CONSONUS
PHARMACY

INFUSION THERAPY POLICY & PROCEDURE MANUAL

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RECORD OF ADOPTION

On _____ the _____ day of _____ 20 _____ the Governing Board of this facility adopted the policies and procedures outlined in this manual. Such policies and procedures have been reviewed by the Board, the Medical Director, and the Quality Assessment and Assurance Committee and found to be adequate in meeting the day-to-day operational needs of this facility and our residents.

The Administrator has been delegated the administrative authority, responsibility, and accountability of assuring that all personnel, residents, and the community are made aware of these policies and procedures through an established orientation and/or in-service training program.

Approved on:

_____

Adopted on:

_____

Signature—Administrator:

_____

Authorized Signature—Governing Board:

_____

Signature—Medical Director:

_____

Approved by the Quality Assessment and Assurance Committee on:

_____

Signature—Committee Chairperson

_____

Comments:

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ACKNOWLEDGEMENTS

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PREFACE

The safe practice of infusion therapy demands clinical competency in infusion therapy, including a thorough understanding of anatomy, catheter selection, medication administration, monitoring, infection control and effective documentation. This manual is designed to be a guide for Registered and Licensed Practical Nurses who work with long-term care residents receiving infusion therapy. It is not to be used as a substitute for appropriate training or clinical competency.

The policies and procedures in this manual are based on the current standards published by the *Infusion Nurses Society* and the *Centers for Disease Control and Prevention*, as well as federal guidelines and regulations published by the *Centers for Medicare and Medicaid Services* and the *Occupational Safety and Health Administration*. These policies and procedures guide the infusion therapy nurse in the nursing process as well as in particular nursing functions related to infusion therapy, infection control, medication administration, orders and documentation. They should be reviewed at established intervals, revised as necessary, and approved by the appropriate organizational committee.

Nurses performing the procedures in this manual must refer to their individual State Nurse Practice Act for requirements regarding licensure, scope of practice, competency requirements and certification. If a question arises or a conflict exists between an individual State Nurse Practice Act and a procedure in this manual, always defer to the State Nurse Practice Act, which is the legal authority regarding infusion therapy. When working with infusion therapy equipment and supplies, always follow the manufacturer labeled use and directions.

Since the original edition of this manual was published the scope of practice and range of licensure in healthcare has expanded. It is no longer adequate to refer to prescribers of infusion therapy as "physicians". Therefore, the term "provider" is used in this manual to refer to any licensed healthcare practitioner who has legal authority to prescribe infusion-related medications, solutions, laboratory monitoring and/or treatments. Depending on the state practice act, this may include physicians, nurse practitioners, clinical nurse specialists or physician assistants.

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OVERVIEW OF INFUSION THERAPY

INFUSION EQUIPMENT AND SUPPLIES

Administration Sets (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 via gravity or per pump operating instructions if self-priming pump.
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.

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.

Admixture Bags

Infusion bags with the medication to be added attached. The medication is mixed into the intravenous 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.

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.

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.

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 Balloon 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 intravenous catheter and the pressure is released at a slow rate to deliver medication. When infusion is finished, the sphere is disconnected and disposed.

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.

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.

Patient Controlled Analgesia (PCA) Pump

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

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.

Vascular Visualization Technology

Visual aids that assist with locating veins and arteries. These devices help minimize complications associated with catheter insertion, allowing for the most appropriate and least invasive VAD. Examples of vascular visualization technologies include trans-illumination and reflective light; infrared light; and ultrasound.

INFUSION THERAPY IN OLDER ADULTS

General Guidelines

1. Licensed staff are responsible to ensure Infusion Therapy and management are within scope of practice in the state care is provided. In addition, following Board of Nursing, state regulations, and facility policies and procedures.
2. Licensed staff administering infusion therapy to older residents 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;
   c. loss of thickness in the dermal skin layer and connective tissue;
   d. vein fragility; and
   e. how medication side effects may cause or contribute to existing clinical conditions.
3. Residents are assessed for any limitations associated with the safe and effective administration of infusion 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.
4. The interdisciplinary team, including the consultant pharmacist, nursing staff and prescribing provider meet regularly to evaluate the impact of infusion therapy on the resident's quality of life.
5. Infusion therapy is consistent with the resident's goals and wishes as indicated in the resident's advance directives.
6. The resident and the resident's legal surrogate and family are educated regarding the goals and expected outcome associated with infusion therapy.
7. Educational information is appropriate to age, cognitive level, health literacy, culture, and language preferences.
8. Any therapy-related care or tasks involving the resident/family/surrogate are taught and validated for appropriate knowledge and skill acquisition, including:
   a. care of the access site and 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.
9. Informed consent is obtained prior to infusion therapy in accordance with state or local laws and organizational policy.
10. The resident/family/surrogate has the right to refuse treatment of any kind.

PRINCIPAL USES OF INTRAVENOUS THERAPY

Common Reasons for Intravenous Therapy

***Not all uses are appropriate in all LTC facilities**

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
3. **Administering blood and blood products.**
   a. The administration of blood and blood products in long-term care facilities is governed by state nurse practice acts and long-term care regulations.
   b. This therapy is used to replace deficit in blood volume or blood components due to certain clinical conditions such as:
      (1) Post-operative blood loss;
      (2) GI bleed;
      (3) Chronic diseases; and
      (4) Chemotherapy cancer treatment.
   c. Blood transfusions require close observation during infusions.
   d. Blood transfusions are to be administered by a Nurse who has received training in administration of blood and blood products, and according to provider order.
4. **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

TYPES OF VASCULAR ACCESS DEVICES

Peripheral Intravenous Catheters (PIVC)

1. Catheters that dwell in veins.
2. Peripheral catheters are appropriate for short-term therapies (less than 14 days) when therapy is compatible with peripheral veins.
3. Types of peripheral catheters:
   a. Short peripheral (over the needle) intravenous catheter
      (1) Less than 3" in length.
      (2) Usually inserted into superficial peripheral veins.
      (3) Do not use for continuous infusion of solutions with irritant or vesicant properties.
      (4) Remove when therapy is completed or clinically indicated for unresolved complications.
   b. Long peripheral intravenous catheter
      (1) 3" or greater in length.
      (2) Inserted into either superficial or deep peripheral veins by a specialized healthcare professional with advanced training and certification.
      (3) Used when a short PIVC is not long enough to cannulate a desired or available vein.
   c. Midline catheter
      (1) 3 to 8 inches in length.
      (2) Inserted into a peripheral vein of the upper arm via the basilic, cephalic or brachial vein by a specialized health care professional with advanced training and certification. The terminal tip of the catheter is located at or below the axilla. The tip does not enter the central vasculature.
      (3) Do not use for continuous infusion of solutions with vesicant properties, parenteral nutrition, or solutions with extreme osmolarity or pH.
      (4) Do not confuse with peripherally inserted central catheter (PICC). If resident arrives without documentation, have chest X-ray done to verify type of catheter before using.
      (5) Do not use in residents with a history of thrombosis, hypercoagulability, decreased venous flow in the extremities, or end-stage renal disease.
      (6) Blood sampling via midline catheter may or may not be appropriate. Refer to manufacturer's recommendations.

Central Venous Access Devices (CVAD)

1. CVADs are placed in the major veins of the body (jugular, subclavian, femoral; or upper arm cephalic, basilic, brachial, or median cubital) by a specialized health care professional with advanced training and certification and dwell in the superior 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. Confirm placement by radiology report, x-ray, or other approved method of tip confirmation prior to use..
2. CVADs are indicated for the following situations:
   a. Complex infusion regimen and/or clinically unstable resident;
   b. Episodic chemotherapy treatment where it is anticipated that peripheral vein access may be insufficient;
   c. Continuous infusion therapy that is inappropriate for peripheral intravenous delivery;
   d. Invasive hemodynamic monitoring;
   e. Any long-term, intermittent infusion therapy expected to continue more than 4 weeks; or
   f. Known history of failed or difficult peripheral access despite use of ultrasound guidance.

3. CVADs cannot be used for dialysis.
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) catheter
        (1) The tip of the catheter is open 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) catheter
        (1) The tip of the catheter is closed.
        (2) There is a pressure sensitive valve in the catheter.
        (3) In general, 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 as easily as open-ended catheters.
        (4) In general, closed ended catheters can be maintained using saline flushes per protocol. Heparin is not necessary, however, it can be ordered by the provider, if desired. Please review IV catheter manufacturer guidelines for flushing specifics.
        (5) This type of catheter should be considered for residents with heparin allergy or other contraindications to heparin use.
        (6) There are no external clamps.
6. Generic Categories of Central Venous Access Devices
    a. Tunneled catheter
        (1) Surgically placed and removed.
        (2) The 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.
    b. Non-Tunneled catheter
        (1) Percutaneously inserted by a qualified provider; can be removed at bedside by a qualified licensed nurse (per state nurse practice act).
        (2) Inserted into internal jugular, subclavian, or femoral veins with tip ending in vena cava.
        (3) Catheter is sutured or secured to the 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, but could remain longer depending on infusions and proper management of lines and if no signs/symptoms of catheter related complications.
        (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.
    c. Implanted venous port
        (1) Catheter is surgically placed and removed. It is placed under the skin - with only the outline of catheter visible. Terminal end of the catheter dwells in the vena cava.
        (2) Dwell time is multiple years with proper maintenance.
        (3) Can be made of metal, plastic, or titanium.
        (4) Used for infrequent/intermittent vascular access.
        (5) Requires the placement of a non-coring needle through the skin to access the port for treatment.
        (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).

d. Peripherally inserted central catheter (PICC)
   (1) Located in the upper arm above the antecubital fossa and below the shoulder area.
   (2) May be inserted at the basilic, median cubital, cephalic, or brachial veins. Terminal end of catheter dwells in superior vena cava.
   (3) 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.
   (4) Length of catheter is specific to resident. Catheter length is documented in the medical record by the person who is placing catheter.
   (5) Upon removal, catheter measurements are compared to baseline to verify that all of catheter has been removed.
   (6) Catheter can stay in place for approximately one year if maintained properly (refer to manufacturer specifications).
   (7) Avoid placing on agitated residents to prevent breakage.
   (8) Upper arm circumference is measured on insertion, admission to facility and whenever clinically indicated,
   (9) External catheter length is measured on admission to facility and weekly to monitor for outward migration of the catheter.
   (10) No blood pressures or phlebotomy should be done on arm that contains PICC.
   (11) Anchor catheter to skin using an engineered securement device (ESD) to prevent accidental removal.

Arterial Catheters

1. Used for short-term hemodynamic monitoring, blood sampling, and analyzing blood gases.
2. Can be a peripheral or pulmonary arterial catheter.

Other Infusion Devices

1. Non-vascular infusion therapies include intraspinal, intraosseous and subcutaneous devices.
2. These are listed below for reference. Policies and procedures for access and care are not included in this manual.
   a. Intraspinal access devices
      (1) Allows access to the epidural, intrathecal or intraventricular spaces of the spinal column.
      (2) Commonly used for the infusion of pain medications or for administration of chemotherapy.
      (3) Scope of practice for managing these devices varies according to state nurse practice acts.
   b. Intraosseous access device
      (1) Used to access the venous system through the marrow of a bone (sternum, tibia, or humerus) when intravenous access is not possible.
      (2) Can stay in place up to 24 hours.
      (3) Used in shock, trauma, or cardiac arrest.
   c. Subcutaneous infusion device
      (1) Used to infuse fluids into the subcutaneous tissue.
      (2) A safe and comfortable alternative to intravenous infusions.
      (3) Can be used for mild to moderate dehydration in the elderly

ORGANIZATIONAL ASPECTS OF INFUSION THERAPY

DOCUMENTATION OF INFUSION THERAPY

Policy Statement

1. Any insertion, removal and/or care of catheters or insertion sites is documented in the resident's medical record.
2. Medication administration is recorded in the medication administration record unless otherwise specified.

Documenting Infusion Therapy

1. Document device insertion, including the following:
   a. Date and time of insertion.
   b. The clinical rationale for device insertion and infusion therapy.
   c. Provider order for type of treatment and catheter.
   d. Verbal or written consent received.
   e. Assessment of site/extremity and surrounding tissue prior to catheter insertion.
   f. Prep solution and technique used.
   g. Anatomic location of catheter insertion.
   h. The brand, type, gauge, lot number and length of catheter.
   i. Verification of blood return.
   j. Flush used and protocol.
   k. Type of dressing placed (transparent or gauze with transparent).
   l. Type of catheter stabilization device.
   m. Number of attempts.
   n. Any complications that arose after the insertion or attempt (bruise, hematoma, skin tear).
   o. Resident response to procedure.
   p. Insertion methodology (i.e., visualization/ guidance).
   q. Resident and/or family education provided.
   r. 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 and whenever an infusion treatment is given. The shift note should include the following information:
   a. Location and objective description of insertion site.
   b. Type of infusion therapy, including rate, time, duration, route and method of administration.
   c. Type of equipment used for infusion therapy administration.
   d. Amount, type and time of flush and/or lock, if indicated.
   e. Patency and/or functionality of the device.
   f. Condition of the dressing, stabilization device (if any) and administration set.
   g. Dressing, administration set or catheter change (if done).

h. Any complications, interventions.
i. Resident education provided or questions answered.
j. A statement from the resident regarding how they are tolerating treatment. If the resident is non-verbal, describe any objective signs/symptoms of problems.
k. Date, time, signature and title.

4. Document continuous infusion every 2 hours. This includes:
   a. Observation of the insertion site.
   b. Condition of the dressing.
   c. Patency and/or functionality of the device.
   d. Type, rate and duration of infusion.
   e. How the resident is tolerating the infusion.
   f. Date, time and initials.
5. Document continued need 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.
8. 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.
9. 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, at established intervals and as needed, document:
   a. Confirmation of the location of the catheter tip.
   b. The external length of the catheter and the original length of the catheter inserted.
   c. Circumference of the extremity:
      (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) Include location of the measurement and measure extremity in the same place each time; and
      (4) Characterize any edema as pitting or non-pitting.

NURSING RESPONSIBILITIES, INFUSION THERAPY

Policy

1. Nurses administering infusion therapies operate 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 shared across all disciplines. The interdisciplinary team works collaboratively to maintain these priorities.

General Nursing Responsibilities

General nursing care and supervision are provided to all residents receiving intravenous 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. Initial competency is assessed along with maintaining clinical competency by attending required in-service education and supervised competency assessments for administering infusion therapy, performing vascular access insertions as well as any IV related management tasks. Ongoing clinical competencies and documentation is to be determined by facility policy. The facility is responsible for maintaining all educational records or certification of completion within facility or employee files.
3. Conducting detailed and comprehensive assessments of residents.
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. This includes appropriate intravenous line use, infusion rates, and management of the line for the specific therapy.
5. Knowing and adhering to the *Five Rights of Medication Administration* (right medicine, right resident, right dose, right route, and right time).
6. Possessing the knowledge to intervene appropriately when complications arise. This includes following facility policy of appropriate notification(s) to the provider, other professional staff and responsible party with documentation in resident chart.
7. Safely and accurately operating and troubleshooting infusion equipment.
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. Providing residents with education and information and obtaining consent (verbal, written) from the resident before performing any procedure.
10. Accepting, clarifying and transcribing verbal, written and electronic orders.
11. Understanding and adhering to the principles of infection control, aseptic and sterile techniques as they pertain to intravenous therapy.
12. Maintaining adequate documentation (see documentation section).
13. Communicating with the resident and his or her representative and family members as appropriate.
14. Supervising and providing a safe and secure environment for the residents.
15. Completing incident reports for any unusual occurrence (according to facility policy and procedure).

Nursing Scope of Practice

1. Prior to performing procedures/functions associated with intravenous therapy, the licensure and skills competency are verified by the director of nursing, nursing supervisor, staff development coordinator or other appropriate authorized individual.
2. Nurses caring for residents receiving infusion therapy are only approved to practice within the scope of their licensure for the state or certifying board.

Nursing Competency

1. Any nurse (LPN, RN or APRN) providing care for the resident receiving intravenous therapy must demonstrate initial and ongoing competency in the following areas:
   a. Aseptically inserting and removing a peripheral IV catheter.
   b. Starting and discontinuing primary and secondary intravenous (IV) solutions.
   c. Administering and/or monitoring 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.)
   d. Adding medications to existing IV solutions (admixtures).
   e. Administering IV push medications.
   f. 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.
   g. Monitoring and troubleshooting electronic infusion devices and IV tubing.
   h. Calculating and adjusting flow rates of IV therapies.
   i. Observing and reporting on catheter patency, insertion site, complications and resident's response to treatment.
   j. Documenting treatment, observations, complications, interventions, resident's response to treatment.
   k. Creating, documenting, and following through on care plans for resident.
   l. Providing education to resident and family.
   m. Recognizing and addressing complications related to IV therapy.

ORGANIZATIONAL RESPONSIBILITIES, INFUSION THERAPY

Facility Responsibilities

The facility is responsible for the following aspects of infusion therapy:

1. Contracting with an infusion services provider/pharmacy.
2. Maintaining a written agreement with the infusion services provider detailing responsibilities.
3. Providing education, verifying licensure and establishing competency of the staff providing infusion therapy.
4. Defining the roles and responsibilities for all healthcare professionals involved in initiating, prescribing and monitoring infusion therapy according to practice boards and regulations.
5. Developing and maintaining facility policies and procedures for infusion therapy.
6. Providing a safe, secure environment for the practice of intravenous therapy.
7. Correcting and investigating infusion-related problems.
8. Maintaining inventory of supplies and equipment used for infusion therapy.
9. Assuring the availability of the Infusion Therapy P & P is accessible to all staff administering or managing infusion therapies.

Infusion Services/Product Provider Responsibilities

The provider/pharmacy is responsible for the following aspects of infusion therapy:

1. Maintaining a current pharmacy permit/license and adequate professional liability insurance and providing proof of it to the facility upon request.
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. Assisting with 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.
9. Maintaining an infusion care plan for each resident receiving infusion services.
   a. If the infusion therapy product provider is not the same pharmacy provider which supplies the balance of the resident's medications, the facility must coordinate care plans between both medication providers.
   b. Communicating with the provider as necessary, and relaying order changes to the facility.
   c. Having a pharmacist knowledgeable about infusion therapy available 24 hours a day to the charge nurse and provider for consultation on infusion therapy product compatibility, dosing, and other information.

