleansing port with alcohol.
8. Place tubing into pump and set rate as ordered.
9. Start pump and observe flow.
10. Note resident response to procedure.

Documentation

The following should be documented in the resident's medical record:

1. Date, time, amount, and flow rate of lipids administered.
2. Solution and equipment change. Document in the treatment administration record.
3. Any observation facts related to catheter insertion site, problems with solution, resident's reactions. Any interventions that were done.
4. Intake and output if ordered.

Reporting

1. Report any complications with treatment to provider, supervisor, and oncoming shift.
2. Report any problems with solution to pharmacy.
3. Report resident's reaction to procedure.
4. Report other information in accordance with facility policy or professional standards of practice.

P. NARCAN (NALOXONE) PROTOCOL

Policy

To assist in the determination of a treatment of opiate narcotic reaction.

1) A "qualified licensed nurse may administer medication for emergency use in the event of an opiate narcotic respiratory depression.
2) The Narcan (Naloxone Hydrochloride) is to be given according to protocol and with a physician's order.
3) The order may read, "Administer Narcan protocol when appropriate according to facility policy and procedure."

Procedures:

1) Prior to IV medication administration
   a) Obtain baseline nursing assessment and vital signs.
   b) Review allergies in medical record for any know allergies.
   c) Instruct patient as to signs and symptoms to report at once.
   d) Facility will have Narcan medication available to facility e-box.
2) Signs and symptoms of opiate narcotic reaction.
   a) Respiratory depression, dyspnea, wheezing, choking, cyanosis.
   b) Dermatologic changes: angioedema (hives), pruritis.
   c) Gastrointestinal complaints: nausea, vomiting.
   d) Vascular response: bradycardia, hypotension, weak pulse, small pupil.
   e) Mental status: confusion, psychosis.
3) During IV medication administration, if signs and symptoms of opiate narcotic reaction are present, complete all of the following steps.
   a) Stop the flow of drug.
   b) Evaluate signs and symptoms rapidly.
   c) If opiate narcotic reaction is suspected, proceed with the following immediately:
   Administer NARCAN (NALOXONE HYDROCHLORIDE) an initial dose of 2mg may be administered IV, IM, or SC. May repeat in 2-3 minutes. If no response after 6mg, then condition is probably not due to narcotic.
4) Monitor patient's vital signs.
5) Notify physician and call ambulance as needed.
6) Document on nurse's note, and other appropriate forms.

VII. MEDICATION MONITORING

Table of Contents

MEDICATION MONITORING

A. LABORATORY MONITORING OF IV MEDICATIONS

Policy

Laboratory tests require an order from a provider or pharmacist. Contact laboratory for specific criteria on how to draw sample.

General Guidelines

1. Therapeutic medication monitoring is done so that effective therapeutic levels of a medication can be determined, and to prevent toxicity.
    a. Factors that may influence therapeutic/toxicity levels of medication include: age, weight, route of administration, absorption rate, excretion rate, delivery rate, dosage, and concurrent medications therapies and/or clinical conditions.
2. The provider or pharmacist will determine frequency of laboratory testing.
3. Contact laboratory for specific procedures regarding the following:
    a. TROUGH concentration is the lowest level of a medication in the plasma. This level is drawn BEFORE the next dose. Time of draw can range from 30 minutes to immediately before next dose.
    b. PEAK concentration is the highest level of a medication in the plasma. This level is drawn AFTER the medication is completely infused. Time of draw is according to the medication and infusion time. It may range from 30 minutes to 60+ minutes after completion of infusion.
    c. RANDOM concentration levels are useful when toxicity is suspected. Drawn at any time that toxicity is suspected. Verify with physician or pharmacists whether dose of medication should be held until results are received.
    d. Blood draw technique (Refer to laboratory procedures or see *Obtaining a Blood Specimen from a Central Venous Catheter*).
    e. Make sure that the laboratory tubes or paperwork are marked with the following information:
        (1) Trough or Peak.
        (2) Time that blood was drawn.
        (3) Time that last dose of medicine was given.
4. Notify provider and/or pharmacist of levels when results are received.
5. Obtain orders for medication dosage adjustments as necessary.

B. CLINICAL MONITORING OF PARENTERAL NUTRITION (PN)

Policy

The purpose of this policy is to provide guidelines for monitoring of parenteral nutrition therapies.