QUALITY ASSURANCE AND PERFORMANCE IMPROVEMENT, INFUSION THERAPY

Policy

1. Quality deficiencies in infusion services are identified and addressed through the process of quality assurance and performance improvement (QAPI) that has been established by the facility.
2. The QAPI program strives to measure, identify and correct quality/performance issues related to infusion therapy by:
   a. Tracking and measuring performance;
   b. Establishing performance thresholds;
   c. Prioritizing issues;
   d. Analyzing the systemic or root causes of identified problems;
   e. Creating and implementing corrective actions;
   f. Monitoring and measuring the corrective actions; and
   g. Revising as necessary.
3. Infusion therapy performance indicators include (for example):
   a. Staff competency;
   b. Clinical outcomes;
   c. Resident and family feedback;
   d. Availability of sufficient supplies and equipment;
   e. Adverse events, including complications, infections and premature device removals;
   f. Medication administration errors and adverse reactions; and
   g. Near misses, close calls and other reports.
4. Benchmarks and performance thresholds are established based on internal data, historical information, industry standards and publicly reported outcomes.
5. Tools for tracking and measuring performance are designed for consistent comparison of benchmark standards.
6. The QAPI Committee is responsible for applying the QAPI process to analyze, prioritize and determine root causes of deficiencies, designing corrective actions and monitoring results.
7. The facility staff is responsible for participating in data gathering, implementing corrective actions and other QAPI activities as requested.

INFECTION CONTROL

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 of 20 second soap and water wash, rinsing using warm water; or using hand gels containing at least 60% ethanol or 70% isopropyl alcohol 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.

Aseptic Non Touch Technique (ANTT®)

Aseptic Non Touch Technique is a standardized approach to aseptic technique that has demonstrated increased compliance and consistency in infection control among healthcare professionals.[1] ANTT® is a practice framework that can be applied to any invasive procedure including intravenous therapy.

1. The core elements of ANTT® are:
   a. Hand hygiene – before, during (if necessary if contamination occurs), and after any invasive procedure;
   b. Glove use – appropriate use of gloves and other personal protective equipment;
   c. Key-Part and Key-Site – identifying and protecting critical parts of equipment and anatomical sites from touch and contamination;
   d. Non-touch technique – the practice of not touching Key-Parts or Key-Sites during the procedure;
   e. Disinfection of Key-Part and Key-Site – appropriate disinfection to prevent the introduction of microorganisms; and
   f. Aseptic field management – identifying and protecting general, critical, and micro-critical aseptic fields:
      (1) General aseptic field – a decontaminated/disinfected procedure tray or single-use procedure kit used to promote asepsis;
      (2) Critical aseptic field – a sterile barrier or drape on which all decontaminated procedure equipment is placed and protected from contamination during the procedure; or
      (3) Micro-critical aseptic field – a small surface that is kept sterile and on which Key-Parts can be kept sterile during the procedure.
2. **Standard ANTT** – incorporates standard precautions and the protection of Key-Parts individually by using micro-critical aseptic fields within the general aseptic field. This approach is appropriate for procedures with short duration in which maintaining asepsis is straightforward. Non-sterile gloves may be worn unless direct contact with Key-Parts or Key-Sites is anticipated.
3. **Surgical ANTT** – combines standard precautions and the management of Key-Parts and Key-Sites collectively through the use of sterile drape(s) and barriers. This approach is used for invasive procedures that are complex and long in duration and/or where protecting Key-Sites and Key-Parts is difficult. Sterile gloves are worn.

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1. Clare SD and S Rowley. 2018. Implementing the Aseptic Non Touch Technique (ANTT®) clinical practice framework for aseptic technique: a pragmatic evaluation using a mixed methods approach in two London hospitals. *J Infect Prev*; 19(1): 6-15.

Principles of Sterile Technique

1. Sterile technique means keeping the designated area free from any type of contamination or microorganisms until procedure is completed. Sterile technique encompasses:
   a. Establishing and maintaining a sterile field throughout the procedure.
   b. Wearing a mask, sterile gloves, and possibly a gown or cap throughout the procedure.
   c. Removing equipment and supplies that come in sterile packaging and placing them on a sterile field in such a way that prevents contamination.
   d. Taking care not to cross-contaminate sterile objects (including gloves) with non-sterile objects.
   e. 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.
   f. Air drying sterile areas that have been cleaned (not waving or blowing over cleaned area).

Applying Aseptic and Sterile Technique to Intravenous Catheter Insertion and Care

1. Use Standard ANTT for simple procedures with a short duration, involving a few small Key-Parts that are easily protected using a Micro Critical Aseptic Field, including:
   a. peripheral IV catheter insertion;
   b. intravenous medication administration; and
   c. phlebotomy.
2. Use Surgical ANTT for complex, long procedures involving multiple Key-Parts, including:
   a. central vascular access device (CVAD) insertion; and
   b. CVAD exchange;
3. See *Disinfection of Catheter Insertion Site* and procedures in Chapter 5 for insertion and care of specific catheter types.

CATEGORIES OF TRANSMISSION-BASED PRECAUTIONS

Policy

Transmission-based precautions are initiated when a resident develops signs and symptoms of a transmissible infection; arrives for admission with symptoms of an infection; or has a laboratory confirmed infection; and is at risk of transmitting the infection to other residents.

General Guidelines

1. Standard precautions are used when caring for residents at all times, regardless of their suspected or confirmed infection status.
2. Transmission-based precautions are additional measures that protect staff, visitors, and other residents from becoming infected. These measures are determined by the specific pathogen and how it is spread from person to person. The three types of transmission-based precautions are contact, droplet and airborne.
3. The Centers for Disease Control and Prevention (CDC) maintains a list of diseases, modes of transmission and recommended precautions.
4. The facility makes every effort to use the least restrictive approach to managing individuals with potentially communicable infections. Transmission-based precautions are used only when the spread of infection cannot be reasonably prevented by less restrictive measures.
5. When a resident is placed on transmission-based precautions, appropriate notification is placed on the room entrance door and on the front of the chart so that personnel and visitors are aware of the need for and the type of precaution.
    a. The signage informs the staff of the type of CDC precaution(s), instructions for use of PPE, and/or instructions to see a nurse before entering the room.
    b. Signs and notifications comply with the resident's right to confidentiality or privacy.
6. When transmission-based precautions are in effect, non-critical resident-care equipment items such as a stethoscope, sphygmomanometer, or digital thermometer will be dedicated to a single resident (or cohort of residents) when possible.
    a. If re-use of items is necessary, then the items will be cleaned and disinfected according to current guidelines before use with another resident.

Contact Precautions

1. Contact precautions are implemented for residents known or suspected to be infected with microorganisms that can be transmitted by direct contact with the resident or indirect contact with environmental surfaces or resident-care items in the resident's environment.
2. Contact precautions are also used in situations when a resident is experiencing wound drainage, fecal incontinence or diarrhea, or other discharges from the body that cannot be contained and suggest an increased potential for extensive environmental contamination and risk of transmission of a pathogen, even before a specific organism has been identified.
3. Contact precautions are used for residents infected or colonized with MDROs in the following situations:
    a. When a resident has wounds, secretions, or excretions that are unable to be covered or contained; and
    b. On units or in facilities where, despite attempts to control the spread of the MDRO, ongoing transmission is occurring.
4. These strategies may differ depending on the prevalence or incidence of the MDRO in the facility and region. For example, additional usage of PPE (enhanced barrier precautions) may be used for residents who do not meet criteria for contact precautions but are infected or colonized with MDROs (or have risk factors for MDRO acquisition).

5. The decision on whether contact precautions are necessary are evaluated on a case by case basis.
6. The individual on contact precautions is placed in a private room if possible. If a private room is not available, the infection preventionist will assess various risks associated with other resident placement options (e.g., cohorting, placing with a low risk roommate).
7. Staff and visitors wear gloves (clean, non-sterile) when entering the room.
    a. While caring for a resident, staff will change gloves after having contact with infective material (for example, fecal material and wound drainage).
    b. Gloves are removed and hand hygiene performed before leaving the room.
    c. Staff avoid touching potentially contaminated environmental surfaces or items in the resident's room after gloves are removed.
8. Staff and visitors wear a disposable gown upon entering the room and remove before leaving the room and avoid touching potentially contaminated surfaces with clothing after gown is removed.
9. When transporting individuals with skin lesions, excretions, secretions, or drainage that is difficult to contain, contact precautions are taken during resident transport to minimize the risk of transmission.

Droplet Precautions

1. Droplet precautions are implemented for an individual documented or suspected to be infected with microorganisms transmitted by droplets (large-particle droplets [larger than 5 microns in size] that can be generated by the individual coughing, sneezing, talking, or by the performance of procedures such as suctioning).
2. Residents on droplet precautions are placed in a private room if possible.
    a. When a private room is not available, residents may share a room with a resident infected with the same microorganism or with limited risk factors.
    b. When a private room is not available and cohorting is not achievable, decisions regarding resident placement are made on a case-by-case basis after considering infection risks to other residents in the room and available alternatives.
    c. Special air handling and ventilation are unnecessary and the door to the room may remain open.
3. Masks are worn when entering the room.
4. Gloves, gown, and goggles are worn if there is risk of spraying respiratory secretions.
5. Resident Transport.
    a. A mask is placed on the resident during transport from his or her room. The resident is encouraged to follow respiratory hygiene/cough etiquette to minimize dispersal of droplets.
    b. If the resident can tolerate a mask and control respiratory secretions, some activities outside the room may be acceptable.

Airborne Precautions

1. Airborne precautions are indicated when an individual is infected with a pathogen that is very small (5 microns or smaller in size) and can be transmitted long distances through the air.
2. Preventing the spread of airborne pathogens requires a room with special air handling and ventilation called an airborne infection isolation room (AIIR).
3. If an AIIR is not available, a resident suspected of having an airborne infectious disease shall be masked and transported to a facility with an AIIR.
4. Any individuals who enter the room of a resident placed on airborne precautions must wear approved respiratory protection.
5. A resident on airborne precautions will wear a mask when leaving the room or coming into contact with others. Depending on the organism, a special filtration mask may be necessary.
6. If the resident is transported to another unit within the facility or to another facility, the infection preventionist (or designee) will notify the unit or facility of the type of precautions the resident

is on and the resident's suspected or confirmed type of infection. The facility is also responsible for notifying transport staff of residents that require special care due to infectious conditions.

CLEANING AND DISINFECTION OF ENVIRONMENTAL SURFACES

Policy

Environmental surfaces will be cleaned and disinfected according to current CDC recommendations for disinfection of healthcare facilities and the OSHA Bloodborne Pathogens Standard.

General Guidelines

1. The following categories are used to distinguish the levels of sterilization/disinfection necessary for items used in resident care and those in the resident's environment:
   a. **Critical items** consist of items that carry a high risk of infection if contaminated with any microorganism. Objects that enter sterile tissue (e.g., urinary catheters) or the vascular system (e.g., intravenous catheters) are considered critical items and must be sterile.
   b. **Semi-critical items** consist of items that may come in contact with mucous membranes or non-intact skin (e.g., respiratory therapy equipment). Such devices should be free from all microorganisms, although small numbers of bacterial spores are permissible. (Note: Some items that may come in contact with non-intact skin for a brief period of time (e.g., hydrotherapy tanks, bed side rails) are usually considered non-critical surfaces and are disinfected with intermediate-level disinfectants.)
   c. **Non-critical items** are those that come in contact with intact skin but not mucous membranes.
      (1) Non-critical environmental surfaces include bed rails, some food utensils, bedside tables, furniture, and floors.
      (2) Most non-critical items can be decontaminated where they are used (as opposed to being transported to a central processing location).
2. Non-critical surfaces will be disinfected with an EPA-registered intermediate or low-level hospital disinfectant according to the label's safety precautions and use directions.
   a. Most EPA-registered hospital disinfectants have a label contact time of 10 minutes.
   b. By law, all applicable label instructions on EPA-registered products must be followed.
3. Devices that are used by staff but not in direct contact with residents (e.g., computer keyboards, PDAs, etc.) shall be cleaned and disinfected regularly (according to facility schedule) by the environmental services staff and as needed by the nursing staff.
4. Clean and disinfect DME (e.g. intravenous [IV] poles, flow control devices [IV pumps], vascular visualization devices) using an appropriate disinfectant (e.g. Environmental Protection Agency [EPA]-registered disinfectant) before and after each use.
   a. Develop organizational procedures based upon manufacturer's instructions for cleaning and disinfection.
   b. Maintain separation between clean and soiled equipment to prevent cross contamination.

CLEANING AND DISINFECTION OF RESIDENT-CARE ITEMS AND EQUIPMENT

Policy

Resident-care equipment, including reusable items and durable medical equipment will be cleaned and disinfected according to current CDC recommendations for disinfection and the OSHA Bloodborne Pathogens Standard. Refer to facility policies and procedures.

General Guidelines

1. The Spaulding Classification System is used to distinguish the levels of sterilization/disinfection necessary for items used in resident care:
   a. **Critical items** consist of items that carry a high risk of infection if contaminated with any microorganism. Objects that enter sterile tissue (e.g., urinary catheters) or the vascular system (e.g., intravenous catheters) are considered critical items and must be sterile when used, based on acceptable sterilization procedures. Sterilization destroys all viable microorganisms to prevent disease transmission associated with the use of that item.
   b. **Semi-critical items** consist of items that may come in contact with mucous membranes or non-intact skin (e.g., respiratory therapy equipment). Such devices should be free from all microorganisms, although small numbers of bacterial spores are permissible. (Note: Some items that may come in contact with non-intact skin for a brief period of time [e.g., hydrotherapy tanks, bed side rails] are usually considered non-critical surfaces and are disinfected with intermediate-level disinfectants.)
   c. **Non-critical items** are those that come in contact with intact skin but not mucous membranes.
      (1) Non-critical resident-care items include bedpans, blood pressure cuffs, crutches, and computers.
      (2) Non-critical environmental surfaces include bed rails, bedside tables, etc.
      (3) Non-critical items require cleaning followed by either low- or intermediate-level disinfection following manufacturers' instructions. Disinfection is performed with an EPA-registered disinfectant labeled for use in healthcare settings. All applicable label instructions on EPA-registered disinfectant products are followed (e.g., use-dilution, shelf life, storage, material compatibility, safe use, and disposal).
         (a) Low-level disinfection is defined as the destruction of all vegetative bacteria (except tubercle bacilli) and most viruses, some fungi, but not bacterial spores. Examples of low-level disinfectants include EPA- registered hospital disinfectants with a HBV and HIV label claim. Low-level disinfection is generally appropriate for most non-critical equipment.
         (b) Intermediate-level disinfection is traditionally defined as destruction of all vegetative bacteria, including tubercle bacilli, lipid and some nonlipid viruses, and fungi, but not bacterial spores. EPA-registered hospital disinfectants with a tuberculocidal claim are intermediate-level disinfectants. Intermediate-level disinfection is considered for non-critical equipment that is visibly contaminated with blood. However, a low-level disinfectant with a label claim against HBV and HIV may also be used.
2. Intermediate and low-level disinfectants for non-critical items include:
   a. ethyl or isopropyl alcohol;
   b. sodium hypochlorite (5.25-6.15% diluted 1:500 or per manufacturer's instructions);
   c. phenolic germicidal detergents;
   d. iodophor germicidal detergents; and
   e. quaternary ammonium germicidal detergents (low-level disinfection only).
3. High-level disinfectants/liquid chemical sterilants are not used for disinfection of non-critical items.
4. Critical and semi-critical items are sterilized/disinfected in a central processing location and stored appropriately until use. Equipment to be processed will be labeled with at least the following information:
   a. That the equipment is contaminated;
   b. The address to which the equipment is to be shipped;
   c. The address from which the equipment was removed (including telephone number);
   d. The name of the person labeling the equipment; and

e. The date and time the label was affixed to the equipment.

5. **Reusable items** are cleaned and disinfected or sterilized between residents (e.g., stethoscopes, durable medical equipment).
   a. **Single resident-use items** are cleaned/disinfected between uses by a single resident and disposed of afterwards (e.g., bedpans, urinals).
6. Reusable resident care equipment is decontaminated and/or sterilized between residents according to manufacturers' instructions.
7. Only equipment that is designated reusable is used by more than one resident.
8. **Single-use items** are disposed of after a single use (e.g., thermometer probe covers).
   a. **Reprocessed single-use devices** are those that have been previously used by a resident and then subjected to additional processing (manufacturing) for the purpose of an additional single use on another resident. Use of reprocessed single-use devices is permitted if:
      (1) the device is reprocessed by a FDA-registered third party preprocessor; and
      (2) there is documentation from the third party processor indicating that it has been cleared by the FDA to reprocess the device.
9. Durable medical equipment (DME) is cleaned and disinfected before reuse by another resident.

CLEANING SPILLS AND SPLASHES OF BLOOD OR BODY FLUIDS

Policy

Environmental contamination and the possible spread of bloodborne infections 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. The facility shall have policy and procedures in place that address Bloodborne Pathogens, including educating staff of work practices, PPE, and ensuring competency is observed and documented for safety of staff and patients.
2. 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.
3. An appropriately trained and authorized individual shall clean and disinfect any surfaces or equipment contaminated with spills or splashes of blood or body fluids immediately/as soon as possible to prevent exposure.
4. 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.
5. 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.) CDC states required: Gown and/or plastic apron, reusable rubber gloves. Face mask with either goggles or face shield (if splash risk or large spill).
6. Perform hand hygiene as soon as practical after exposure to blood or body fluids.
7. The facility has established procedures governing the cleaning and disinfection of spills or splashes of blood or body fluids.
8. 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.
9. Do not pick up broken glass by hand. Use forceps, tongs, or brush and dustpan.
10. 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.

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. Use precautions when obtaining samples for blood cultures to avoid false-negative and false-positive results.
3. Verify with state nurse practice act for RN/LPN scope of practice for this procedure.

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. For multi-lumen CVADs, draw a separate sample from each lumen and label appropriately. The needleless connector must be removed prior to obtaining a sample for blood from a 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. See policy and procedure for removal of specific CVAD catheters.
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 without CVAD removal. Refer this situation to the provider for specific orders.

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. Some catheters cannot be removed at the bedside and must be surgically removed.
     (2) Recommend having 2 individuals present for this procedure.
     (3) Verify with state nurse practice act if LPN/RN with clinical competency is allowed to remove catheter.
     (4) Using sterile technique and supplies, remove catheter per policy and procedure, avoiding contact with surrounding skin and environment. Once removed, apply pressure with one hand and dressing on the exit site while holding the catheter with the other hand.
     (5) Have second person uncap culture container, making sure that cap and container stay sterile.
     (6) Place catheter tip into container, and using sterile scissors cut approximately 2 inches of catheter tip into container.
     (7) 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 with alcohol swab.
     (2) Insert sterile 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) Notify lab of sample obtained as it may require special handling or storage prior to pick up (i.e. refrigeration).
(3) Place labeled cultures in lab biohazard bag and send to lab.
(4) Discard used supplies in appropriate receptacle.
(5) Remove gloves. Perform hand hygeine.
(6) 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.

DISINFECTION OF DURABLE MEDICAL EQUIPMENT FOR INTRAVENOUS THERAPY

Policy

Durable medical equipment (DME) used for intravenous therapy (IV poles, pumps, vascular visualization devices, etc.) is cleaned and disinfected before and after each resident use. Note that Consonus Pharmacy cleans and calibrates IV pumps between uses.

General Guidelines

1. Clean and disinfect DME used for IV therapy:
   a. before and after each resident use;
   b. when visibly soiled;
   c. at least weekly when in use for a single resident; and
   d. at established intervals when not in use.
2. Disinfect DME used for IV therapy with high level germicides that are Environmental Protection Agency (EPA) registered and use in accordance with manufacturers' labeled use and directions.
3. Do not use disinfection solutions that could alter the integrity or performance of the equipment. Check equipment manufacturer's manual for acceptable products.
4. Use standard precautions when handling DME.
5. Separate clean and soiled equipment to prevent cross-contamination.

ENHANCED BARRIER PRECAUTIONS

Policy

Enhanced barrier precautions (EBPs) are utilized to prevent the spread of multi-drug resistant organisms (MDROs) to residents.

General Guidelines

1. Enhanced barrier precautions (EBPs) are a specific strategy used in SNFs as an infection prevention and control intervention to reduce the spread of multi-drug resistant organisms (MDROs) to residents when performing resident care activities that are deemed high-contact (creating opportunities for transfer of MDROs to staff hands and clothing).
2. Refer to Facility Policies and Procedures and follow CDC recommendations for EBPs.
3. EBPs employ targeted gown and glove use during high contact resident care activities when contact precautions do not otherwise apply.
    a. Gloves and gown are applied prior to performing the high contact resident care activity (as opposed to before entering the room).
    b. Personal protective equipment (PPE) is changed before caring for another resident.
    c. Face protection may be used if there is also a risk of splash or spray.
4. Examples of high-contact resident care activities requiring the use of gown and gloves for EBPs include:
    a. dressing;
    b. bathing/showering;
    c. transferring;
    d. providing hygiene;
    e. changing linens;
    f. changing briefs or assisting with toileting;
    g. device care or use (central line, urinary catheter, feeding tube, tracheostomy/ventilator, etc.); and
    h. wound care (any skin opening requiring a dressing).
5. EBPs are indicated (when contact precautions do not otherwise apply) for residents infected or colonized with the following:
    a. Pan-resistant organisms;
    b. Carbapenemase-producing carbapenem-resistant Enterobacterales;
    c. Carbapenemase-producing carbapenem-resistant *Pseudomonas* spp;
    d. Carbapenemase-producing carbapenem-resistant *Acinetobacter baumannii*;
    e. *Candida auris*;
    f. Methicillin-resistant *Staphylococcus aureus (MRSA)*;
    g. ESBL-producing Enterobacterales;
    h. Vancomycin-resistant *Enterococci (VRE)*;
    i. Multidrug-resistant *Pseudomonas aeruginosa*; and
    j. Drug-resistant *Streptococcus pneumonia*.
6. EBPs are indicated (when contact precautions do not otherwise apply) for residents with wounds and/or indwelling medical devices regardless of MDRO colonization.
7. EBPs remain in place for the duration of the resident's stay or until resolution of the wound or discontinuation of the indwelling medical device that places them at increased risk.
8. The use of EBPs does not impose limitations on group activities or room restrictions for residents.
9. Standard precautions apply to the care of all residents regardless of suspected or confirmed infection or colonization status.
10. Staff are trained prior to caring for residents on EBPs.

11. Signs are posted in the door or wall outside the resident room indicating the type of precautions and PPE required.
12. PPE is available outside of the resident rooms.
13. Residents, families, and visitors are notified of the implementation of EBPs throughout the facility.

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. Aseptic non-touch technique (ANTT) is applied to all infusion related procedures including vascular access device insertion , management, and administration of infusion medications and fluids.

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
   c. Knowledge and ability to identify potential IV related complications with proper intervention and notifications.; and
   d. 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 and which are allowed per their licensure and state board of nursing regulations.
3. Aseptic technique shall be observed at all times when working with IV equipment.
4. All infusion supplies shall be sterile when first opened. At all times supplies shall remain aseptic. If any become contaminated, they 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;
   d. Improper insertion technique or IV catheter management; and
   e. 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. Palpation of the insertion site should not be performed after the application of an antiseptic. In the event that direct touch is necessary after site disinfection, then sterile gloves must be applied.

Other Strategies to Prevent Catheter-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 any IV-related complication, 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 short peripheral catheters, 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 and proper flushing management based on use.

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.

HANDWASHING/HAND HYGIENE AND DISPOSABLE GLOVE USE

Policy

This facility considers hand hygiene the primary means to prevent the spread of infections. Healthcare personnel to perform hand hygiene according to current CDC recommendations.

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, disposable paper 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* (alcohol-based hand rub does not effectively kill these organisms).
7. Use an alcohol-based hand rub containing at least 60% ethanol or 70% isopropyl 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 and is prohibited among those caring for severely ill or immunocompromised residents. The infection preventionist maintains the right to request the removal of artificial fingernails at any time if he or she determines that they present an unusual infection control risk.

Equipment and Supplies

1. The following equipment and supplies are necessary for hand hygiene:
    a. Running water;
    b. Soap (liquid; anti-microbial or non-antimicrobial);
    c. Disposable paper towels;
    d. Trash can;
    e. Or, alcohol-based hand rub containing at least 60% ethanol or 70% isopropyl alcohol (if using for hand hygiene);
    f. Non-sterile gloves.

Procedure

Washing Hands

1. Wet hands first with water, then apply an amount of product recommended by the manufacturer to hands.
2. Rub hands together vigorously for at least 15 seconds (at least 15 seconds per CDC or according to facility policy and procedure. Other entities may state 20 seconds and either time is acceptable per CDC) , covering all surfaces of the hands and fingers.
3. Rinse hands with water and dry thoroughly with a disposable towel.
4. Use towel to turn off the faucet.
5. Avoid using hot water because repeated exposure to hot water may increase the risk of dermatitis.

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 (approximately 20 seconds).
3. Follow manufacturers' directions for volume of product to use.

Applying and Removing Gloves

1. Wear gloves according to Standard Precautions. Gloves are not a replacement for proper hand hygiene nor shall multiple gloves be placed on at one time to avoid hand hygiene between tasks.
2. Perform hand hygiene before applying non-sterile gloves.
3. When applying, remove one glove from the dispensing box at a time, touching only the top of the cuff.
4. Gloves should be removed if torn or damaged during use and proper hand hygiene to occur prior to donning a new pair of gloves. Gloves are to be removed if moving from one soiled site of the body to a clean site of the same body to another to avoid cross-contamination followed with proper hand hygiene. Never use the same pair of gloves from one patient to another.

5. When removing gloves, pinch the glove at the wrist and peel away from the hand, turning the glove inside out.
6. 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.
7. Perform hand hygiene.

LATEX ALLERGIES

Policy

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

General Guidelines

1. Latex exposure is minimized or eliminated among latex-sensitive individuals.
2. Staff are screened for latex allergy upon hire.
3. Residents are assessed for latex allergy upon admission.
4. Document this allergy in the medical record. To note: Fruit allergies can create cross-reactions with latex including but not limited to citrus fruits, bananas, mangoes, chestnuts, pears, avocados, or other tropical fruits such as pineapple.
5. The facility is responsible for providing latex-free supplies to residents or staff with latex sensitivity.
6. The director of nursing maintains current 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.
7. Allergic reactions are reported to OSHA and the Food and Drug Administration (FDA), as required.
8. Staff and resident education are available concerning latex allergies.
9. The pharmacy is available to help facility staff identify any products that may contain latex (such as rubber lids on tops of bottles).

MULTIDRUG-RESISTANT ORGANISMS

Policy

Appropriate precautions are taken when caring for individuals known or suspected to have infection with a multidrug-resistant organism.

General Guidelines

1. Multidrug-resistant organisms (MDROs) are bacteria and other microorganisms that have developed resistance to one or more classes of antimicrobial drugs.
2. 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 Prevention and Control of MDROs

The following strategies are adopted from the Centers for Disease Control and Prevention and provide current recommendations for MDRO prevention and control. These recommendations are incorporated into the facility infection prevention and control processes as indicated.

1. Administrative
   a. Make MDRO prevention/control an organizational priority.
   b. Provide administrative support and both fiscal and human resources to prevent and control MDRO transmission.
   c. Identify experts who can provide consultation and expertise for analyzing epidemiologic data, recognizing MDRO problems, or devising effective control strategies, as needed.
   d. Implement systems to communicate information about reportable MDROs to administrative personnel and state/local health departments.
   e. Implement a multi-disciplinary process to monitor and improve staff adherence to recommended practices for standard and contact precautions.
   f. Implement systems to designate residents known to be colonized or infected with a targeted MDRO and to notify receiving healthcare facilities or personnel prior to transfer of such residents within or between facilities.
   g. Support participation in local, regional and/or national coalitions to combat emerging or growing MDRO problems.
   h. Provide updated feedback at least annually to healthcare providers and administrators on facility and resident- care unit MDRO infections. Include information on changes in prevalence and incidence, problem assessment and performance improvement plans.
2. Education/Training
   a. Provide education and training on risks and prevention of MDRO transmission during orientation and periodic educational updates for staff. Include information on organizational experience with MDROs and prevention strategies.
3. Antimicrobial Use
   a. Ensure that a multi-disciplinary process is in place to review local susceptibility patterns (antibiograms), and antimicrobial agents included in the formulary, to foster appropriate antimicrobial use.
   b. Implement systems (e.g., CPOE, susceptibility report comment, pharmacy, or unit director notification) to prompt clinicians to use the appropriate agent and regimen for the given clinical situation.
   c. Provide clinicians with antimicrobial susceptibility reports and analysis of current trends, updated at least annually, to guide antimicrobial prescribing practices.
   d. In settings with limited electronic communication system infrastructures to implement physician prompts, etc., at a minimum implement a process to review antibiotic use. Prepare and distribute reports to providers.

4. Surveillance
   a. Use standardized laboratory methods and follow published guidelines for determining antimicrobial susceptibilities of targeted and emerging MDROs.
   b. Establish systems to ensure that clinical micro labs (in-house and outsourced) promptly notify infection control or a medical director/designee when a novel resistance pattern for that facility is detected.
   c. Develop and implement laboratory protocols for storing isolates of selected MDROs for molecular typing when needed to confirm transmission or delineate epidemiology of MDRO in facility.
   d. Establish laboratory-based systems to detect and communicate evidence of MDROs in clinical isolates.
   e. Prepare facility-specific antimicrobial susceptibility reports as recommended by CLSI and monitor reports for evidence of changing resistance that may indicate emergence or transmission of MDROs.
   f. Develop and monitor special-care unit-specific antimicrobial susceptibility reports (e.g., ventilator-dependent units, ICUs, oncology units).
   g. Monitor trends in incidence of target MDROs in the facility over time to determine if MDRO rates are decreasing or if additional interventions are needed.
5. Infection Precautions
   a. Follow standard precautions in all situations.
   b. Consider the individual resident's clinical situation and facility resources in deciding whether to implement contact precautions.
   c. Masks are not recommended for routine use to prevent transmission of MDROs from residents to HCWs.
   d. Use masks according to standard precautions when performing splash-generating procedures, caring for residents with open tracheostomies with potential for projectile secretions, and when there is evidence for transmission from heavily colonized sources (e.g., burn wounds).
6. Room Placement
   a. When single-resident rooms are available, assign priority for these rooms to residents with known or suspected MDRO colonization or infection.
   b. Give highest priority to those residents who have conditions that may facilitate transmission, e.g., uncontained secretions or excretions.
   c. When single-resident rooms are not available, cohort residents with the same MDRO in the same room or resident-care area.
   d. When cohorting residents with the same MDRO is not possible, place MDRO residents in rooms with residents who are at low risk for acquisition of MDROs and associated adverse outcomes from infection and are likely to have short lengths of stay.
7. Environmental Cleaning
   a. Follow recommended cleaning, disinfection, and sterilization guidelines for maintaining resident care areas and equipment.
   b. Dedicate non-critical medical items to use on individual residents known to be infected or colonized with an MDRO. Prioritize room cleaning of residents on contact precautions. Focus on cleaning and disinfecting frequently touched surfaces (e.g., bed rails, bedside commodes, bathroom fixtures in resident rooms, doorknobs) and equipment in immediate vicinity of resident.
8. Decolonization
   a. Routine decolonization of residents is not recommended.

Intensified Interventions to Prevent MDRO Transmission

1. Indications and Approach
   a. Indications for intensified MDRO control efforts:
      (1) When incidence or prevalence of MDROs are not decreasing despite implementation of and correct adherence to the routine control measures described above; or
   b. When the first case or outbreak of an epidemiologically important MDRO (e.g., VRE, MRSA, VISA, VRSA, MDR-GNB) is identified within a healthcare facility or unit.

c. Indications for intensified MDRO control efforts should result in selection and implementation of one or more of the interventions/measures described below. Individualize the selection of control measures according to local considerations.

d. Continue to monitor the incidence of target MDRO infection and colonization after additional interventions are implemented. If rates do not decrease, implement more interventions as needed to reduce MDRO transmission.

2. Administrative Measures

a. Identify persons with experience in infection control and the epidemiology of MDRO, either in house or through outside consultation, for assessment of the local MDRO problem and for the design, implementation, and evaluation of appropriate control measures.

b. Provide necessary leadership, funding, and day-to-day oversight to implement interventions selected. Involve the governing body and leadership of the healthcare facility or system that have organizational responsibility for this and other infection control efforts.

c. Evaluate healthcare system factors for their role in creating or perpetuating transmission of MDROs, including: staffing levels, education and training, availability of consumable and durable resources, communication processes, policies and procedures, and adherence to recommended infection control measures (e.g., hand hygiene and standard or contact precautions). Develop, implement, and monitor action plans to correct system failures.

d. During the process, update healthcare providers and administrators on the progress and effectiveness of the intensified interventions. Include information on changes in prevalence, rates of infection and colonization; results of assessments and corrective actions for system failures; degrees of adherence to recommended practices; and action plans to improve adherence to recommended infection control practices to prevent MDRO transmission.

3. Educational Interventions

a. Intensify the frequency of MDRO educational programs for healthcare personnel, especially those who work in areas in which MDRO rates are not decreasing. Provide individual or unit-specific feedback when available.

4. Antimicrobial Use

a. Review the role of antimicrobial use in perpetuating the MDRO problem targeted for intensified intervention. Control and improve antimicrobial use as indicated. Antimicrobial agents that may be targeted include vancomycin, third-generation cephalosporins, and anti-anaerobic agents for VRE; third-generation cephalosporins for ESBLs; and quinolones and carbapenems.

5. Surveillance

a. Calculate and analyze prevalence and incidence rates of targeted MDRO infection and colonization in populations at risk. When possible, distinguish colonization from infection.

b. Include only one isolate per resident, not multiple isolates from the same resident, when calculating rates.

c. Increase the frequency of compiling and monitoring antimicrobial susceptibility summary reports for a targeted MDRO as indicated by an increase in incidence of infection or colonization with that MDRO.

d. Develop and implement protocols to obtain active surveillance cultures (ASC) for targeted MDROs from residents in populations at risk (e.g., patients in intensive care, burn, bone marrow/stem cell transplant, and oncology units; residents transferred from facilities known to have high MDRO prevalence rates; roommates of colonized or infected persons; and residents known to have been previously infected or colonized with an MDRO).

e. Obtain ASC from areas of skin breakdown and draining wounds. In addition, include the following sites according to target MDROs:

(1) For MRSA: Sampling the anterior nares is usually sufficient. Throat, endotracheal tube aspirate, percutaneous gastrostomy sites, and perirectal or perineal cultures may be added to increase the yield. Swabs from several sites may be placed in the same selective broth tube prior to transport.

(2) For VRE: Stool, rectal, or perirectal samples should be collected.

(3) For MDR-GNB (gram-negative bacilli): Endotracheal tube aspirates or sputum should be cultured if a respiratory tract reservoir is suspected (e.g., Acinetobacter spp., Burkholderia spp.).

f. Obtain surveillance cultures for the target MDRO from residents at the time of admission to high-risk areas, e.g., ICUs, and at periodic intervals as needed to assess MDRO transmission.

g. Conduct culture surveys to assess the efficacy of the enhanced MDRO control interventions.

h. Conduct serial (e.g., weekly, until transmission has ceased and then decreasing frequency) unit-specific point prevalence culture surveys of the target MDRO to determine if transmission has decreased or ceased.

i. Repeat point prevalence culture surveys at routine intervals or at time of resident discharge or transfer until transmission has ceased.

j. If indicated by assessment of the MDRO problem, collect cultures to assess the colonization status of roommates and other residents with substantial exposure to residents with known MDRO infection or colonization.

k. Obtain cultures of healthcare personnel for target MDRO when there is epidemiologic evidence implicating the healthcare staff member as a source of ongoing transmission.

Enhanced Infection Control Precautions

1. Use of Contact Precautions
   a. Implement contact precautions routinely for all residents colonized or infected with a target MDRO.
   b. Because environmental surfaces and medical equipment, especially those in close proximity to the resident, may be contaminated, don gowns and gloves before or upon entry to the resident's room or cubicle.
   c. Modify contact precautions to allow MDRO colonized/infected residents whose site of colonization or infection can be appropriately contained and who can observe good hand hygiene practices to enter common areas and participate in group activities.
   d. When ASC are obtained as part of an intensified MDRO control program, implement contact precautions until the surveillance culture is reported negative for the target MDRO.
   e. No recommendation is made regarding universal use of gloves, gowns, or both in high-risk units in acute-care hospitals.
2. Resident Admission and Room Placement
   a. Place MDRO residents in single-resident rooms.
   b. Cohort residents with the same MDRO in designated areas (e.g., rooms, bays, resident care areas).
   c. When transmission continues despite adherence to standard and contact precautions and cohorting residents, assign dedicated nursing and ancillary service staff to the care of MDRO residents only. Some facilities may consider this option when intensified measures are first implemented.
   d. Stop new admissions to the unit of facility if transmission continues despite the implementation of the enhanced control measures described above. (Refer to state or local regulations that may apply upon closure of units or services.)
3. Enhanced Environmental Measures
   a. Implement resident-dedicated or single-use disposable noncritical equipment (e.g., blood pressure cuff, stethoscope), instruments and devices.
   b. Intensify and reinforce training of environmental staff who work in areas targeted for intensified MDRO control and monitor adherence to environmental cleaning policies. Some facilities may choose to assign dedicated staff to targeted resident care areas to enhance consistency of proper environmental cleaning and disinfection services.
   c. Monitor (i.e., supervise and inspect) cleaning performance to ensure consistent cleaning and disinfection of surfaces in close proximity to the resident and those likely to be touched by the resident and staff (e.g., bedrails, carts, bedside commodes, doorknobs, faucet handles).
   d. Obtain environmental cultures (e.g., surfaces, shared medical equipment) when there is epidemiologic evidence that an environmental source is associated with ongoing transmission of the targeted MDRO.
   e. Vacate units for environmental assessment and intensive cleaning when previous efforts to eliminate environmental reservoirs have failed.
4. Decolonization
   a. Consult with physicians with expertise in infectious diseases and/or healthcare epidemiology on a case-by-case basis regarding the appropriate use of decolonization therapy for residents or staff during limited periods of time, as a component of an intensified MRSA control program.
   b. When decolonization for MRSA is used, susceptibility testing for the decolonizing agent against the target organism in the individual being treated or the MDRO strain that is epidemiologically implicated in transmission. Monitor susceptibility to detect emergence of resistance to the decolonizing agent. Consult

with a microbiologist for appropriate testing for mupirocin resistance, since standards have not been established.