General Guidelines

1. Parenteral therapy provides a system of intravenous feeding for residents with severe gastrointestinal disease or other condition that precludes adequate oral ingestion or absorption of sufficient nutrition to maintain normal weight or strength or normal fluid and electrolyte balance.
2. Hyperalimentation is an obsolete term used previously for parenteral therapy. The literal meaning of hyperalimentation is the provision of one or all necessary nutrients in excess of individual metabolic requirements by either parenteral or enteral infusion.
3. Nutritional supplementation is the term used to refer to the provision of less than total nutritional requirements either enterally or parenterally. This term is appropriate for intravenous therapy in which isotonic, iso-osmolar nutrient solutions are administered via a peripheral or central vein.
4. Total nutrition admixture, also known as "3-in-1" or "all in one" solutions, consist of dextrose, amino acids, and lipids emulsion admixed into one container for parenteral administration.
5. Total parental nutrition, also known as "TPN", is used to indicate therapy in which all needed nutrients are provided parenterally.
6. Indications for parenteral nutrition may include, but are not limited to:
    a. Bowel dysfunction:
        (1) Bowel fistulae;
        (2) Bowel obstructions;
        (3) Congenital disorders;
        (4) Inflammatory bowel disease such as Crohn's disease and ulcerative colitis;
        (5) Intestinal motility disorders such as pseudo-obstruction and scleroderma;
        (6) Malabsorption syndromes such as radiation enteritis and villus atrophy;
        (7) Malignant disease;
        (8) Massive bowel resection;
        (9) Mesenteric infarction;
        (10) Severe mucosal injury;
        (11) Short bowel syndrome; and
        (12) Trauma.
    b. Miscellaneous:
        (1) Cystic fibrosis;
        (2) Dialysis;
        (3) Failure to thrive;
        (4) Pancreatitis; and
        (5) Tumors and anti-tumor therapies.
7. Medical selection criteria for residents receiving PN/TPN therapy may include:
    a. Malfunctioning gastrointestinal system that does not allow adequate nutritional and electrolyte balance despite all efforts of non-parenteral nutrition support;
    b. Clinical and metabolic stability and able to tolerate infusions of proposed formula and rate;

c. Available central venous catheter for TPN or peripheral venous access for PN; and
d. Appropriate laboratory monitoring available.

8. Potential side effects and complications of PN therapy to monitor for include, but are not limited to:
   a. Mechanical:
      (1) Air embolism;
      (2) Pneumothorax, hemothorax or hydrothorax;
      (3) Pump malfunction; or
      (4) Thrombosis or catheter occlusion.
   b. Septic:
      (1) Catheter-related infections; or
      (2) Contaminated or compromised PN solution.
   c. Metabolic:
      (1) Acid-base imbalance;
      (2) Electrolyte imbalance;
      (3) Fluid overload or dehydration;
      (4) Hypo/hyperglycemia; or
      (5) TPN-induced liver dysfunction.
9. Laboratory tests commonly recommended for PN therapy:
   a. Blood chemistries every week or every other week; monthly for stable residents.
   b. CBC with differential every week or every other week; monthly for stable residents.
   c. Additional lab tests may be ordered to access nutritional status (such as pre-albumin and transferring) as well as if infection or metabolic abnormalities occur.
10. Blood glucose should be monitored during initial PN therapy. Measure blood glucose while PN is running and then again while it is off. Document results and report to the provider.

MEDICATION MONITORING

C. CLINICAL MONITORING OF NARCOTICS USED IN PAIN MANAGEMENT

Policy

The purpose of this policy is to provide guidelines for the clinical monitoring of narcotics for pain management infusion therapy.

General Guidelines

1. Common indications for use of narcotics for pain management infusions include, but are not limited to:
   a. Residents with advanced stages of disease experiencing chronic, severe pain due to tumor recurrence or metastatic disease and unrelieved by conventional means of pain control due to one or more of the following reasons:
      (1) Emesis or difficulty swallowing negates oral analgesia.
      (2) Suppositories are contraindicated or ineffective.
      (3) Refuses other routes of administration.
      (4) Chronic pain makes intramuscular dosing impractical.
      (5) Neurosurgical procedures have been ruled out.
2. Medical selection criteria for residents receiving narcotics for pain management infusions may include:
   a. Clinical stability;
   b. Available sites for peripheral IV catheter placement or have a central venous catheter/needleless connection device; and
   c. Evaluation for potential medication abuse and/or history.
3. Doses are highly variable, depending on medication selected and resident specifics. Careful consideration should be given to converting oral doses to the injectable or infusion route of administration. Equivalent dosages exist between various narcotic analgesics.
4. Use caution in residents with renal or hepatic disease as these conditions generally warrant reduced doses and closer monitoring.
5. Narcotic pain management therapy may be administered via a continuous or an intermittent mode. An electronic infusion device or pump is recommended for delivery. (Note: Pain management infusions may also be administered via the subcutaneous and epidural/intrathecal routes.)
6. Potential side effects and complications of narcotic pain management therapy to monitor for include, but are not limited to:
   a. Pulmonary:
      (1) Respiratory depression is the most serious side effect observed, and to a lesser degree, circulatory depression.
      (2) Dose-related signs of intoxication include miosis, drowsiness, decreased rate and depth of respiration, bradycardia and hypotension.
   b. Gastrointestinal:
      (1) Nausea and vomiting is frequently observed with morphine administration.
      (2) Decreased intestinal peristalsis with constipation and possible fecal impaction.
      (3) Biliary spasm.
   c. Central Nervous System:
      (1) Decreased alertness and/or sedation may be noted.