(1) Because mupirocin-resistant strains may emerge and because it is unusual to eradicate MRSA when multiple body sites are colonized, do not use topical mupirocin routinely for MRSA decolonization of residents as a component of MRSA control programs in any healthcare setting.

(2) Limit decolonization of staff found to be colonized with MRSA to persons who have been epidemiologically linked as a likely source of ongoing transmission to residents. Consider reassignment of staff if decolonization is not successful and ongoing transmission to residents persists.

c. No recommendation can be made for decolonizing residents with VRE or MDR-GNB. Regimens and efficacy of decolonization protocols for VRE and MDR-GNB have not been established.

Novel or Targeted MDROs

1. Strategies to identify targeted MDROs include:
   a. surveillance of clinical cultures (retrospective and prospective) to identify organisms with patterns of resistance;
   b. additional follow-up testing of saved isolates with certain resistance phenotypes; and
   c. periodic point prevalence surveys on high-risk units.
2. When a novel or emerging MDRO is identified (facility- or community-based), colonization screening and containment strategies are implemented.
3. Measures to control transmission are based on response tiers (Tier 1, 2, or 3 organisms) (see https://www.cdc.gov/hai/containment/guidelines.html) and include:
   a. investigation of the resident's healthcare exposure prior to and after the positive culture;
   b. contact investigation; and
   c. infection control measures.
4. The infection preventionist consults the health department for assignment of specific organisms to tiers.
5. For MDROs that are not identified as novel or emerging, the following precautions are implemented, as appropriate. Specific precautions indicated by organism are determined by the infection preventionist.

Table 1: Response Recommendations for Containment of Novel or Targeted MDROs by Tier

Description	Tier 1	Tier 2	Tier 3
Healthcare Investigation			
Review the resident's healthcare exposures prior to and after the positive culture	Always	Always	Always
Contact Investigation			
Screening of healthcare roommates	Always	Always	Always
Broader screening of healthcare contacts	Always	Sometimes	Sometimes
Prospective lab surveillance	Always	Always	Always
Retrospective lab surveillance	Always	Always	Sometimes
Household contact screening	Sometimes	Rarely	Rarely
Environmental sampling	Sometimes	Rarely	Rarely
Healthcare personnel screening	Sometimes	Rarely	Rarely
Evaluate potential spread to healthcare facilities that regularly share residents with the index healthcare facility	Sometimes	Sometimes	Rarely
Infection Control Measures			
Prompt notification of healthcare providers and resident and implementation of appropriate transmission-based precautions	Always	Always	Always
Clear communication of resident status with transferring facilities	Always	Always	Always
On-site infection control assessment with observations of practice	Always	Always	Sometimes

Tier 1 – Resistance mechanisms never or very rarely identified in the United States; pan-resistant organisms with the potential for wider spread in a region
Tier 2 – Mechanisms and organisms not regularly found in a region
Tier 3 – Mechanisms and organisms regularly found in a region but not endemic

NEEDLE HANDLING AND/OR DISPOSAL

Policy

To guide the safe handling and disposal of used needles based on laws, rules, and regulations established and as defined in facility policy and procedures. Facility to provide safety engineered devices as part of Workplace Safety and QI program. In addition, the facility must provide education as part of new hire and conduct ongoing competency reviews.

Objectives

To reduce needlestick injuries associated with intravenous insertions, parenteral injections, VAD's, and blood sampling procedures, and exposure to bloodborne infections through contact with blood or tissues.

Equipment and Supplies

1. Sharps container that is closable, leakproof, tamperproof, puncture resistant, and identified with proper labeling as biohazard collection container which is easily accessible;
2. Gloves (as indicated); and
3. Other as necessary or appropriate.

Procedure

1. After using a single-use safety-engineered device, engage the safety mechanism as directed per manufacture of product, and dispose directly into a sharps container that is in immediate vicinity.
2. Do not bend, break, or cut needles. When the disposal container is three-quarter filled or at fill line, seal the container and follow facility policy and procedures for management of sealed sharps containers.
3. Do not discard used or unused needles or other biohazard contaminated devices such as blood sampling tubing or tubes into trash receptacles.
4. Educate staff on the protocol for notification of needlestick injuries and exposure to bloodborne pathogens. Follow organizational protocol for post-exposure follow-up.

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.
4. Facility policy and procedures shall be in place in accordance with CDC standards of practice.

Equipment and Supplies

1. Protective eyewear (disposable or reusable);
2. Goggles (disposable or reusable);
3. Face shield (disposable or reusable); and
4. Masks (disposable).
5. Approved disinfectant product for reusable equipment - follow facility policies and procedures for disinfecting equipment based on manufacturer directions.

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. After use with designated patient, dispose of or disinfect eyewear/goggles/face shield, as applicable. Do not go from room to room with PPE to avoid cross-contamination.
4. Dispose of masks in a designated container.
5. Wash hands after removing the mask and eyewear.

PERSONAL PROTECTIVE EQUIPMENT - USING FACE MASKS

Policy

To guide the use of masks, Which may be disposable or a fit-tested, certified N-95 or higher respirator, if indicated.

Refer to facility policy and procedures.

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.

Equipment and Supplies

1. High-efficiency disposable masks; or
2. Fit-tested N-95, if applicable, and
3. Eyewear (e.g., goggles). (Note: When the use of a mask is indicated, appropriate eyewear will also be worn.)

Miscellaneous

1. Perform hand hygiene then place appropriate mask on prior to entering room.
2. A proper fitting mask is vital to ensuring protection for the staff and the patient. There should be no gaps around the nose or sides of mask. For fit-tested masks, seek facility assistance to ensure proper fit, especially for staff with facial hair.
3. Be sure that face mask covers the nose and mouth while performing treatment or services for the resident.
4. If the face mask becomes wet, change it. Masks become ineffective when moist.
5. Do not hang the face mask around the neck.
6. Before changing a face mask, wash hands.
7. Do not remove the mask while performing treatment or services for the resident.
8. Use a mask only once and then discard it.
9. Handle mask only by the strings (ties).
10. Never touch the mask while it is in use.
11. Follow established hand hygiene 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.
4. Or when facility or regulatory agencies deem wearing a mask is required.

Procedure

1. Follow facility policy and procedures in accordance with CDC Recommendations for their setting and potential exposure risks.

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. Perform hand hygiene 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 appropriate to the task. (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 on a clean, dry surface. Do not touch the gloves.
4. With one hand, using only thumb and index finger, grasp the folded cuff edge of the glove. Insert the opposite hand into the glove. Leave the cuff turned down.
5. Pick up the remaining glove by sliding gloved hand under the cuff. In a single step, slip the 2nd glove onto the ungloved hand. Do not touch any other surface.
6. Adjust the fingers for proper fit, then unfold the first cuff by placing fingers of the other hand inside the cuff fold. The gloved hands are now considered sterile and must only touch appropriate areas.

Removing Gloves

1. Using one hand, pull the cuff down over the opposite hand turning the glove inside-out. Avoid touching the wrist. Once removed, keep the gathered glove in the palm of the remaining gloved hand.
2. With the ungloved hand, slide an ungloved finger or thumb under the cuff of the remaining glove. Peel the glove off inside-out over the previously removed glove which now has created a containment of the used gloves.
3. Discard the glove into the designated waste receptacle inside the room.
4. Discard any waste per OSHA, CDC, or facility policy.
5. Perform hand hygiene.

PERSONAL PROTECTIVE EQUIPMENT - USING GOWNS

Policy

To guide the use of gowns. Refer to current CDC guidelines and standards of practice.

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 on to 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. The procedure for donning and doffing PPE should be tailored to the specific task and type of PPE. Typical sequence for donning PPE is gown, mask or respirator, goggles, or face shield, then gloves.
2. Typical sequence for doffing PPE is gloves, goggles or face shield, gown, then mask or respirator. *Remove all PPE before exiting the patient room except a respirator, if worn. Remove the respirator after leaving the patient room and closing the door (per CDC).
3. Do not reuse gowns, even for repeated contacts with the same patient (per CDC).
4. Clean reusable or disposable gowns may be worn in most circumstances.
5. Use gowns only when indicated or as instructed.
6. Follow established handwashing procedures.
7. Reusable gowns shall be laundered after each use in accordance with established laundry procedures.
8. When use of a gown is indicated, all staff must put on the gown before treating or touching the resident.
9. Gowns shall be large enough to cover all of the wearer's clothing, and they must be tightly cuffed at the sleeves.
10. After completing the treatment or procedure, gowns must be discarded in the appropriate container located in the room.
11. 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.
12. Soiled gowns must not be worn in break rooms, lobbies, or into any area in which contamination of equipment is likely to occur.

Procedure (Recommend following CDC recommendations - https://www.cdc.gov/hai/pdfs/ppe/ppe-sequence.pdf)

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. Perform hand hygiene.
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. Do not hang gowns for later use.
7. Perform hand hygiene.
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. Perform hand hygiene.

STANDARD PRECAUTIONS

Policy

Standard precautions are used in all the care of all residents regardless of their diagnoses, or suspected or confirmed infection status. Standard precautions presume that all blood, body fluids, secretions, and excretions (except sweat), non-intact skin and mucous membranes may contain transmissible infectious agents.

General Guidelines

1. Standard precautions apply to the care of all residents in all situations regardless of suspected or confirmed presence of infectious diseases.
2. Personnel are trained in the various aspects of standard precautions to ensure appropriate decision-making in various clinical situations.
3. Residents and family members are provided with information pertaining to standard precautions and the prevention of infection upon the resident's admission to the facility.
4. Visitors are reminded and encouraged to maintain hand hygiene and follow instructions regarding infection prevention and control while in the facility.

Standard Precautions

1. Hand hygiene, a major component of standard precautions
   a. Hand hygiene refers to handwashing with soap (anti-microbial or non-antimicrobial) or the use of alcohol-based hand rub (ABHR) containing at least 60% ethanol or 70% isopropyl alcohol, which does not require access to water.
   b. Hand hygiene is performed with *ABHR* or *soap and water*:
      (1) before and after contact with the resident;
      (2) before performing an aseptic task;
      (3) before moving from work on a soiled body site to a clean body site on the same resident;
      (4) after contact with items in the resident's room; and
      (5) after removing gloves.
   c. Hands are washed with soap and water:
      (1) when visibly soiled with dirt, blood, or body fluids;
      (2) after contact with blood, body fluids, or contaminated surfaces;
      (3) after caring for a resident with *C. difficile* infection;
      (4) in general if rates of *C. difficile* infection are high;
      (5) after caring for a resident with norovirus infection during an outbreak; and
      (6) before eating and after using the restroom.
   d. Except as noted above, ABHR is preferred for hand hygiene.
   e. Sinks, soap, water, disposable towels and ABHR are available to personnel and visitors in readily accessible and visible locations throughout the facility.
   f. Artificial fingernails are discouraged among staff with direct resident contact.
   g. Personnel assist the residents with hand hygiene before meals, after toileting and when indicated.
   h. Proper hand washing technique is described in the hand washing/hand hygiene policy and procedure.
2. Gloves
   a. Gloves (clean, non-sterile) are worn when in direct contact with blood, body fluids, mucous membranes, non-intact skin, and other potentially infected material.
   b. Gloves are worn when in direct contact with a resident who is infected or colonized with organisms that are transmitted by direct contact. (For specific pathogens, refer to current CDC isolation precautions guidelines.)
   c. Gloves are worn when handling or touching resident-care equipment that is visibly soiled or potentially contaminated with blood, body fluids, or infectious organisms.
   d. Gloves are changed and hand hygiene performed before moving from a contaminated-body site to

a clean- body site during resident care.

e. Gloves with fit and durability appropriate to the task are available to personnel at all times.

f. Gloves are not to be reused and are single use only for 1 resident. Do not alter disposable gloves in any way (i.e. removing a portion of the glove such as the index finger to palpate a vein)..

g. Gloves are removed promptly after use, before touching non-contaminated items and environmental surfaces, and before going to another resident.

h. After gloves are removed, hands are washed immediately to avoid transfer of microorganisms to other residents or environments.

3. Masks, Eye Protection, Face Shields

   a. Mask and eye protection or a face shield are worn to protect mucous membranes of the eyes, nose, and mouth during procedures that are likely to contaminate mucous membranes and during resident-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

   b. Mouthpieces, resuscitation bags, or other ventilation devices are used as an alternative to mouth-to-mouth resuscitation methods in areas where the need for resuscitation is predictable.

4. Gowns

   a. Gowns are worn for direct resident contact if the resident has uncontained secretions or excretions.

   b. Gowns (clean, non-sterile) are worn to protect skin and prevent soiling of clothing during procedures and resident care activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions or cause soiling of clothing.

   c. Gowns that are appropriate to the task are available to personnel at all times.

   d. Soiled gowns are removed as promptly as possible and hands washed to avoid transfer of microorganisms to other residents or environments.

   e. Gowns may be disposable or some fabric gowns are can be appropriately laundered after use. Once a gown is donned, it cannot be reused for another resident or instance. Therefore, the disposable gown must be properly removed and disposed of and if a fabric gown was worn, it must be properly removed and placed into a designated laundry container. Refer to facility policy and procedures.

5. Resident-Care Equipment

   a. Resident-care equipment soiled with blood, body fluids, secretions, and excretions are handled in a manner that prevents skin and mucous membrane exposure, contamination of clothing, and transfer of microorganisms to other residents and environments.

   b. Reusable equipment is not used for the care of more than one resident until it has been appropriately cleaned and reprocessed.

   c. Single use items are properly discarded.

6. Environmental Infection Control

   a. Environmental surfaces, beds, bedside equipment, and other frequently touched surfaces are appropriately cleaned using an EPA approved disinfecting cleaner. Refer to facility policy and procedures for further details.

7. Linen

   a. Linen soiled with blood, body fluids, secretions, excretions are handled and processed in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and avoids transfer of microorganisms to other residents and environments.

8. Safe Needle Handling

   a. Used needles are never recapped or otherwise manipulated using two hands, or any other technique that involves directing the point of a needle toward any part of the body.

   b. Used needles are not removed from disposable syringes by hand, and not bent, broken, or otherwise manipulated by hand.

   c. Used disposable syringes and needles, scalpel blades, and other sharp items are placed in appropriate puncture-resistant containers located as close as practicable to the area in which the items were used.

9. Safe Injection Practices – The following principles are applied to the use of needles, cannulas that replace needles, and intravenous delivery systems:

   a. Always use aseptic technique when handling injection equipment.

   b. Never re-use syringes, even if the needle or cannula on the syringe is changed.

c. Use IV administration sets for one resident only and dispose of appropriately after use.

d. Do not use bags of IV solution as a common source for multiple residents.

e. Use single-dose vials for parenteral medications.

f. Do not administer medications from single-dose vials to multiple residents.

g. If multi-dose vials are used, both the cannula and the syringe used to access the vial must be sterile. Discard if the sterility of the vial is compromised.

10. Respiratory Hygiene/Cough Etiquette – The following measures are implemented to contain respiratory secretions in residents, staff, and visitors at the point of initial entry into the facility: The facility may have their own internal policy and procedures which may be referred to.

a. Signs are posted at entrances in strategic places with instructions to residents, staff, and visitors to cover their mouths and noses when coughing or sneezing; use and dispose of tissues; and perform hand hygiene after hands have been in contact with respiratory secretions.

b. Tissues and no-touch (e.g., foot-pedal operated) trash receptacles are available for the disposal of tissues.

c. Written materials and reminders regarding effective hand hygiene practices are posted in the facility.

d. Conveniently located supplies and equipment for hand hygiene (e.g., sinks, soap, paper towels, and alcohol-based hand rubs) are available.

e. Masks for residents and visitors who have symptoms of a respiratory infection are available for use

MEDICATION ORDERING, RECEIVING AND STORAGE

ACCEPTING DELIVERY OF MEDICATIONS

Policy

1. All staff follow a consistent procedure in accepting medications.
2. Any errors noted in receiving medications are brought to the attention of the pharmacist and director of nursing services.

General Guidelines

1. A nurse or medication aide accepts each medication delivery.
2. Before signing to accept the delivery, the nurse or medication aide checks for any controlled medications. If any are present, they reconcile the medications in the package with the delivery ticket/order receipt.
3. If an error is identified when receiving medications from the pharmacy, the nurse/med aide verifying the order refers to the main Pharmacy Policy and Procedure Manual for specific procedures.
4. A nurse/med aide signs the delivery ticket, indicating review and acceptance of the delivery, and keeps a copy of the delivery ticket. Both the receiving nurse and the delivery agent must sign any notations about errors.
5. The delivery ticket is archived in a designated location.
6. The dispensing pharmacy, consultant pharmacist, and director of nursing services are notified of medication order errors.
7. Any hazardous drugs delivered by the pharmacy will be labeled for easy recognition of hazardous status.

AUTOMATIC STOP AND 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.** Note that Consonus does not supply pain infusions.
2. When the provider creates the order for a medication covered by this policy, the nurse requests a specific duration of therapy for the order, if not part of the original order. This then supersedes the *Automatic Stop and Discontinuation Orders* policy.
3. When implementing the *Automatic Stop and Discontinuation Orders* policy, the provider is 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 is 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 communicates the discontinuation in the order to the pharmacy.
2. Upon receipt of a provider's order for discontinuation of infusion therapy, the pharmacist or technician discontinues the order in the pharmacy's computer system and on the resident's *IV Medication Profile*.
3. Any remaining medication is removed from the resident's supply and disposed of appropriately to avoid a medication administration error.

CONTROLLED SUBSTANCES

Policy

The facility complies with all laws, regulations, and other requirements related to handling, storage, disposal, and documentation of controlled medications (listed as Schedule II-V of the Comprehensive Drug Abuse Prevention and Control Act of 1976).

General Guidelines

Handling Controlled Substances

1. Note that Consonus Pharmacy does not provide controlled substance infusions for pain management. Please see the P&P titled “Intravenous Pain Management” in this manual for further information.
2. Please see the main Pharmacy Policy and Procedure Manual for specific information on proper receiving, handling, and disposition.

DISCARDING AND DESTROYING MEDICATIONS

Policy

Medications that cannot be returned to the dispensing pharmacy (e.g., compounded infusion medications and/or medications left by residents upon discharge) are 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 are retained in a securely double-locked area with restricted access. They must continue to be counted each shift until disposed of.
2. Non-controlled (non-hazardous) substances are disposed of in accordance with state regulations and federal guidelines regarding disposition of non-hazardous medications.
3. Schedule II, III, IV and V (non-hazardous) controlled substances are disposed of in accordance with state regulations and federal guidelines regarding disposition of non-hazardous controlled medications.
4. Any controlled substance that is considered hazardous waste is managed in accordance with federal, state and local hazardous waste regulations, as well as the Controlled Substance Act and DEA regulations.
5. The medication disposition record contains, as a minimum, the following information:
    a. The resident's name.
    b. The name and strength of the medication.
    c. The prescription number (if any).
    d. The name of the dispensing pharmacy.
    e. Date medication destroyed.
    f. The quantity destroyed.
    g. Method of destruction.
    h. Reason for destruction.
    i. Signature of witnesses.
6. Completed medication disposition records are kept on file in the facility for at least two (2) years, or as mandated by state law governing the retention and storage of such records.
7. Staff shall contact the provider pharmacy if unsure of proper disposal methods for a medication.

DISCONTINUED MEDICATIONS

Policy

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

General Guidelines

1. A provider's order to discontinue a resident's medication is 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 are destroyed or returned to the issuing pharmacy in accordance with facility policy and state regulations. (See *Discarding and Destroying Medications* policy.)

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 and dispense medications or supplies.
4. Attending providers and prescribers are informed as to the availability of emergency medications in the facility.
5. Medications and supplies deemed appropriate for emergency kits and storage are kept secure within the facility.
6. The emergency supply is stored and located for access by licensed nursing staff only.
7. The medications contained in the emergency kits and machines are checked periodically for integrity and expiration dating.
8. Emergency medications are only administered after a valid provider's order. The resident's allergy history should also be checked prior to medication administration.
9. If the emergency medication supply is an emergency kit, the nurse records the medication use on the EMERGENCY KIT SIGN-OUT RECORD and faxes the reorder sticker to the pharmacy as soon as possible after the medication has been administered. See the main Pharmacy Customer Procedure Manual for more details.
10. 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 or automated dispensing machines.
11. All hazardous drugs within emergency supplies will be labeled as such and should be handled following proper procedures.

Procedure

1. A list of medications and supplies approved for inclusion in the emergency kit or system is 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.
2. A method of recording use of items from the emergency kit/system is in place. The EMERGENCY KIT SIGN-OUT RECORD forms may be added to kits or available for nurses to complete as items are removed from kits.
3. Emergency kits/systems are sealed or locked, whether by physical seal, key, or code access.
4. Medications used from emergency kit/system or an entire kit will be replaced per state laws.
5. If exchanging kits, the pharmacy will deliver a sealed kit to the facility and pick up the opened and re-sealed kit per the normal delivery schedule.
6. If replacing used doses of medication, the nurse or pharmacy staff is instructed to replace the medication in the appropriate area of the system within 72 hours of receiving.
7. 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. Arranges to provide the emergency medication as soon as possible if the medication is not available.

MEDICATION LABELING AND STORAGE

Policy

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

General Guidelines

Medication Storage

1. Medications and biologicals are 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 is responsible for maintaining medication storage and preparation areas in a clean, safe, and sanitary manner.
3. If the facility has discontinued, outdated, or deteriorated medications or biologicals, contact the dispensing pharmacy if needed for instructions regarding returning or destroying these items.
4. Compartments (including, but not limited to, drawers, cabinets, rooms, refrigerators, carts, and boxes) containing medications and biologicals are locked when not in use, and trays or carts used to transport such items are not be left unattended if open or otherwise potentially available to others.
5. Medications are stored in an orderly manner in cabinets, drawers, carts, or automatic dispensing systems. Each resident's medications are assigned to an individual cubicle, drawer, or other holding area to prevent the possibility of mixing medications of several residents. Refer to state guidelines for additional storage requirements, if applicable.
6. Medications requiring refrigeration are stored in a refrigerator located in the medication room at the nurses' station or other secured location. Medication refrigerator temperature is monitored regularly. Medications are stored separately from food and are labeled accordingly.
7. Controlled substances (listed as Schedule II-V of the Comprehensive Drug Abuse Prevention and Control Act of 1976) and other drugs subject to abuse are separately locked in permanently affixed compartments, except when using single unit package drug distribution systems in which the quantity stored is minimal and a missing dose can be readily detected.

Medication Labeling

1. Labeling of medications and biologicals dispensed by the pharmacy is consistent with applicable federal and state requirements and currently accepted pharmaceutical practices.
2. The medication label includes, at a minimum:
   a. medication name (generic and/or brand);
   b. prescribed dose;
   c. strength;
   d. expiration date, when applicable;
   e. resident's name;
   f. route of administration; and
   g. appropriate instructions and precautions.
   h. Information on the hazardous nature of the product, as applicable;
3. For medications that are prepared or compounded for intravenous infusion, the label contains:
   a. name and volume of the solution;
   b. resident's name;
   c. infusion rate;
   d. name and quantity of each additive;
   e. date of preparation;

   f. initials of compounder;
   g. date and time of administration;
   h. initials of the person administering medication; and
   i. date after which the mixture cannot be used.
4. For over the counter (OTC) medications in bulk containers (if permitted by state law) the label contains:
   a. the medication name;
   b. strength;
   c. quantity;
   d. accessory instructions;
   e. lot number; and
   f. expiration date (if applicable).
5. Multi-dose vials that have been opened or accessed (e.g., needle punctured) are dated and discarded within 28 days unless the manufacturer specifies a shorter or longer date for the open vial.
6. Multi-dose vials that are not opened or accessed are discarded according to the manufacturer's expiration date.
7. Medications for external use, as well as hazardous drugs and biologicals, are clearly marked as such, and are stored separately from other medications.
8. If medication containers have missing, incomplete, improper, or incorrect labels, contact the dispensing pharmacy for instructions regarding returning or destroying these items.
9. 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.
10. Only the dispensing pharmacy may label or alter the label on a medication container or package. It is against federal and other regulations to remove an Rx label from a product and store as house stock or give to another individual for use.
11. Medications may not be transferred between containers.
12. The nursing staff must inform the pharmacy of any changes in physician orders for a medication.

MEDICATION RECALLS

Policy

The facility honors any 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 inspects the facility's medical supplies for the recalled item; and
   b. If the recall item is in stock, it is used until a replacement is received or removed from the inventory and returned to the supplier in accordance with the instructions found on the recall notice.
3. The director of nursing services, or designee, documents inventory records concerning removal of such supplies.
4. In conjunction with the consultant pharmacist, the director of nursing services and medical director ensure that all nurses and attending providers are informed that a medication has been recalled, and identify any specific precautions that should be followed, or symptoms that might result from the medication.
5. Nursing staff notify the provider promptly. They will discuss the situation with the provider and depending on availability of a non-recalled version, may ask 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 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.

MEDICATION STABILITY

Policy

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

General Guidelines

1. Medication stability refers to the length of time that a medication/solution retains its original physical, chemical and therapeutic properties.
2. 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 "activated"/mixed just before being administered.
3. If the stability or condition of the medication has been compromised in any way, the medication will not be used.
4. Medications that have been compounded, manipulated or require refrigeration cannot be returned to the pharmacy for credit.

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. See *Medication Beyond-Use Dating*.
5. Temperature:
   a. Medication stability is affected by heat: in most cases, refrigeration improves stability.
   b. If a medication arrives from the pharmacy refrigerated, it must stay refrigerated until ready to use.
   c. Remove medication from refrigerator approximately 30 minutes before use. Do not infuse medication straight from the refrigerator, which is regulated at 36-46 degrees as the cold temperature can cause vasoconstriction, burning, and pain to the resident.
   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. It is also not appropriate to warm IV fluids/medications by placing item into clothing of the nurse or placing under arms to generate warmth to the item.
   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, notify the pharmacy. It will likely be necessary to discard the medication.
6. Light:
   a. Some medications are light sensitive (may be stable in 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.

See P&P on Compounding at the Nursing Facility for Immediate Use for stability and other information.

Signs of Medication Instability

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

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, are allowed to write orders in the medical record. The pharmacy staff verifies that individuals who prescribe medications are legally authorized to do so.
2. Only approved abbreviations and symbols are used when ordering and/or documenting. Prescriber, and nursing and pharmacy staff are 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, identify and approve appropriate order writing practices and related policies. This includes any modifications to the list of approved abbreviations.
4. Providers are responsible for providing timely, accurate, and complete orders.
5. Verbal or telephone orders in the facility:
    a. Verbal or telephone orders may 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 are always be based on a conversation with the prescribing provider or on approved written protocols.
    c. Verbal or telephone orders are transcribed by the person receiving the order, and recorded in the resident's medical record. Documentation on the provider's order sheet include "v.o." (verbal order) or "t.o." (telephone order).
    d. Documentation includes the instructions from the provider, date, time and the signature and title of the person transcribing the information.

Procedure

1. Orders for medication are verified by the nurse prior to administering.
2. The nurse verifies 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. If the provider desires the pharmacy to order labs or assist with dosing of the infusion medication, this will be indicated in the orders. The pharmacy cannot order specific dosing, but will recommend dosing as appropriate.
4. 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.
5. Additional resident information the nurse should have on hand includes:

a. Allergies;
b. Age;
c. Height and weight; and
d. Pertinent laboratory results.

6. Orders to "Keep Vein Open" (KVO) are not accepted. If such a request is made by a provider, the nurse must obtain specific medication order outlining all requirements such as type of fluid, rate, duration, etc.
7. Stat orders are communicated from the facility to the pharmacy immediately upon receipt from the provider.
8. Stat infusion medications and supplies are delivered to the facility within a timely manner whether during the pharmacy's regular business hours or after hours/emergency times.
9. Orders for flushing protocols are written at the time of IV medication order writing if not already present in the resident's medical record.
10. Dispensing pharmacists may use the *Pharmacy Telephone Order Sheet* to transcribe verbal or oral medication orders or changes directly from providers or prescribers. The pharmacist then shall communicate the new order to the facility nurse for transcribing onto the resident's medical record, if allowed by state law.

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

Information about medications is provided to residents, their legal representative or to other providers at discharge in accordance with applicable laws and regulations for request of Protected Health Information (PHI).

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 orders;
   d. Pharmacokinetic dosing information, if applicable:
   e. Applicable lab orders/results;
   f. IV catheter maintenance required (i.e. flushing orders, dressing changes, administration set changes, needleless connector changes, etc.) and
   g. 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.
4. Equipment used (IV pump, etc.) to infuse medications remains as property of the dispensing pharmacy and it is not authorized to be discharged with resident/responsible party.
5. Pharmacists are available for questions regarding medications upon discharge or transfer.

CATHETER INSERTION AND CARE

ADMINISTRATION SET/TUBING CHANGES

Policy

Administration sets and tubing will be changed at specific intervals in order to prevent infections associated with contaminated infusion 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 and frequency of administration (intermittent or continuous).
4. Assess all supplies 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 with luer-lock connections.
6. Label all tubing with the date and time tubing was hung, when next change is due for replacement, and initials. Change and then label accordingly any tubing that is observed not to have a label.
7. Apply a single-use 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 blood or blood products every 4 hours and with every 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. 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, if applicable:
   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 supplies for sterility or problems.

Procedure

1. Perform hand hygiene and don clean gloves.
2. Inspect new supplies (infusate, add-on devices and administration set).
3. Prepare equipment:
   a. Attach add-on devices to administration set, if applicable.
   b. Open administration set package and close all clamps..
   c. Remove cover for the tubing port, if present, on the bag of infusate.
   d. Remove the cover of the administration tubing spike and aseptically insert tubing spike into the infusate bag.
   e. 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. For gravity IV administration: Open roller clamp to prime tubing. Hold distal end of tubing over sink or trash can and allow all of the air bubbles to leave tubing.
   c. For IV pump administration: Place IV tubing into pump and refer to IV pump manual instructions.
   d. Ensure that no air bubbles remain in tubing.
   e. When primed, clamp tubing.
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 - Once appropriate flushing of the IV catheter has been completed per policy/procedure:
   a. Disinfect the needleless connector of the IV catheter using an alcohol swab for 5-15 seconds).
   b. Remove sterile end cap of the primed administration set and attach by screwing it into the disinfected needleless connector of the IV catheter.
8. Resume infusion:

a. Check pump program or flow regulator device for proper rate/volume.
b. Observe flow rate for 1 to 2 minutes to ensure accuracy.

9. Discard used supplies.
10. Label administration set and tubing with date, time and initials.
11. Remove gloves and perform hand hygiene.
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.

CENTRAL VENOUS CATHETER CARE AND DRESSING CHANGES

Policy

The purpose of this procedure is to prevent complications associated with intravenous therapy, including catheter-related infections that are associated with contaminated, loosened, soiled, or wet dressings.

Preparation

1. Check the State's Nurse Practice Act for LPNs regarding scope of practice for changing a central venous catheter dressing.
2. A physician's order is not needed for this procedure.

General Guidelines

1. Perform site care and dressing change at established intervals or immediately if the integrity of the dressing is compromised (e.g., damp, loosened or visibly soiled).
2. Maintain sterile dressing (transparent semi-permeable membrane [TSM] dressing or sterile gauze) for all central vascular access devices.
3. Change the dressing if it becomes damp, loosened or visibly soiled and:
   a. at least every 7 days for TSM dressing and as needed if it becomes damp, loosened, or visibly soiled;
   b. at least every 2 days for sterile gauze dressing (including gauze under a TSM unless the site is not obscured); or
   c. immediately if the dressing or site appear compromised.
4. Adhere to Aseptic Non Touch technique (ANTT) when performing this procedure. Adhere to standard or surgical ANTT based on the ability to prevent touching key parts or key sites.
5. Assess central venous access devices with each infusion and at least every shift:
   a. Visually inspect the entire infusion system (solution, administration set and dressing);
   b. Check expiration dates of the infusion, dressing and administration set;
   c. Assess the patency of the vascular access device;
   d. Palpate and inspect the skin, dressing and securement device for signs of complications, including:
      (1) dislodgement;
      (2) redness;
      (3) tenderness;
      (4) swelling;
      (5) infiltration;
      (6) induration;
      (7) elevated body temperature; or
      (8) drainage;
   e. Ask the resident if he or she is experiencing pain, tingling or numbness; and
   f. Remove any non-transparent dressing and visually inspect the insertion site if any signs or symptoms of complication are present.
6. Measure the length of the external central vascular access device with each dressing change or if catheter dislodgement is suspected. Compare with the length documented at insertion.

7. Assess the integrity of securement devices with each dressing change.
8. For PICCs, measure arm circumference and compare to baseline when clinically indicated to assess for edema and possible deep-vein thrombosis.
9. Removal of old dressing is an aseptic, non-sterile procedure.
10. Needleless connectors are to be changed every 7 days with the sterile dressing change.

Equipment and Supplies

To remove dressing:

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

To replace sterile dressing:

1. Needleless connectors for each lumen present;
2. NS Flush syringes for each lumen present;
3. Securement device (i.e. Statlock or other type);
4. Antimicrobial disc, if applicable;
5. Sterile central venous catheter dressing change kit; and
6. Plastic underpad or clean towel.

Assessment

Observe insertion site and surrounding area for complications.

Steps in the Procedure

Procedure to remove old dressing:

1. Clean the over the bed table with appropriate disinfectant, or alcohol.
2. Place equipment on table.
3. Perform hand antisepsis. Wear non-sterile gloves.
4. Resident should be lying on bed, with head facing opposite direction from dressing site. It is recommended that the resident also wear a disposable face mask, if able to do so.
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. *Do not 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. Any securement devices must also be removed - i.e. Statlock, etc. or antimicrobial discs (i.e. biopatches). These items are to be replaced with each 7 day dressing change. Discard dressing, remove gloves and wash hands.

Procedure to apply sterile dressing:

1. Open sterile dressing kit.
2. Apply mask.
3. Apply sterile gloves. Once the gloves are on, only the contents of the kit can be touched.
4. Clean catheter insertion site with approved antiseptic solution.
    a. Do not pick up the catheter with the sterile gloves. The outside of the catheter is not sterile.
    b. Use sterile gauze to pick up catheter when cleaning underneath the catheter to preserve the sterile gloves.
5. Allow antiseptic solution to **air dry** on skin. Do not blow or wave over site.

6. Apply securement device according to manufacturer directions
7. If antimicrobial disc is used, apply according to manufacturer directions.
8. Apply sterile dressing (TSM or gauze). For TSM dressing or TSM over gauze:
   a. Center the dressing over the insertion site.
   b. Starting at the catheter, smooth dressing outward toward the edges to remove air.
   c. Press down on the edges of the dressing while removing the paper around edges of dressing.
   d. Sterile tape from the kit may be used to secure edges if needed. The tape should not cover the insertion site.
   e. Label with initials, date and time.
9. Use the paper measuring tape included in the sterile dressing change kit to measure the external length of the catheter.
10. Dispose of gloves, equipment and old dressing in appropriate containers.
11. Perform hand hygiene.
12. 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. Any questions, education given to resident, resident's statement regarding IV therapy and response to procedure.
   f. Signature and title of the person recording the data.

Reporting

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

CENTRAL VENOUS CATHETER FLUSHING AND LOCKING

Policy

The purposes of this procedure are to maintain patency of central venous catheters (CVADS); 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 the scope of practice for RNs and LPNs regarding this procedure.

Solution/Volume

1. Use preservative-free 0.9% sodium chloride (normal saline) for flushing a central venous access device (CVAD).
2. If medication is incompatible with preservative-free 0.9% sodium chloride, flush first with 5% dextrose in water followed by preservative-free 0.9% sodium chloride.
3. Use only single-dose systems for flushing and locking (single-dose vials or pre-filled syringes).
4. The volume of flushing solution should be at least twice the volume of the catheter system.
5. Lock CVADs with either preservative-free 0.9% sodium chloride or heparin 10 units/mL (or according to the manufacturer's directions).
6. Refer to Flush Chart.