(2) Due to a metabolite of meperidine, doses greater than 100 mg every two hours for greater than 24 hours may precipitate tremors, myoclonus or seizures, particularly for residents with renal failure and a history of seizures.

(3) Other CNS symptoms seen include mental clouding, visual disturbances, euphoria, agitation, insomnia and restlessness.

d. Dermatologic:

(1) Allergic reactions of which the majority consists of skin rash, and wheal and flare over the vein with an IV infusion. These reactions are due to the release of histamine and are not true allergic reactions. True allergic, anaphylactic reactions are rare.

7. Contraindications:
   a. Meperidine is contraindicated in resident receiving monoamine oxidase (MAO) inhibitors within the past 14 days.
   b. Narcotics may obscure the resident's clinical course with increased intracranial pressure, such as with brain tumors and head injuries.
8. Naloxone will inhibit the effects of the narcotics including respiratory depression, CNS depression and pain control within a minute of administration if sufficient amount of the medication has been administered.
   a. In non-responding residents, administration of a second or third dose may be required depending upon the amount of excess narcotic involved.
   b. There appears to be no set dose required to achieve toxicity as this is rarely seen.
   c. The resident may initially respond to naloxone then return to previous condition. Again, another dose of naloxone may be required.

D. IDENTIFYING AND MANAGING MEDICATION ERRORS AND ADVERSE CONSEQUENCES

Policy

The interdisciplinary team evaluates medication usage in order to prevent and detect adverse consequences and medication-related problems such as adverse drug reactions (ADRs) and side effects.

Adverse consequences shall be reported to the attending physician and pharmacist, and to federal agencies as appropriate.

General Guidelines

1. Residents receiving any medication that has a potential for an adverse consequence will be monitored to ensure that any such consequences are promptly identified and reported.
2. An "adverse consequence" is defined as an unpleasant symptom or event that is due to or associated with a medication, such as an impairment or decline in an individual's mental or physical condition or functional or psychosocial status. An adverse consequence may include:
    a. Adverse drug/medication reaction;
    b. Side effect;
    c. Medication-medication interaction; or
    d. Medication-food interaction.
3. An "adverse drug reaction" (ADR), a form of adverse consequences, is defined as a secondary and usually undesirable effect of a drug and is different from the therapeutic and helpful effects of the drug. An ADR is any noxious and unintended response to a drug and occurs in doses for prophylaxis, diagnosis or therapy.
4. The staff and practitioner shall strive to minimize adverse consequences by:
    a. Following relevant clinical guidelines and manufacturer's specifications for use, dose, administration, duration, and monitoring of the medication;
    b. Defining appropriate indications for use; and
    c. Determining that the resident:
        (1) Has no known allergies to a medication;
        (2) Is not taking other medications, nutritional supplements including herbal products, or foods that would be incompatible with the prescribed medication; and
        (3) Has no condition, history, or sensitivities that would preclude use of that medication.
5. A "medication error" is defined as the preparation or administration of drugs or biological which is not in accordance with physician's orders, manufacturer specifications, or accepted professional standards and principles of the professional(s) providing services.
6. Examples of medications errors include:
    a. Omission – a drug is ordered but not administered;
    b. Unauthorized drug – a drug is administered without a physician's order;
    c. Wrong dose (*e.g., Dilantin 12 mL ordered, Dilantin 2 mL given*);
    d. Wrong route of administration (*e.g., ear drops given in eye*);
    e. Wrong dosage form (*e.g., liquid ordered, capsule given*);
    f. Wrong drug (*e.g., vibramycin ordered, vancomycin given*);
    g. Wrong time; and/or

h. Failure to follow manufacturer's instructions and/or accepted professional standards (e.g., failure to shake medication that is labeled "shake well"; crushing a medication on the "do not crush list" without an order).

Procedures

1. The interdisciplinary team reviews the resident's medication regimen for efficacy and actual or potential medication-related problems on an ongoing basis.
2. When a resident receives a new medication, the medication order is evaluated for the following:
    a. The dose, route of administration, duration, and monitoring are in agreement with current clinical practice, clinical guidelines, and/or manufacturer's specifications for use.
    b. A written diagnosis/indication supporting the use of the medication.
    c. The resident has no known allergies to the medication.
    d. Presence of a boxed warning for specific side effect(s).
    e. The resident is not taking other medications, nutritional supplements, including herbal products, or foods that would be incompatible with the prescribed medication.
    f. The resident does not have a condition, history, or sensitivity that would preclude the use of the medication.
    g. The prescriber documents the clinical rationale for using a medication outside these stated guidelines.
3. Facility staff monitor the resident for possible medication-related adverse consequences, including mental status and level of consciousness, when the following conditions occur:
    a. A clinically significant change in condition/status:
        (1) An unexplained decline in function or cognition.
        (2) A worsening of an existing problem or condition.
        (3) A new or worsening psychiatric manifestation or distressed behavior.
        (4) Acute onset of signs or symptoms or worsening of a chronic problem or condition.
    b. Addition or discontinuation of medications and/or non-pharmacologic interventions.
    c. Change in dose.
    d. Addition or discontinuation of care and services such as enteral feedings.
    e. Significant changes in diet that may affect medication absorption.
    f. Medication error, e.g., wrong or expired medication.
4. When any of the above occurs, the prescriber and/or staff rule out medication as a cause and document it in the resident's clinical record.
    a. A review of medications as potential causes of permanent significant change that requires a Significant Change of Status MDS Assessment should be performed within the required 14-day observation period.
5. The facility staff monitors residents on the following combinations for possible adverse consequences and/or the need to modify the dose of one or more medications. The prescriber documents why or how these medications' benefits outweigh their risks in the resident's clinical record.

MEDICATION MONITORING

Medication 1	Medication 2	Impact
warfarin (Coumadin®)	NSAID's (e.g., ibuprofen (Motrin®), naproxen (Naprosyn®), celecoxib (Celebrex®))	Potential for serious gastrointestinal bleeding
warfarin (Coumadin®)	sulfonamides (e.g., trimethoprim/sulfamethoxazole (Bactrim®))	Increased effects of warfarin with potential for bleeding
warfarin (Coumadin®)	macrolides (e.g., azithromycin (Zithromax®), clarithromycin (Biaxin®), erythromycin)	Increased effects of warfarin with potential for bleeding
warfarin (Coumadin®)	fluoroquinolones (e.g., ciprofloxacin (Cipro®), levofloxacin (Levaquin®), ofloxacin (Floxin®))	Increased effects of warfarin with potential for bleeding
warfarin (Coumadin®)	phenytoin (Dilantin®)	Increased effects of warfarin and/or phenytoin
ACE Inhibitors (e.g., benazepril (Lotensin®), captopril (Capoten®), enalapril (Vasotec®), lisinopril (Prinivil®/Zestril®), quinapril (Accupril®), ramipril (Altace®))	potassium supplements	Elevated serum potassium levels
ACE Inhibitors (e.g., benazepril (Lotensin®), captopril (Capoten®), enalapril (Vasotec®), lisinopril (Prinivil®/Zestril®), quinapril (Accupril®), ramipril (Altace®))	spironolactone	Elevated serum potassium levels
digoxin	amiodarone	Digoxin toxicity
digoxin	fluoroquinolones (e.g., ciprofloxacin (Cipro®), levofloxacin (Levaquin®), ofloxacin (Floxin®))	Digoxin toxicity
fluoroquinolones	theophylline	theophylline toxicity

Source: American Society of Consultant Pharmacists and American Medical Directors Association. *Top 10 Dangerous Drug Interactions in Long-Term Care*.

6. In the event of a significant medication-related error or adverse consequence, immediate action is taken, as necessary, to protect the resident's safety and welfare. Significant is defined as:
    a. Requiring medication discontinuation or dose modification. (A current list of medications that should not be abruptly discontinued should be consulted before discontinuing a medication.)
    b. Requiring hospitalization, or extending a hospitalization.
    c. Resulting in disability.
    d. Requiring treatment with a prescription medication.
    e. Resulting in cognitive deterioration or impairment.
    f. Life threatening.
    g. Resulting in death.
7. The provider is notified promptly of any significant error or adverse consequence.