Frequency

1. Aspirate for blood return and flush catheter prior to each infusion to assess catheter function.
2. Flush after each infusion to clear the medication from the catheter lumen.
3. Flush all lumens of a multi-lumen catheter after obtaining blood samples.
4. All lumens must be maintained if not actively in use. Refer to Flush Chart.

Technique

1. 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.
2. Apply the push-pause technique to flush catheter.
3. When flushing after an IV push medication, flush at the same rate of injection as the medication.
4. If there is resistance or difficulty during flushing procedure, identify any cause for external obstruction (closed clamps, kinked tubing, etc.). If unable to identify and correct, stop flushing and notify the provider.

Equipment and Supplies

1. Preservative-free 0.9% sodium chloride syringes (prefilled);
2. Heparin, as ordered;
3. Non-sterile gloves; and
4. Alcohol wipes.

Steps in the Procedure

1. Perform hand hygiene.
2. Don non-sterile gloves.
3. Assemble supplies.
4. Explain procedure to resident.
5. Prime medication tubing and/or remove air from syringes.

Flushing to Maintain Patency of Catheter

1. Disinfect needleless access device by scrubbing the hub with an alcohol wipe.
2. Prime prefilled saline syringe by expelling any air, then attach to needleless access device.
3. Unclamp catheter or lumen.
4. Aspirate slowly for blood return to ensure patency of catheter.
5. Flush with preservative-free 0.9% sodium chloride using the push-pause technique.
6. Engage any clamping mechanism present on IV catheter, then disconnect syringe from needleless access device.
7. Attach syringe with locking solution and LOCK with saline or heparin, as ordered.
8. Repeat process on each lumen of multi-lumen catheter.

Flushing Before and After Medications or Fluid Administration

1. Disinfect needleless access device by scrubbing the hub with an alcohol wipe.
2. Prime prefilled saline syringe by expelling any air, then attach to needleless access device.
3. Unclamp catheter or lumen.
4. Aspirate slowly for blood return to ensure patency of catheter.
5. Flush with preservative-free 0.9% sodium chloride using the push-pause technique.
6. Engage any clamping mechanism present on IV catheter, then disconnect syringe from needleless access device.
7. Connect primed tubing or syringe containing medication to access device.
8. Administer medication/solution at ordered rate.
9. Engage clamp if present on the IV catheter. Disconnect tubing from access device.
10. Disinfect needleless access device by scrubbing the hub with an alcohol wipe.
11. Attach another prefilled saline syringe to needleless access device.
12. Flush with preservative-free 0.9% sodium chloride. Flush at the same rate of injection as the medication.
13. Engage clamp.
14. Disconnect syringe.
15. Attach syringe with locking solution and LOCK with saline or heparin, as ordered.
16. Clamp catheter or lumen.
17. Monitor resident’s response and for any signs and symptoms of complications.
18. Discard used supplies in appropriate waste container.
19. Remove gloves.
20. Wash hands.
21. 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. Total amount of flush administered.
3. The route and rate of medication administration.
4. The condition of the IV site before and after administration.
5. Notification of physician 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, physician, and oncoming shift of any complications.
2. Report other information in accordance with facility policy and professional standards of practice.

DISINFECTION OF CATHETER INSERTION SITE

Policy

The purpose of this procedure is to prevent bacteria from being introduced into the skin and vascular system.

General Guidelines

1. Prior to inserting an intravenous catheter, the insertion site will be prepared with antiseptic solution using aseptic technique (Standard ANTT®) for peripheral catheters and sterile technique (Surgical ANTT®) for central vascular access devices.
2. If the intended insertion site is visibly soiled, clean the site with soap and water prior to the application of antiseptic solution. Alcohol may be used to remove skin oils and increase dressing adherence.
3. Clip hair in and around insertion area if necessary and ensuring patient consent with sterile scissors or disposable surgical clippers before cleaning the site. Do not shave, as shaving can introduce bacteria and potential skin abrasions, leading to IV-related complications.
4. Use antiseptic solutions in a single-unit package.
5. Chlorhexidine solution (>0.5% chlorhexidine in alcohol) is preferred for skin antisepsis.
6. If there is a contraindication to chlorhexidine solution, the following antiseptic agents are acceptable:
   a. Povidone iodine; and
   b. 70% alcohol.
7. Allow antiseptic solution to AIR DRY before venipuncture or applying dressings. Note that some antiseptic solutions may take greater than 1 minute to dry thoroughly.

Equipment and Supplies

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

Steps in the Procedure

1. Perform hand hygiene and don 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. Alcohol may be used to remove skin oils and increase dressing adherence.
3. Remove antiseptic solution from package.
4. Follow manufacturer's instructions for application.
5. Any type of antiseptic cleansing device is for single use only. After use, dispose of in trash container.
6. Remove gloves and perform hand hygiene.

Documentation

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

CATHETER INSERTION AND CARE

HEMODIALYSIS CATHETERS

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. These devices are similar to CVADs but have larger gauge lumens which increases the risk of air embolism and bleeding out if the catheter becomes damaged, dislodged or any connections become loose or disconnected. The size of the lumens allows for greater flow rates which are required during dialysis.
5. Dialysis catheters come in multiple brands, but two basic types; tunneled cuffed catheters and percutaneously inserted non-tunneled catheters.
6. The hub ends of the catheter are usually RED and BLUE. This is to designate the arterial catheter and venous catheter.

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. Ensure that if the facility accepts patients that have these types of catheters, it is known what orders are expected to be carried out before accepting admissions.
5. Upon accepting an admission, ensure all orders are completed and properly trained staff are present with completed competency skills (per state regulations).
6. **There are NO standard protocols for the care of these devices.** Each resident must have specific orders pertaining to the dialysis catheter they have.
7. Determine what stabilization device is in place (sutures, etc.) and measure the external length of the catheter for baseline data.
8. To prevent infection and/or clotting:
    a. Upon admission and during skin assessment, LN is to inspect and visualize dialysis catheter and site.
    b. Keep the access site clean at all times.
    c. Check any connectors to ensure securely attached and not loose or damaged.
    d. Do not use the access site arm to take blood pressure, blood samples, administer IV fluids or give injections.
    e. Needle access for hemodialysis should be rotated (alert the DNS if it is noted that the same site is accessed repeatedly).

f. Check for signs of infection (warmth, redness, tenderness, or edema) at the access site when performing routine care and at regular intervals.
g. Advise the resident not to sleep on, wear tight jewelry or lift heavy objects with the access arm.
h. Check the color and temperature of the fingers, and the radial pulse of the access arm when performing routine care and at regular intervals.
i. 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. Though the dressing change is done in the dialysis center post-treatment, the LN is still responsible for monitoring the site to determine if any IV related complications arise and intervene as appropriate.
2. It is recommended that the facility obtain an order to change the dressing PRN should the dressing become compromised at any time between dialysis visits.
3. 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.) Note that it is not appropriate to reinforce a compromised dressing.
4. Mild bleeding from site (post-dialysis) can be expected. Apply pressure to insertion site and contact dialysis center for instructions.
5. 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.
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. The facility must obtain orders for flushing that include solution, strength, amount, and frequency. It is also recommended that the facility be in close communication with the dialysis center and inquire of their policy and procedures for maintaining that specific line.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.
5. 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.

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. It is the responsibility of the nurse to ensure this procedure is within scope of practice and allowed by state regulations.

Definition

1. An implanted venous port is a surgically placed and surgically removed central venous catheter that is placed in the subcutaneous layer of the skin in the mid chest area or upper arm. The catheter tubing ends in the vena cava. It generally is not sutured in place to avoid collection of bacteria at suture site.
2. The catheter consists of three parts – the septum, reservoir, and tubing. The self-sealing septum is usually made of silicone.

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. Access the port with the smallest-gauge non-coring needle to accommodate the prescribed therapy.
   c. 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. Apply topical anesthetic to numb access site before needle insertion, if ordered. Follow manufacturer recommendations of application.
5. Verify power injection capability before using the port for CT injection dye. CT injection dye requires a power port.
6. Confirm positive blood return with aspiration before flushing or using the port for infusion.
7. Flush ports accessed for intermittent infusions immediately before/after each infusion.
8. Use at least 10 mL of 0.09% sodium chloride when flushing the port. Refer to Flushing Chart Guidelines.
9. Lock ports with 0.09% sodium chloride or heparin. Follow prescriber orders for solution and flushing intervals.
10. Replace the non-coring needle according to manufacturer's directions when port is being accessed.
11. Adhere to either standard ANTT or surgical ANTT when accessing the port (depending on the ability to prevent touching key-sites and key-parts).

Equipment and Supplies

1. Central line dressing change kit or the following:
   a. Sterile gloves. Have additional pairs readily available;
   b. Mask;
   c. Cleaning solution (chlorhexidine/alcohol or alcohol wipes); and
   d. Transparent sterile dressing.
   e. Non-sterile gloves

2. Implanted port kit, if available or the following:
   a. Non-coring safety needle (smallest gauge to accommodate the prescribed therapy) with attached extension tubing and clamp;
   b. Needleless access connector;
   c. 10mL normal saline flush syringes (3-4 syringes). It is best to obtain *sterile* NS flush syringes for this particular procedure as using the standard NS flush syringes create extra steps in the process as the barrel of the syringe itself is not sterile, only the fluid path is. Both techniques will be shared below.
   d. Heparin flush syringe, if ordered- Strength of heparin is based if implanted port is to remain accessed with non-coring needle - 5mL of Heparin 10 units/mL. If implanted port is accessed for maintenance only and non-coring needle removed, the stronger strength of heparin is to be utilized of 5mL Heparin 100 units/mL.
   e. Topical anesthesia, if ordered, for use prior to accessing the implanted port. This requires an order and nurse to follow prescription and manufacture directions of use. Please note, several of these products require application 30-60 minutes prior to accessing port with non-coring needle therefore the nurse will need to consider this for time management purposes and efficacy of product.

Steps in the Procedure for Accessing an Implanted Port (currently without any non-coring needle present).

1. IF you are removing/replacing a non-coring needle, please reference the Deaccessing policy and procedure prior to this Accessing Procedure.
2. Explain procedure to resident or legal representative.
3. 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.)
4. Perform hand hygiene and apply clean gloves.
5. Observe and palpate the port. Check for swelling and pain. Observe for redness, drainage, and the presence of collateral veins on the chest wall signaling occlusion. *Do not proceed and notify the provider of these findings and to receive further instructions.*
6. Apply topical anesthetic if prescribed. Follow manufacturer directions or prescriber orders for application, length of time to allow for product efficacy, and how to remove product prior to proceeding with procedure. Remove gloves and perform hand hygiene.
7. Remove gloves and perform hand hygiene.
8. Assemble equipment on disinfected surface near resident.
9. Open central line dressing kit or implanted port kit and prepare a sterile field.
10. Place a mask on yourself and one on the resident. *Please note that some kits do not contain a 2nd mask therefore it may need to be obtained prior to the procedure. Instruct resident to turn his/her head away from the port during the procedure.
11. Open individual sterile items such as the non-coring needle and needleless connector and drop onto sterile field.
12. Don sterile gloves and attach the needleless connector to the non-coring needle extension tubing.
13. Attaching the NS flush syringe:
14. a. If using sterile NS package syringes, attach the flush syringe to the needleless connector, prime tubing and needle then clamp the extension tubing. Leave the syringe connected to the extension tubing. If not sterile packaged NS saline syringe, refer to the standard direction below.

    b. If using standard NS flush syringe, attach flush syringe to the connector and prime tubing and needle then clamp the extension tubing. Leave the syringe connected to the extension tubing. Place non-coring

needle on edge of sterile field with syringe on non-sterile area. *Please note, you have a non-sterile syringe attached to a sterile non-coring needle and tubing. The needle itself, must remain sterile as it will be under a sterile dressing. Do not touch or manipulate the non-coring needle with the hand that has touched the syringe.

15. If a standard NS flush syringe was utilized: Remove gloves, perform hand hygiene, and don new pair of sterile gloves.
16. Scrub the implanted port site with provided antiseptic solution according to manufacture direction and allow to air dry completely. This could take a minute - do not blow or fan the site.
17. With non-dominant hand, palpate the exterior of the port to locate the boundaries and the center of the septum, stabilizing the port for insertion. Avoid touching the center of the port, if possible.
18. Grasp the wings of the needle with the syringe attached and remove the cover from the needle. Firmly insert the non-coring needle perpendicular through the skin into the center of the septum until the needle tip comes in contact with the base of the port reservoir. This will require pressure to push the needle in. Once the septum has been punctured, do not rock, or tilt the needle which can cause damage to the needle or the port.
19. If the wings of the needle are not flush to the skin after insertion, a folded sterile 2x2 gauze may be placed under the wings to minimize movement. If the needle is too short, change it to a longer one following proper procedure as if a new insertion. A needle that is too short can cause complications such as extravasation or infiltration of medication or fluids, or resident inadvertently pulling the needle out by moving.
20. Check catheter patency by aspirating for blood return using the unclamping and use the attached NS flush syringe. When blood return is visualized, flush the port with NS using the push-pause method which causes turbulence within the lumen, then clamp extension tubing. *Do not flush forcibly, if unable to obtain blood return, the resident should be repositioned (extend right arm over head or out to the side, roll to one side or the other) and blood return checked again. If no blood return is noted, the needle should be removed and the site re-prepped and re-accessed using a new kit and needle. If there is no blood return after re-accessing, contact the provider to obtain further direction of possible de-clotting agent or additional assessment of the port.*
21. Flush with heparin as indicated, if not resuming infusion. The needleless connector must be disinfected with alcohol swab prior to accessing with heparin flush syringe. Once complete, clamp the extension tubing. Refer to Flush Chart Guidelines.
22. *If flushing for maintenance* and non-coring needle will not remain in place; Remove needle and apply pressure with gauze, if needed. Apply a bandaid or sterile 2 x 2 gauze dressing.
23. If port it to remain accessed, apply the transparent dressing over the non-coring needle and site (do not cover the insertion site with gauze) allowing the needleless connector to be exposed outside of the dressing for access ability. The dressing may need additional stabilization on the border and use of the provided tape in the kit is advisable. Secure the tubing with tape making sure not to obscure the site for future assessments.
24. Label the dressing with date/time/initials.
25. Start or resume therapy, as ordered.
26. Dispose of waste according to OSHA, CDC, and facility policy.
27. Remove gloves and perform hand hygiene

Documentation

1. Document the following in the resident's medical record:
    a. Date and time of procedure.
    b. Catheter specifics
    c. Resident education.

d. Needle size (length and gauge).
e. Evidence of blood return.
f. Whether implanted venous access port flushed with ease. Flushing protocol.
g. Resident 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 and indicate next date procedure is to be done.

4. If site is to remain accessed for therapies, ensure the records reflect the next scheduled rotation of the non-coring needle and dressing change.

IMPLANTED VENOUS PORT - DEACCESSING

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.

General Guidelines

1. Verify with state Nurse Practice Act the scope of practice for RNs and LPNs regarding this procedure.
2. De-accessing (removing the non-coring needle from the port) is an aseptic procedure.
3. Replace the non-coring needle according to manufacturer's directions when port is being accessed.
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. Two 10 mL syringe with normal saline (preservative-free 0.9% sodium chloride);
3. Heparin flush, if ordered, 100u/ml
4. Sharps container
5. Chlorhexidine/alcohol or alcohol wipes; and
6. Sterile 2 x 2 gauze and tape, or adhesive bandage.

Steps in the Procedure

1. Verify provider order for discontinuation
2. Explain the procedure to the resident or legal representative.
3. Position resident for comfort and expose port site.
4. Ensure IV fluids/tubings have been discontinued and disconnected from implanted port site appropriately.
5. Perform hand hygeine.
6. Place equipment on clean surface near resident.
7. Don non-sterile gloves.
8. Discontinue any running IV fluids.
9. Clamp extension tubing on non-coring needle.
10. Disinfect end of needleless access device with chlorhexidine/alcohol or alcohol wipe.
11. Prime normal saline syringe, attach to disinfected needleless connector, unclamp tubing and aspirate for blood return PRIOR to flushing as ordered, using the push-pause technique. Repeat for 2nd NS flush syringe.
12. Remove syringe and clamp tubing if no heparin is ordered. If heparin is ordered, follow the same process of disinfecting the hub of the needleless connector, prime heparin syringe prior to attaching to needleless connector. Flush as ordered for maintenance of specific line. Clamp tubing.
13. Remove dressing by working from the edges toward the non-coring needle/port. This includes any supportive gauze or antimicrobial patch.
14. Stabilize the port with non-dominant hand and grasp the wings with dominant hand. Firmly and smoothly pull the needle straight up and out of the port/septum and skin. Activating the safety mechanism of the non-coring needle per manufacture direction.
15. Apply adhesive bandage or sterile 2 x 2 to site.

16. Dispose of needle into sharps container and other waste according to OSHA, CDC, and facility policy.
17. Remove gloves and perform hand hygiene.
18. Clean insertion site with chlorhexidine/alcohol or alcohol wipe.
19. Cover with sterile 2 x 2 gauze, transparent dressing, or adhesive bandage per protocol. Leave dressing in place for 24 hours.
20. Wash hands and reposition the resident.

Documentation

1. Document the date and time that port was de-accessed in the resident's medical record.
2. Document the flushing agent, flush amounts; and condition of site on the appropriate nursing document.

IMPLANTED VENOUS PORT - FLUSHING AND LOCKING

Purpose

The purposes of this procedure are to maintain patency of the implanted venous port; 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 the scope of practice for RNs and LPNs regarding this procedure.
2. The implanted venous port is a central line.
3. Use aseptic technique when accessing an implanted port.
4. Always use a non-coring needle to access port.
5. If port is not actively in use, it must be accessed, flushed, and de-accessed a minimum of once every 30-90 days per manufacture specifications and physician order.
6. VADs (vascular access devices) are aspirated for evidence of whole blood cells prior to flushing.
7. See flush/lock chart for specifics.

Solution/Volume

1. Use preservative-free 0.9% sodium chloride (normal saline) for flushing a central venous access device (CVAD).
2. If medication is incompatible with preservative-free 0.9% sodium chloride, flush first with 5% dextrose in water followed by preservative-free 0.9% sodium chloride.
3. Use only single-dose systems for flushing and locking (single-dose vials or pre-filled syringes).
4. Lock with either preservative-free 0.9% sodium chloride or heparin 10 units/mL (or according to the manufacturer's directions).
5. See flush/lock chart for specifics.

Frequency

1. When the port is accessed but not infusing, flush every 24 hours. See flush/lock chart for specifics.
2. When the port is used intermittently for medication administration, see flush/lock chart for specifics.
3. Flush implanted venous ports not accessed for infusions with at least 10 mL preservative-free 0.9% sodium chloride and 5 mL heparin 100 units mL every 1-3 months for maintenance flushing, according to manufacturer's instructions.