8. The provider's orders are implemented, and the resident is monitored closely for 24 to 72 hours or as directed.
9. The incident is described on the shift change report to alert staff of the need to monitor the resident.
10. The following information is documented in an incident report and in the resident's clinical record:
    a. Factual description of the error or adverse consequence.
    b. Name of provider and time notified.
    c. Provider's subsequent orders.
    d. Resident's condition for 24 to 72 hours or as directed.
11. Each incident report is forwarded to:
    a. Director of nursing;
    b. QAPI nurse;
    c. Medical director; and
    d. Consultant pharmacist.
12. Data regarding medication adverse consequences and errors (e.g., total number of incidents, number of incidents by category/type, trends) will be compiled and presented to the QAPI committee on a monthly or quarterly basis.
13. The QAPI committee will:
    a. Conduct a root cause analysis of medication administration errors to determine the source of errors;
    b. Create and implement process improvement steps; and
    c. Compare results over time to determine that system improvements are effective in reducing errors.
14. Adverse events associated with contaminated or defective medications or infusion devices will be reported to the Food and Drug Administration (FDA) through the MedWatch system, or to the Institute for Safe Medication Practices (ISMP).
15. The following information will be included in a product contamination, defect, or quality report to the FDA or ISMP:
    a. Suspected or known contamination;
    b. Product damage;
    c. Product tampering;
    d. Poor, confusing, or unclear labeling and/or instructions;
    e. Packaging defects;
    f. Product or device name; and
    g. Product or device model, lot, serial number and any other identifying information.
16. Follow additional instructions on FDA form 3500A for reporting details when a medication or device defect results in resident injury or other adverse event.

MEDICATION MONITORING

E. ADVERSE DRUG REACTION REPORTING

Policy

The purpose of this policy is to provide guidelines for communicating, documenting and reporting suspected adverse reactions from intravenous medications.

General Guidelines

1. An adverse drug reaction (ADR) is any response to a medication that is noxious or unintended and that occurs at any dose used for prophylaxis, diagnosis or treatment, excluding failure to accomplish the intended purpose.
2. An adverse event or reaction may be one that results in the discontinuation of therapy, hospitalization, treatment with another therapy/agent and/or significant injury.
3. The pharmacy and the facility both maintain their own files on ADRs. ADR reports shall be communicated between the pharmacy and facility as they occur. Pharmacists shall communicate any known or suspected ADRs to the facility's quarterly quality assurance or medication management committee meetings.

Procedure

1. The pharmacist shall review the resident's allergy history prior to the first dose of a compounded IV medication dose to identify any potential cross-sensitivities.
2. When a suspected ADR is encountered, the following protocol should be followed:
    a. The pharmacist and facility nurse shall review the reaction or untoward event.
    b. A plan of action shall be formulated and implemented.
    c. The physician shall be contacted with recommendations for the plan of action documented.
    d. A Suspected ADR Report shall be completed. The following information should be included:
        (1) Resident's name and age;
        (2) Description of reaction, date and outcome;
        (3) Suspected medication, route, dose and date of administration;
        (4) Medication profile;
        (5) Treatment, therapy or plan of action; and
        (6) Other relevant history.
3. If the adverse event is associated with a medication defect or suspected contamination a MedWatch FDA Form #3500 (found at www.fda.gov/medwatch/getforms.htm) will be completed and sent to:
    Department of Health and Human Services
    Food and Drug Administration
    Division of Epidemiology and Surveillance
    5600 Fisher Lane
    Rockville, MD 20857
4. When ADRs are reported to the MedWatch program, the pharmacy manager shall also be notified. A copy shall be kept on file in the pharmacy.

VIII. APPENDIX A: SAMPLE FORMS AND DOCUMENTATION

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EMERGENCY KIT TRACKING LOG

Kit Type or Number: _____

Date Kit Sealed	Facility to Receive Kit	Date Kit Expires	Expiring Medication	Technician Checking Sealed Kit	Pharmacist Checking Sealed Kit	Seal# on Completed Kit	Driver Delivering Kit	Driver Returning Kit	Seal# on Returned Kit

IX. APPENDIX B: INFORMATIONAL RESOURCES

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A. ELECTROLYTE GUIDELINES:

Electrolytes greater than 20 mEg/L mixed in large volume IV fluids for continuous infusion must be administered with an IV pump only

Sodium Chloride
Potassium Chloride

Potassium is <u>extremely</u> irritating to veins and my cause cardiac arrhythmias:

Recommended limits for the administration of potassium to long term care residents without cardiac monitoring are:

-No more than **40 mEq/ Liter**

-No more than **60 mEq/ 24 hours**

-No more than **10 mEq/ hour**

Remember to consider potassium given by other routes (po, G-tube, etc.) when calculating the hourly IV limit. **If the resident is to receive more than 10 mEq IV potassium (or 10 mEq IV plus additional potassium by other routes) in a one hour period, cardiac monitoring is required.**

IV medications should not be given in combination with one another due to compatibility issues. It is the responsibility of the nurse to check for incompatibility prior to infusion.