Technique

1. Use a syringe barrel size of 10 mL or greater when flushing to avoid excessive pressure inside the catheter, to prevent potential rupture of the catheter, and to prevent dislodgement of clots.
2. Apply the push-pause technique to flush catheter.
3. When flushing after an IV push medication, flush at the same rate of injection as the medication.

Equipment and Supplies

1. For daily maintenance:
   a. One prefilled 10 mL barrel size syringe of preservative-free 0.9% sodium chloride (saline) and 5ml heparin 10u/ml, if ordered;
   b. Chlorhexidine/alcohol or alcohol wipes; and
   c. Gloves.

2. For intermittent medications:
    a. Two prefilled 10 mL barrel size syringes of preservative-free 0.9% sodium chloride (saline) and 5ml heparin 10u/ml, if ordered;
    b. Chlorhexidine/alcohol or alcohol wipes; and
    c. Gloves.

Steps in the Procedure

1. Obtain provider order for appropriate flushing solutions and refer to flush/lock chart.
2. Assemble supplies.
3. Explain procedure to resident.
4. Prime medication tubing or remove air from syringes.

Flushing to maintain patency of catheter (port is accessed but not infusing):

1. Perform hand antisepsis. Don non-sterile gloves.
2. Disinfect needleless access device with alcohol wipe.
3. Connect syringe to catheter via needleless connection device.
4. Unclamp catheter or lumen.
5. Aspirate slowly for blood return to ensure patency of catheter. Do not proceed if any resistance or absence of blood.
6. Slowly administer saline flush using the push-pause technique.
7. Disconnect syringe from needleless access device.
8. LOCK with saline or heparin, as ordered.
9. Re-engage the clamp mechanism.
10. Repeat process on each lumen of multi-lumen catheter.
11. Remove gloves and perform hand hygiene.
12. Dispose of waste per CDC, OSHA and facility policy and procedures.

Flushing when giving medications (port is accessed for intermittent infusions):

1. Perform hand antisepsis. Don non-sterile gloves.
2. Disinfect needleless access device with alcohol wipe.
3. Connect syringe to catheter via needleless connection device.
4. Unclamp catheter or lumen.
5. Aspirate slowly for blood return to ensure patency of catheter. Do not proceed if any resistance or absence of blood.
6. Slowly administer saline flush using the push-pause technique.
7. Disconnect syringe.
8. Connect primed tubing or syringe containing medication to access device.
9. Administer medication at ordered rate.
10. Disconnect medication from access device.
11. Connect another 10 mL syringe containing saline to catheter access device.
12. Flush with saline at the same rate of injection as the medication (if it was a push medication).
13. Disconnect syringe.
14. LOCK with saline or heparin, as ordered.
13. Clamp catheter or lumen.
14. Repeat process on each lumen of multi-lumen catheter.
15. Remove gloves and perform hand hygiene.

16. Dispose of waste per CDC, OSHA and facility policy and procedures.

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.
   d. Any complications and interventions necessary.
   e. Resident tolerance of procedure.
   f. Any communication with physician, 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 physician, supervisor, or oncoming shift

INSERTION OF PERIPHERAL MIDLINE OR LONG PERIPHERAL INTRAVENOUS CATHETERS

Policy

Placement of peripheral midline or long peripheral intravenous catheters (PIVC) is restricted to specially trained clinicians.

General Guidelines

1. The nurse or clinician is specially trained and has demonstrated competency to perform this procedure.
2. Midlines and long PIVC catheters may be placed at the bedside by qualified nurses and clinicians; however, they are usually placed in the hospital setting.

NEEDLELESS CONNECTION DEVICE CHANGES

Purpose

The purpose of this procedure is to provide guidelines to change needleless connection devices or extension tubing to prevent catheter related infections.

General Guidelines

1. Needleless connectors are used to connect syringes and/or administration sets to catheter hubs to eliminate the use of needles and prevent needlestick injuries.
2. Connections of any kind must never be made directly to the catheter hub without the needleless connector attached.
3. Needleless connector devices are a sterile single-use product. Once applied and removed, it cannot be reattached to the IV lumen and must be discarded.
4. All needleless connectors have a Luer-lock® design to ensure a secure connection and have anti-reflux design.
5. Follow manufacturers' directions for use for flushing, clamping, and disconnection. In the absence of manufacturers' direction - the following guidelines may be reviewed:
   a. Negative displacement - flush, clamp, disconnect
   b. Positive displacement - flush, disconnect, clamp
   c. Neutral and anti-reflux - no specific sequence required.
6. Each lumen must have a needleless connector in place, but needleless connectors should not be placed directly on the IV catheter hub.
7. Adhere to Standard ANTT when accessing and changing a needleless connector. Attach only a sterile syringe tip or sterile luer end of the administration set to the needleless connector.
8. Change needleless connection device when the primary administration set is changed (no more than every 96 hours, but at least every 7 days) and every 96 hours if used for TPN/PPN solution:
   a. unless it is removed for any reason;
   b. unless there is residual blood or debris within the connector;
   c. before obtaining a blood culture from the vascular access device;
   d. upon contamination; and/or
   e. per manufacturer’s directions.
   f. It is recommended to change pre-existing needleless connectors to the brand provided by the pharmacy when a resident is admitted to the facility with an active IV site.
   g. Needleless connectors are to be changed with every dressing change, typically every 7 days. Every lumen present must have a connector change regardless if actively used or not.
9. Disinfect the surface and sides of the needleless connector attached to any IV catheter lumen to reduce introduction of microbes. Follow manufacturers' direction and use of disinfectant agent. A vigorous mechanical scrub of surface with 70% alcohol swab or alcohol-based chlorhexidine product for devices of at least 5-15 seconds are recommended in the absence of manufacturer recommendation. Drying time for alcohol swabs is approximately 5 seconds whereas alcohol chlorhexidine based is approximately 20 seconds.

Equipment and Supplies

1. Non-sterile gloves;
2. Needleless connection device or extension tubing that has a needleless connector as part of the extension tubing system in which the entire system (extension set with connector) will be changed. *Items can come separate or pre-attached by the manufacturer;
3. Alcohol wipes;

4. Preservative-free 0.9% normal saline flush to flush needleless connection device or extension tubing.

Steps in the Procedure

1. Explain procedure to the resident.
2. Perform hand hygiene. Don non-sterile gloves.
3. Clamp catheter.
4. Open sterile needleless connector package and attach normal saline flush syringe to new needleless connector. Prime with small amount of preservative-free 0.9% normal saline. Leave syringe in place.
5. Remove the existing needleless connector from the IV catheter.
6. Vigorously scrub the catheter hub with an alcohol swab and allow to air dry.
7. Place new needleless connection device/extension tubing onto catheter. Unclamp/unkink catheter.
8. Aspirate for blood return then flush catheter with preservative-free 0.9% normal saline.
9. Continue with infusion or clamp catheter.
10. Remove gloves and perform hand hygiene.
11. Dispose of waste per CDC, OSHA and facility policies and procedures.

Documentation

1. Document on resident's medical record when procedure was done.
2. Document in resident's medical record if any complications of IV catheter were present and interventions necessary.
3. Document if physician was made aware of complications.

Reporting

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

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 physician 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 categories 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 Vacutainer® barrels directly onto a catheter, especially the PICC, 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. Do not draw blood for therapeutic drug monitoring through the same lumen used to administer the medication.
11. Draw blood from a dedicated lumen, if possible.
12. For blood sampling through a multi-lumen catheter use the largest lumen and the lumen farthest from the heart.
13. Thoroughly flush the lumen with 10-20 mL of preservative-free 0.9% sodium chloride (normal saline) before and after obtaining a blood sample.
14. Do not draw blood from a lumen that is being used for parenteral nutrition.
15. 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 prefilled NS 10mL flush syringes;
2. One or more sterile syringes (10 mL or larger barrel size);
3. Chlorhexidine or alcohol wipes;
4. Needleless connector;
5. Blood transfer kit (needleless);
6. Vacutainer® tubes; and

7. Non-sterile gloves.
8. Sharps container.

Steps in the Procedure

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 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, you may also ask the resident to straighten his/her arm.

Obtaining Blood Specimen

1. Stop any infusions for at least 2 minutes prior to accessing the catheter.
2. Perform hand hygiene. Apply non-sterile gloves.
3. Attach primed saline syringe to new needleless access device (end cap, valve). Prime access device with 0.5 mL flush and place in clean area for use after blood draw.
4. Leave needleless access device on end of catheter. Clean end of access device with alcohol wipe.
5. Attach the primed NS flush syringe to the disinfected needleless connector and aspirate for evidence of blood to confirm patency PRIOR to flushing 10mL of NS. Use the pulsatile flush method.
6. With same saline syringe attached, wait 30 seconds, then draw back 5ml of blood (for waste) using pull-stop method. Disconnect syringe with blood waste from catheter (clamp catheter if necessary).
7. Discard blood waste syringe in sharps container. Do not re-infuse blood into resident.
8. Only use syringes to draw blood from catheter. Do not attach vacuum tube.
9. Disinfect the needleless connector with alcohol swab, then attach 10 mL sterile empty syringe to access device. Withdraw necessary amount of blood for needed 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.
10. Post blood draw, disinfect the needleless connector with alcohol swab again.
11. Attach prefilled NS syringe and flush 10mL using the push-pause technique. Once 1st syringe infused, clamp catheter and remove needleless connector with NS syringe.
12. Dispose of flush syringes in sharps container.
13. 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. Remove gloves and perform hand hygiene.
4. Label tubes with resident's information (per lab requirements), date, time, and initials of person drawing blood.
5. 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 physician of results.
5. Signature and title of person who is recording/reporting data.

Reporting

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

OBTAINING BLOOD SPECIMENS FROM A PERIPHERAL INTRAVENOUS 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 intravenous (IV) catheter.

Preparation

1. A physician order is required to obtain blood samples.
2. Verify in state Nurse Practice Act regarding scope of practice for this procedure. Facility should inquire with lab company of specific requirements and procedures.

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 IV catheter to avoid too much pressure on catheter.
4. Do not attach Vacutainer® barrels 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 IV catheter, either at insertion or while indwelling.
9. Do not obtain a blood sample for any purpose at the time of catheter insertion due to high risk of hemolysis and a rejected lab sample.
10. Use the pull-stop technique when obtaining blood samples.
11. Ensure proper sequencing of lab samples obtained as some vacutainer tubes contain additives that cause result errors.

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. Vacutainer® tubes; and
7. Non-sterile gloves.
8. Sharps container.

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 hygeine. Apply non-sterile gloves.

4. Attach primed 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. To obtain blood sample from the PIV, disinfect the current needleless connector at the end of the extension tubing with alcohol wipe.
6. Attach primed saline syringe to end of catheter and use push-pause flush method to infuse 10 mL saline.
7. Only use syringes to draw blood from catheter. Do not attach vacuum tube.
8. With same 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. Disinfect the needleless connector again with an alcohol swab prior to accessing it with sterile 10mL empty syringe that will be used to withdraw the blood sample. Attach 10 mL (or larger) sterile empty syringe to access device. Withdraw necessary amount of blood for needed 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, disinfect the needleless connector with alcohol swab again.
13. Attach prefilled NS syringe and flush 10mL using the push-pause technique. Once 1st syringe infused, clamp catheter and remove needleless connector with NS syringe.
14. Dispose of flush syringes in sharps container.
15. 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.
5. Remove gloves and perform hand hygiene.

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 physician of results.
5. Signature and title of person who is recording/reporting data.

Reporting

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

OBTAINING BLOOD SPECIMENS FROM A DIRECT VENIPUNCTURE

Purpose

Obtaining blood specimens from a direct venipuncture must follow facility policies and procedures, as well as those of the particular laboratory that will receive the sample(s). These policies and procedures must take into account the appropriate tube(s) to use for the test(s) being run, what order to draw the tubes in, whether to invert, storage, etc.

Preparation

1. A physician order is required to obtain blood samples.
2. Verify in state Nurse Practice Act regarding scope of practice for this procedure.

General Guidelines

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

PERIPHERAL AND MIDLINE INTRAVENOUS CATHETER FLUSHING AND LOCKING

Policy

The purposes of this procedure are to maintain catheter patency and function; 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 the scope of practice for RNs and LPNs regarding this procedure.
2. A physician's order is not needed to flush a peripheral short catheter.
3. Some midline catheters may be non-valved and providers may order Heparin flush. Refer to Flush Chart recommendations.

Solution/Volume

1. Use preservative-free 0.9% sodium chloride (normal saline) for flushing a peripheral or midline catheter.
2. If medication is incompatible with preservative-free 0.9% sodium chloride, flush first with 5% dextrose in water followed by preservative-free 0.9% sodium chloride.
3. Use only single-dose systems for flushing and locking (single-dose vials or pre-filled syringes).
4. The volume of flushing solution should be at least twice the volume of the catheter system. For a peripheral catheter, 2 to 5 mL of preservative-free 0.9% sodium chloride before and after infusion is generally adequate.
5. Use preservative-free 0.9% sodium chloride for locking a peripheral catheter.
6. Check provider's order for flushing midline catheter.

Frequency

1. For catheters actively in use intermittently (for short, long, and midline catheters): aspirate and flush before use, after use, and prn. At minimum, every 8 hours.
2. IV's in place not actively being used (for short, long, and midline catheters) - For maintenance, aspirate and flush every 8 hours and prn. See Flush Chart recommendations.

Considerations

1. Access to flush IV lines will be via a needleless connector attached to the end of the IV catheter line. Flushing is not to occur directly into the IV catheter hub itself.
2. If IV catheter is multi-lumen and 1 lumen is not functioning properly, the provider must be notified for additional orders. It is not appropriate to tape the line as "do not use", it must be addressed.
3. 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.
4. Apply the push-pause technique to flush catheter.
5. When flushing after an IV push medication, flush at the same rate of injection as the medication.
6. If there is resistance or difficulty during flushing procedure, evaluate need for site rotation.
7. Monitor for infiltration of the vein during flushing procedure.
8. Follow manufacturer's instructions for flushing if different from above.

CATHETER INSERTION AND CARE

Equipment and Supplies

1. Preservative free 0.9% sodium chloride prefilled syringes. If vials are used, they must be preservative free and discarded after single use.
2. Heparin flush syringe(s) if indicated for the specific device.
3. Medication or infusion solution to be administered, if applicable
4. Alcohol wipes; and
5. Non-sterile gloves.

Steps in the Procedure

1. Assemble supplies.
2. Explain procedure to resident.
3. Prime medication tubing and/or remove air from syringes.

Flushing to Maintain Patency of Catheter

1. Obtain provider order for appropriate flush solutions - review Flush Chart recommendations. Please note that the flush orders must be complete medication orders.
2. Perform hand hygiene
3. Gather supplies
4. Don gloves
5. Disinfect needleless access device (end cap, access port) with alcohol wipe.
6. Prime and attach prefilled saline syringe to needleless access device.
7. Unclamp catheter if clamp is present.
8. Flush with preservative-free 0.9% sodium chloride using the push-pause technique. Note any resistance or sluggish flow rate. Do not flush if resistance is met.
9. Clamp catheter if clamp is present and remove syringe.
10. Repeat for each additional lumen, as appropriate.
11. Remove gloves and perform hand hygiene.
12. Discard used supplies in appropriate waste container.

Flushing Before and After Medication or Fluid Administration

1. Repeat steps 1-9 above.
2. Attach primed medication or infusion solution and infuse as prescribed.
3. When medication/fluid is completed, disconnect the medication or infusion solution.
4. Disinfect the needleless connector with an alcohol swab before attaching the primed preservative free NS syringe.
5. Flush with preservative-free 0.9% sodium chloride.
6. Clamp catheter, if clamp is present, then remove syringe.
7. Remove gloves and perform hand hygiene.
8. Discard used supplies in appropriate waste container.

Documentation

1. Document procedure in treatment administration 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 physician in nurse's notes.

Reporting

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

PERIPHERAL AND MIDLINE INTRAVENOUS CATHETER CARE AND DRESSING CHANGES

Policy

The purpose of this procedure is to prevent complications associated with intravenous therapy, including catheter-related infections associated with contaminated, loosened, or soiled catheter-site dressings.

General Guidelines

1. Perform site care and dressing change at established intervals or immediately if the integrity of the dressing is compromised (e.g., damp, loosened or visibly soiled).
2. Change the dressing if it becomes damp, there is blood or drainage present or if loosened or visibly soiled or if further assessment is needed due to suspicion of infection.:
   a. Peripheral IV catheter dressing change should occur at least every 7 days and as needed using a peripheral IV start kit.
   b. Midline and Central line dressing change every 7 days and as needed utilizing a central line dressing kit.
   c. At least every 7 days for TSM (transparent semi-permeable membrane dressing).
   d. If gauze is present under the TSM (transparent semi-permeable membrane), dressings must be changed every 2 days. It is not recommended to place gauze under TSM unless necessary due to drainage as it increases the frequency of dressing changes which increases risk of infection.
3. Maintain sterile dressing (TSM or sterile gauze) for all peripheral catheter sites.
4. Review for allergies of transparent dressings or tape. If allergies are noted, the use of gauze dressing may be applied and utilizing tape that resident is not allergic to. This type of dressing must be secure and changed every 48 hours and as needed.
5. Newly placed midlines, PICC, and central lines must have a dressing change within 24-48 hours post insertion if gauze was used and/or evidence of drainage or soiling. If a Biopatch^{R} was placed, it may remain for 7 days unless Biopatch^{R} is also compromised.
6. Sterile central line kits will be used to change dressings for midlines, PICC, central lines, or implanted ports. A mask must be worn during this procedure and should be available within the kit.
7. Any adhesive securement devices (i.e. Statlock^{R}) must also be changed every 7 days as part of the dressing change procedure.
8. Scissors must not be used at or near the dressing site.
9. Rolled gauze or elastic type of wrap are not to be used to secure vascular access devices.

Equipment and Supplies

1. IV start kit (for short peripheral IV's <3 inches in length). Sterile Central line dressing kit (for midlines, PICC, central lines, and implanted ports);
2. Adhesive stabilization device, if applicable; and
3. Non-sterile gloves.

Short Peripheral IV Dressing Change

1. Assemble supplies.
2. Perform hand hygiene and don gloves. Gloves do not need to be sterile when removing the existing dressing.
3. Explain procedure to resident.
4. Remove old dressing from distal to proximal (towards the head) while placing pressure on the catheter to prevent dislodgement. Using an alcohol swab may help to loosen the dressing. Use care to prevent skin tears and bruising.