APPENDIX B: INFORMATIONAL RESOURCES

B. The Joint Commission: "Do Not Use" List of Abbreviations

Do Not Use	Potential Problem	Use Instead
U, u (unit)	Mistaken for "0" (zero), the number "4" (four) or "cc"	Write "unit"
IU (International Unit)	Mistaken for IV (intravenous) or the number 10 (ten)	Write "International Unit"
Q.D., QD, q.d., qd (daily) Q.O.D., QOD, q.o.d, qod(every other day)	Mistaken for each other Period after the Q mistaken for "I" and the "O" mistaken for "I"	Write "daily" Write "every other day"
Trailing zero (X.0 mg)* Lack of leading zero (.X mg)	Decimal point is missed	Write X mg Write 0.X mg
MS MSO_4 and $MgSO_4$	Can mean morphine sulfate or magnesium sulfate Confused for one another	Write "morphine sulfate" Write "magnesium sulfate"

Source: https://www.jointcommission.org/facts_about_do_not_use_list/

APPENDIX B: INFORMATIONAL RESOURCES

C. ANATOMY OF ARTERIES AND VEINS

Arteries and veins are similar in structure. Both are composed of three layers of tissue.

Tunica Intima (the inner layer)
The first layer consists of an inner elastic endothelial lining which also forms the valves in veins. These valves are absent in arteries. The endothelial lining is identical in the arteries and veins consisting of a smooth layer of flat cells. This smooth surface allows the blood cells and platelets to flow through the blood vessels without interruption under normal conditions. Care must be taken to avoid roughening this surface when performing venipuncture or removing a needle from a vein. Any trauma that roughens the endothelial lining encourages the process of thrombosis whereby cells and platelets adhere to the vessel wall.

Tunica Media (the middle layer)
The second layer consists of muscular and elastic tissue. The nerve fibers, both vasoconstrictors and vasodilators, are located in this middle layer. These fibers, constantly receiving impulses from the vasoconstrictor center in the medulla, contract or relax. The middle layer is not as strong and stiff in the veins as in the arteries, and therefore the veins tend to collapse or distend as the pressure within falls or rises. Irritation to this layer may result in venospasms.

Tunica Adventitia (the outer layer)
The third layer consists of areolar connective tissue which surrounds and supports the vein or artery. Arteries pulsate and veins do not – a helpful differentiating characteristic.

D. Metabolic Complications of Parenteral Nutrition

PROBLEM	SYMPTOMS	CAUSE	TREATMENT	PREVENTION
Hypernatremia	Orthostatic hypotension Oliguria Hyperthermia Delirium and Coma	Dehydration Diarrhea Diabetes insipidus Excessive replacement of Sodium	Notify MD, orders may include: Decrease sodium or provide solution until corrected Provide enough free water to meet needs Treat or correct cause	Monitor serum sodium Maintain I/O Be aware of drugs that cause sodium retention (steroids)
Hyponatremia	Nausea Headache Seizures CNS symptoms	Diuretics GI losses (vomiting, fistula) CHF Renal Failure Cirrhosis Water intoxication	Notify MD, orders may include: Fluid restriction Add sodium to PN (done in pharmacy) Minimize GI loss if possible Close metabolic monitoring	Accurate I/O Urine specific gravity Accurate weights (assess fluid shifts)
Hypocalcemia	Cramps and tetany Convulsions Paresthesias of lips and extremities	Vitamin D deficiency Insufficient replacement of Calcium Pancreatitis Hypomagnesemia Hyperphosphatemia Hypoalbuminemia	Notify MD, orders may include: Replace by adding calcium to PN (done in pharmacy) May require IVPB of calcium to correct severe deficiency Correct hypomagnesemia Correct deficiency caused by hypoalbuminemia	Monitor serum levels Be aware of disease states, medications. Malnutrition that can cause hypocalcemia
Hyperphosphatemia	Signs of renal failure Secondary hyper-parathyroidism	Renal failure Excessive replacement	Notify MD, orders may include: Low or no phosphate added May need dialysis	Accurate I/O Monitor serum levels and renal status
Hypophosphatemia	Acute hemolytic anemia Increased susceptibility to infection Anorexia Pain in muscles and bones Fractures	Inadequate phosphates in PN insulin therapy Disease states: Alcoholism, Respiratory alkalosis, Renal problems, Severe diarrhea Malabsorption associated with low calcium and magnesium Increased requirements	Notify MD, orders may include: Replace phosphate in PN *If <1.5 mg/dL – give IVPB replacement over 4-6 h *If <1.0 mg/dL – discontinue PN and correct via IVPB over 4-6 h before restarting PN Replace calcium as needed (repletion of phosphate may cause calcium to drop) Discontinue PN if patient symptomatic	Be aware of potential causes of low phosphate levels Frequent lab monitoring, especially if low levels, depleted Be aware of medications that may lower phosphates (Carafate, Mg, aluminum hydroxide, steroids)

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PROBLEM	SYMPTOMS	CAUSE	TREATMENT	PREVENTION
Hypomagnesemia	Weakness Muscle cramps Tremor Confusion and disorientation Hypertension Tachycardia	Insufficient magnesium in PN Excessive GI or renal losses (diarrhea, fistula, diuretics) Certain drugs (aminoglycosides, diuretics, cisplatin) Disease states (chronic alcoholism, pancreatitis, diabetic acidosis, sepsis/infections, burns	Notify MD, orders may include: Increase magnesium in PN (done in pharmacy) If very low, IVPB Discontinue PN if patient symptomatic Monitor for cardiac arrhythmia	Monitor serum levels Be aware of diseases that can cause hypomagnesemia
Hypermagnesemia	Muscle weakness Decreased deep tendon reflexes Mental obtundation and confusion Hypotension	Excess magnesium in PN Renal failure	Notify MD, orders may include: Decrease or discontinue from PN (done in pharmacy) Calcium salts Dialysis may be necessary	Monitor serum levels Monitor renal function
Metabolic Acidosis	Compensatory hyperventilation Kussmaul respirations (deep, regular, sighing, respirations)	Renal insufficiency, acute/chronic renal failure Diabetic ketoacidosis Diarrhea Lactic acidosis (shock) Potassium-sparing diuretics	Notify MD, orders may include: Give bicarbonate or replace some or all chloride function Monitor vital signs	Monitor ABG's Monitor renal function & electrolytes Be aware of disease states that may cause metabolic acidosis
Hyperglycemia	Nausea Weakness Thirst Headache Elevated glucose Anxiety	Carbohydrate intolerance PN infused too fast No insulin in PN Infection	Notify MD, orders may include: Decrease rate or dextrose concentration Increase proportion of calories as lipids Add insulin to solution and/or use sliding scale coverage	Urine S/A Accuchecks q6h or per order Be aware of meds that cause glucose intolerance (steroids) Start infusion slowly Maintain prescribed rate
Hypoglycemia	Sweating Palor Palpitations Nausea Headache Shakiness Blurred vision Lightheadedness	Abrupt decrease or cessation of PN Excessive insulin administration	Notify MD, orders may include: Hang 10% Dextrose at same rate as PN if unable to hang PN Give IV glucose STAT, 50% may be needed Maintain proper flow rate	Taper rate of PN infusion when stopping Hang 10% Dextrose at same rate as PN if unable to hang PN Maintain infusion rate Use an infusion pump Monitor serum glucose levels

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PROBLEM	SYMPTOMS	CAUSE	TREATMENT	PREVENTION
Hyperglycemic Hyperosmolar nonketotic coma	Coma	Untreated glucose intolerance causes hyperosmolar diuresis, electrolyte imbalances, coma, death (40-50% mortality rate) Increased risk in elderly, diabetics, malnourished therapy, stress or sepsis	Notify MD, orders may include: Monitor closely Discontinue PN Rehydrate with NS or other isotonic solution Correct electrolyte imbalances, especially potassium and bicarbonate Monitor ABG's Insulin as needed	Appropriate glucose monitoring Frequent chemistry profiles to assess electrolytes, osmolarity
Hyperkalemia	Muscle weakness Flaccid paralysis Abdominal distention and diarrhea Cardiac arrythmias	Excessive potassium replacement Renal disease – potassium cannot be excreted Leakage of potassium from cell following severe trauma	Notify MD. Orders may include: Stop or decrease potassium in solution Assess other sources of potassium Monitor pulse for changes (bradycardia) In severe cases, dialysis may be necessary	Monitor serum levels and renal function Anticipate that a sodium deficiency may lead to hyperkalemia Accurate I/O to evaluate fluid balance
Hypokalemia	Muscle weakness Fatigue Muscle cramps Constipation or ileus	Excessive potassium losses (increased GI losses with diarrhea, fistulas) Diuretic therapy Large doses of insulin Increased requirement with anabolism	Notify MD. Orders may include: Add potassium to PN solution (done in pharmacy) May need additional IVPB Monitor pulse for tachycardia/arrhythmia	Monitor serum potassium Anticipate potential fluid & electrolyte losses Monitor I/O Be aware that patients who are severely malnourished are susceptible

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E. Guidelines for Reporting Abnormal Test Results to Physicians

TEST	IMMEDIATE	NON-IMMEDIATE (NEXT OFFICE DAY)
CBC (complete blood count or a component such as Hematocrit, WBCs, or differential)	WBC > 12,000* with fever or other signs/symptoms Hgb: < 8* Hct: < 30* Platelets: < 50,000	WBC > 14,000 without symptoms or fever
Chemistry	BUN: > 50* Calcium (Ca): > 12.5 Potassium (K): < 3.0 or > 6.0 Sodium (Na): < 125 or > 155 Glucose: > 300 in diabetic with signs / symptoms > 430 or "high" on glucose monitor in anyone < 70 in diabetic with signs / symptoms < 50 in anyone	Other Abnormal Levels of BUN, Calcium, Potassium, Sodium Glucose: consistently > 200 Glycohemoglobin: any value Albumin: any value Bilirubin: any value Cholesterol: any value Triglycerides: any value
Drug Levels	Levels above therapeutic range in any drug, hold next dose Any level in someone who is currently unstable or has signs and symptoms of possible toxicity	Any level in the low or therapeutic range in someone who is stable or improving
Prothrombin Time / INR	Any PT/INR outside the therapeutic range or where therapeutic range is not established or is unclear	PT/INR within the therapeutic range in an asymptomatic individual
Urinalysis	Abnormal urinalysis results in someone with signs and symptoms such as fever, burning or pain on urination, delirium	Abnormal urinalysis results in someone without signs and symptoms
Urine Culture	Any culture results in someone with signs and symptoms such as fever, burning or pain on urination, unless treatment has already been instituted	Any positive culture in someone without signs and symptoms, or in a stable individual for whom treatment has already been instituted
X-ray	New or unsuspected finding such as fracture, pneumonia; significant change from previous exam in a symptomatic individual	Old or longstanding finding; no significant change from previous exam

* Unless one of the following exceptions exists:

- It is documented that the individual is terminally ill or is receiving palliative care or comfort measures only, and further medical interventions are not indicated.
- The results are similar to, or better than, known chronic abnormal results associated with chronic conditions (for example, chronic anemia or high BUN and creatinine associated with chronic renal failure), and a physician has previously been aware of those chronic abnormal results.
- The results are the same as or better than previous ones, treatment has already been instituted for an acute condition change, and the individual is stable or improving.

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F. INFUSION RATE SCHEDULE

Infusion Rate Schedule			
Time	**Amount/Rate 1000 mL**	**Amount/Rate 500 mL**	**Amount/Rate 250 mL**
4 hours	250 mL/hr	124 mL/hr	67 mL/hr
6 hours	167 mL/hr	83 mL/hr	42 mL/hr
8 hours	125 mL/hr	62 mL/hr	31 mL/hr
10 hours	100 mL/hr	50 mL/hr	25 mL/hr
12 hours	83 mL/hr	42 mL/hr	21 mL/hr
14 hours	42 mL/hr	21 mL/hr	11 mL/hr

mL Per Hour			
mL Per Hour	**Drops Per Minute @ 60 Drops Per mL**	**Drops Per Minute @ 15 Drops Per mL**	**Drops Per Minute @ 10 Drops Per mL**
10	10	3	2
20	20	5	3
30	30	7	5
40	40	10	7
50	50	12	8
60	60	15	10
70	70	17	11
80	80	20	13
90	90	22	15
100	100	25	16
110	110	27	18
120	120	30	20
130	130	32	21
140	140	35	23
150	150	37	25
160	160	40	26
170	170	42	28
180	180	45	30
190	190	47	31
200	200	50	33

G. U.S. Measurement Equivalencies

1 tablespoon (tbsp) =	3 teaspoons (tsp)
1/16 cup =	1 tablespoon
1/8 cup =	2 tablespoons
1/6 cup =	2 tablespoons + 2 teaspoons
1/4 cup =	4 tablespoons
1/3 cup =	5 tablespoons + 1 teaspoon
3/8 cup =	6 tablespoons
1/2 cup =	8 tablespoons
2/3 cup =	10 tablespoons + 2 teaspoons
3/4 cup =	12 tablespoons
1 cup =	48 teaspoons
1 cup =	16 tablespoons
8 fluid ounces (fl oz) =	1 cup
1 pint (pt) =	2 cups
1 quart (qt) =	2 pints
4 cups =	1 quart
1 gallon (gal) =	4 quarts
16 ounces (oz) =	1 pound (lb)
1 milliliter (mL) =	1 cubic centimeter (cc)
1 inch (in) =	2.54 centimeters (cm)

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U.S. to Metric Conversion

Volume	Weight
1/5 teaspoon = 1 milliliter	1 oz = 28 grams
1 teaspoon = 5 mL	1 pound = 454 grams
1 tablespoon = 15 mL	
1 fluid oz = 30 mL	
1/5 cup = 47 mL	
1 cup = 237 mL	
2 cups (1 pint) = 473 mL	
4 cups (1 quart) = .95 liter	
4 quarts (1gal.) = 3.8 liters	

Metric to U.S. Conversion

Volume	Weight
1 milliliter = 1/5 teaspoon	1 gram = .035 ounce
5 mL = 1 teaspoon	100 grams = 3.5 ounces
15 mL = 1 tablespoon	500 grams = 1.10 pounds
100 mL = 3.4 fluid oz	1 kilogram = 2.205 pounds
240 mL = 1 cup	35 oz
1 liter = 34 fluid oz 4.2 cups 2.1 pints 1.06 quarts 0.26 gallon	