5. Assess the insertion site for the following: redness, swelling, induration, drainage, evidence of sutures and inquire whether pain is present.
6. Disinfect site using aseptic no-touch technique (ANTT) using alcohol swabs to remove skin oils followed with antiseptic solution. Follow manufactures direction for antiseptic application. - Ensure resident does not have allergies to the antiseptic solution. If there is an allergy, a 2nd alcohol prep may be used for 60 seconds.
7. Allow area to air dry completely before application of any dressing. If not completely dry, the trapped moisture can cause skin irritation and discomfort.
8. Do not apply antibiotic ointment to insertion site as part of routine site care.
9. Place new dressing (TSM or gauze) over insertion site. Do not stretch the TSM dressing when applying as it can cause intense itching and skin tears. Application should be smooth by securing from the center towards the outside edge without wrinkles or air pockets present. Additional tape can be applied to reinforce the dressing and further stabilize the catheter.
10. Secure the extension tubing by creating a loose loop (to avoid tension on catheter or sutures if present) and taping it to the extremity.
11. Remove gloves and perform hand hygiene.
12. Label dressing with date, time, and initials. Do not write on the TSM dressing itself as it is a semi-permeable membrane and the marker or pen can leech through to the skin.
13. Dispose of waste in the proper receptacle according to CDC, OSHA, and facility policy and procedures.

Midline, PICC and Central Line Dressing Change

1. Assemble supplies. If only 1 mask is provided in the central line dressing kit, obtain an additional mask for the resident to wear prior to starting procedure.
2. Perform hand hygiene and don gloves. Gloves do not need to be sterile when removing the existing dressing.
3. Explain procedure to resident.
4. Remove old dressing from distal to proximal (towards the head) while placing pressure on the catheter to prevent dislodgement. Using an alcohol swab may help to loosen the dressing. Use care to prevent skin tears and bruising.
5. Assess the insertion site for the following: redness, swelling, induration, drainage, evidence of sutures and inquire whether pain is present. Measure external length of catheter using the sterile paper tape measure provided in the dressing change kit.
6. Remove gloves and perform hand hygiene. Don sterile gloves.
7. Disinfect site using aseptic no-touch technique (ANTT) using alcohol swabs, if necessary, to remove skin oils followed with the antiseptic solution provided in the dressing change kit. Follow manufactures direction for antiseptic application. - Ensure resident does not have allergies to the antiseptic solution. If there is an allergy, a 2nd alcohol prep may be used for 60 seconds.
8. Allow area to air dry completely before application of any dressing. If not completely dry, the trapped moisture can cause skin irritation and discomfort.
9. Apply adhesive securement device per manufacturer directions, if applicable or use sterile tape provided.
10. Do not apply antibiotic ointment to insertion site as part of routine site care.
11. Place new dressing (TSM or gauze) over insertion site. Do not stretch the TSM dressing when applying as it can cause intense itching and skin tears. Application should be smooth by securing from the center towards the outside edge without wrinkles or air pockets present. Additional tape can be applied to reinforce the dressing and further stabilize the catheter.
12. Secure the extension tubing by creating a loose loop (to avoid tension on catheter or sutures if present) and taping it to the extremity.
13. Remove gloves and perform hand hygiene.
14. Label dressing with date, time, and initials. Do not write on the TSM dressing itself as it is a semi-permeable membrane and the marker or pen can leech through to the skin.
15. Dispose of waste in the proper receptacle according to CDC, OSHA, and facility policy and procedures.

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/intervention related to insertion site or surrounding area.
   c. Site assessment
   d. Type of prep solution and dressing applied
   e. Type of catheter securement device
   f. Measurement of external catheter length (midlines, PICCS, and Central VADs)
   g. Resident's response to procedure.

Reporting

1. Notify physician, 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.

PERIPHERAL INTRAVENOUS CATHETERS AND SITE SELECTION

Policy

To select the most appropriate intravenous access device for the resident's situation. Any IV catheter that does not reach the vena cava is a peripheral IV device. This is informational and does not indicate that insertion of long catheters or midlines by facility nurses may be appropriate in the SNF setting. Please reference current board of nursing and state regulations along with education and competency requirements.

General Guidelines

Recommended Uses:

1. Isotonic (or mildly hypotonic or hypertonic) hydration
2. Non-irritant, non-vesicant, non-hyperosmolar (<900mOsm/L) solutions with a short duration of therapy

Assess the Resident:

1. Choose the site and vein most appropriate for resident condition based on assessment.
2. Before selecting the catheter, determine:
   a. type and duration of therapy;
   b. resident preference for insertion site. Use non-dominant arm, if possible;
   c. resident age, co-morbidities, and general condition;
   d. vascular and skin health; and
   e. history of vascular access attempts.

Select the Catheter:

1. Select peripheral intravenous catheters (PIVCs) based on prescribed therapies, infusion rate, duration of treatments, availability of peripheral access sites, diagnosis, and potential complications.
2. The least invasive VAD with the smallest outer diameter and least number of lumens needed for the prescribed therapy should be considered to reduce potential IV related complications
3. If a resident has an implanted port, it is the preferred route of infusion rather than placing an additional vascular access device.
4. Use PIVCs for duration of less than four days when criteria is met for compatibility of therapy.
5. Select the smallest gauge and shortest length catheter that will accommodate the therapy.
   a. Use a 20-24 gauge PIVC for most peripheral infusion therapies.
   b. Consider a large gauge PIV when rapid fluid replacement is required (trauma patients, etc.)
   c. Use a 22-24 gauge catheter as an option for older adults and patients with limited venous access to minimize insertion related trauma. *Note that studies have shown the risk of infiltration increased with use of 22 gauge short PIV was inserted compared to a 20 gauge short PIV.*
   d. Use steel-winged devices for single-dose administration of medication and then remove.
6. Short PIVC (less than 3" in length):
   a. Short term, non-irritating therapies
   b. Remove when clinically indicated when therapy complete, unresolved complications, or catheter is no longer necessary as part of care.
   c. Do not use PIVC for continuous infusion of medication with irritant or vesicant properties.

d. If infusion of total parenteral nutrition (TPN) through a PIVC is necessary, use restricted dextrose (< 10%) and protein (< 5%) solutions.
e. Do not use a short PIVC for deep veins (those that lie under the muscle). At least 2/3 of the catheter must reside in the vein.

7. Long PIVC (greater than 3" in length):
   a. Specialized Training Required for Insertion
   b. For short-term, non-irritating therapies
   c. Ultrasound guidance or other visualizing equipment is recommended for insertion
   d. Remove when clinically indicated when therapy complete, unresolved complications, or catheter is no longer necessary as part of care.
   e. Use long PIVC when criteria for use of a PIVC are met but vessel is not easily palpable or visible to the naked eye.
   f. When using a long PIVC, ensure that 2/3 of the catheter resides in the vein.
8. Midline Catheter (3-8" in length):
   a. Specialized training is required for insertion
   b. For longer term, non-irritating therapies
   c. Midlines do not extend past the axilla at the termination point.
   d. Use midline catheters for medications that are well-tolerated by peripheral veins (antimicrobials, fluids, analgesics, etc.).
   e. Do not use midline catheters for continuous therapy with vesicants, for parenteral nutrition, or for therapies with high pH or high osmolarity.
      (1) For intermittent therapy with vesicant solutions, increase the site monitoring for phlebitis and extravasation.

(2) Evaluate the risks/benefits of intermittent infusion of vesicant solutions for more than six (6) days.

f. Avoid midline catheters in residents who have a history of thrombosis, hypercoagulability, impaired venous circulation in the extremities, and/or end-stage renal disease.

g. Ultrasound guidance or other visualizing equipment is recommended for insertion

h. Remove when clinically indicated when therapy complete, unresolved complications, or catheter is no longer necessary as part of care.

Select the Site:

1. Select site in collaboration with the resident and interdisciplinary team.
2. Prioritize vessel health and vessel preservation.
3. Prevent nerve damage. Use caution at the cephalic vein of the radial wrist, the volar (inner) wrist, and at or above the antecubital fossa due to potential nerve damage.
4. Do not use lower extremities in adults unless needed for an emergency situation and a practitioner order has been obtained. Remove as soon as possible.
5. Do not use veins of the abdomen, chest, trunk, or breasts.
6. Avoid the following sites:
   a. Previous venipuncture site;
   b. Compromised veins;
   c. Areas of pain on palpation;
   d. Areas of planned procedures;
   e. Areas of flexion like the wrist or antecubital fossa;
   f. Bony prominences;
   g. Sites with bruising or other skin conditions that may compromise or increase potential IV related complications;
   h. Areas proximal to open wounds;
   i. Extremities with infection; and
   j. The side of the body affected by:
      i. History of breast cancer
      ii. Radiation therapy
      iii. Lymphedema
      iv. Flaccidity related to CVA
      v. AV fistula.

Select the Vein:

1. For short PIVC:
   a. Choose metacarpal, cephalic, basilic or median veins of the forearm for short peripheral catheters.
   b. Hand veins may be selected for short-term (less than 24 hours) therapy.
   c. The external jugular vein can be used in the event of an emergency when other veins cannot be accessed. A specific order is required to access this area as it is not considered peripheral
2. For long PIVC:
   a. Choose cephalic, basilic or median veins of the forearm for long peripheral catheters.
3. For midline catheter:
   a. Choose basilic, cephalic or brachial veins of the upper arm for midline catheters.

Special Considerations:

1. Renal disease/dialysis – For residents with arteriovenous fistula or arteriovenous graft, select the dorsum of the hand for PIVC insertion, avoiding the cephalic vein. Avoid catheter insertion in the forearm or upper arm. Note - this is informational only and nurses in the LTC/SNF setting must contact the provider for direction if a renal patient with fistula or grafts needs intravenous therapies.

Documentation

Suggested documentation upon catheter insertion:

1. Date and time
2. Consent /notification of resident/family/POA.
3. The location and condition of vein of the insertion and the rationale for selection.
4. Disinfectant used and process.
5. IV catheter brand, gauge, length, and lot #.
6. Observed blood return on aspiration
7. Number of attempts, both successful and unsuccessful. Refer to state practice act for number of allowed attempts.
8. Flush used and protocol
9. 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.

PERIPHERAL INTRAVENOUS CATHETER INSERTION

Policy

The purpose of this procedure is to provide guidelines for the safe and aseptic insertion of a peripheral intravenous catheter (3" or less) for the administration of intravenous fluids and/or medications. Reference board of nursing, state regulations, and facility policy and procedures for the criteria of nurses to perform this procedure. The nurse must have documented intravenous therapy education and competencies in place.

General Guidelines

Hair Removal:

1. Remove excess hair at the insertion site if needed to facilitate application of IV dressing and only with resident consent prior to site preparation and catheter insertion.
2. Avoid shaving the site with a razor as it increases the risk of infection.
3. Clip hair with aseptic, single-resident use safety scissors or electric clippers.
4. Do not use depilatories, which may cause skin irritation.

Skin Antisepsis and Infection Control:

1. Evaluate patient history for any allergies or sensitivity to skin antisepsis products or tape. If there is an allergy to the chlorhexidine antisepsis product in IV start kit, 70% alcohol swabs or an iodophor (povidone-iodine) product may be used. Follow manufacturer directions for application and use of specific product.
2. Use Aseptic Non-Touch Technique (Standard ANTT®) for simple PIVC insertion. Standard Precautions will be used throughout the procedure.
3. Do not attempt more than two catheter insertions. After two unsuccessful attempts, request another nurse or clinician with more advanced skill in IV catheter insertion. After 4 total attempts, the staff must obtain an outside source for evaluation and insertion.
4. If the resident has a known history of difficult intravascular access, or no visible/palpable veins, refer to an infusion specialist.
5. Use new sterile catheter for each insertion attempt.

Vascular Distension:

1. Enlarge vein with heat and gravity:
   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.
2. Apply tourniquet (single-resident use):
   a. Place 4 to 6 inches above insertion site.
   b. Should be snug-fitting, not tight.
   c. Remove within two minutes to prevent vascular damage.
3. Utilize visualization technology to increase success of insertion as applicable.

Equipment and Supplies

CATHETER INSERTION AND CARE

To Start IV

1. Peripheral short safety catheter (1 or 2) (gauge and size per assessment). IV catheters must be a brand that contains a safety mechanism to reduce needlestick punctures.
2. IV start kit (sterile gloves, single-use tourniquet, antiseptic solution, tape, securement device, dressing, and label).
3. Extension tubing and needleless connector device.
4. 10 mL syringe with normal saline.
5. Absorbent pad.
6. Sharps container.

If Starting Infusion:

1. Prescribed IV solution/medication, IV pole, tubing, pump/flow control device.
2. Non-sterile gloves.
3. Alcohol wipes.
4. Tape.
5. Label for IV tubing

Steps in the Procedure

1. A provider's order is necessary for this procedure.
2. Nurses may perform peripheral IV insertions on hands and forearms. The forearm is preferred due to increased stability and prolonged dwell time. Use of lower extremities is not recommended. IV catheters must never be inserted into an extremity that has a functional A-V fistula or shunt.
3. Review the order and type of solution/medication to be infused.
1. Correctly identify the resident and explain the procedure, obtaining verbal consent.
2. Perform hand hygiene.
3. Assemble equipment. Ensure area is disinfected prior to placing equipment on a surface. It is recommended that a barrier drape be considered as a working surface to place supplies onto.
4. Open packages, ensuring the IV catheter remains sterile and utilizing the ANTT technique of key part to key site.
5. Attach needleless connector to the extension set.
6. Attach prefilled NS syringe to the needleless connector and prime to eliminate air and set aside. This step needs to be completed prior to the insertion.
7. Perform hand hygiene.
8. To select the vein:
    a. This assessment can be done with or without gloves at the discretion of the nurse.
    b. Apply tourniquet.
    c. Choose vein within selected site. Factors to consider are - type of infusion, condition of veins and potential other sites, and duration of therapy. Avoid areas of flexion and start distally as appropriate.
    d. Remove tourniquet.
9. To insert the catheter:
    a. Don clean gloves (sterile gloves are not required to insert a sterile catheter if ANTT technique is used). However, the nurse cannot palpate the site after site disinfection if clean gloves are applied. If the nurse chooses to palpate site after disinfection, they must don sterile gloves that are present in the IV start kit.

b. Cleanse insertion site using the product present in the IV start kit, following manufacture direction for application and dry time. Allow prep to dry completely before proceeding.
c. Reapply tourniquet 4-6" above the disinfected site.
d. Do not palpate the site if clean gloves are on. If palpation is necessary, remove clean gloves and apply sterile gloves. Keep note of time that the tourniquet is on as it is not recommended over 2 minutes.
e. Stabilize vein below intended venipuncture site with non-dominant hand.
f. Insert catheter (bevel up) according to manufacturer's recommendation. Do not "go back and forth" with catheter as it can cause catheter damage and/or vessel wall damage.
g. When blood return is observed in the flashback chamber, level the device by decreasing the angle between the catheter and the skin and gently advance the catheter into the vein while stabilizing the stylet. The stylet should be held still and not advance with the catheter.
h. Stabilize hub of catheter with gloved thumb, avoiding the insertion site and place finger 1-2" above the insertion site with slight pressure to slow blood flow and prevent retrograde bleeding.
i. Release the tourniquet then remove stylet
j. Do not let go of the catheter as it can easily be pushed out of the vein by the blood pressure/pulse.

11. While stabilizing catheter with 1 hand, use the other hand to attach the primed extension tubing to the hub of the catheter. Flush with normal saline.
12. Secure the catheter using approved securement device (e.g., adhesive or integrated).
13. Observe insertion site for swelling (infiltration).
    a. If pain or swelling is observed, stop flushing and remove the IV catheter.
    b. If IV is flushing and no IV related complications observed, securing the site is next.
14. Secure the catheter with the sterile tape provided in the kit. There are various techniques and nurse shall ensure tape does not cross over insertion site which obscures future assessment.
15. Place transparent dressing over the insertion site.
16. Coil the extension tubing and secure with tape alongside of catheter to avoid accidental pulling or dislodgement of catheter.
17. Label dressing with date/time/initials.
18. Dispose of waste per OSHA, CDC, and facility policy.
19. Remove gloves and perform hand hygiene
20. If immediately infusing fluids or medications:
    a. Disinfect the needleless connector of the PIV extension tubing with an alcohol swab
    b. Connect the primed IV tubing into the disinfected needleless connector.
    c. Program flow device to desired flow rate and infusion time according to providers orders.
    d. Open clamps on primary IV tubing and on needleless connector.
    e. Start infusion per providers orders.
    f. Observe infusion for 5-10 minutes. If it is a new medication for the resident, the nurse will observe the first 5-10 minutes and will continue routine checks during therapy session.
    g. 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 per nurse or 4 total).
3. The type, length, gauge and lot # of catheter, and type of antiseptic agent used.
4. The location of insertion site (be specific to name of vein, area of limb).
5. The type of solution or medication infusing (if applicable).

6. The amount of solution or medication to be infused (if applicable).
7. The rate of infusion (if applicable).
8. The condition of the IV site.
9. Notification of the physician (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.

PERIPHERAL INTRAVENOUS CATHETER REMOVAL

Policy

The purpose of this procedure is to provide guidelines for safe, aseptic removal of a short peripheral IV catheter.

1. Reference board of nurse, state regulations, and facility policy regarding scope of practice for nurses to perform this procedure. There is to be documented education and competencies.
2. Surgically placed catheters are not be removed by nurses as it is out of scope of practice.
3. Do not remove a peripheral IV catheter based on dwell time alone.
4. Remove the peripheral IV catheter if:
   a. infusion therapy is discontinued;
   b. it is not used for more than 24 hours;
   c. it is no longer in the plan of care; or
   d. there are unresolved complications.
5. If there are signs/symptoms of a catheter-associated blood stream infection, notify the provider regarding a possible culture prior to removing the peripheral/ midline IV catheter.
6. If there are signs/symptoms of extravasation, detach the administration set and immediately notify provider of findings. Request further instructions.
7. If a catheter has been inserted under non-aseptic conditions in another healthcare setting, remove and replace within 24-48 hours.
8. Removing the peripheral IV catheter is an aseptic procedure.

Equipment and Supplies

1. Non-sterile gloves;
2. Alcohol wipes;
3. Sterile 2x2 gauze; and
4. Adhesive bandage.

Steps in the Procedure

1. Verify if catheter is to be removed.
2. Explain procedure to resident.
3. Assemble equipment.
4. Perform hand hygiene. Don non-sterile gloves.
5. Remove any tape that is on dressing or tubing. Use of an alcohol swab may help to loosen the adhesive.
6. Stabilize catheter hub with a finger. Remove transparent dressing from distal to proximal (towards the head).
7. Grasp catheter wings or hub and gently remove catheter out of vein. Have 2x2 gauze prepared to place over the insertion site upon removal (do not apply gauze or pressure until catheter is out as it can cause pain).
8. Apply pressure to gauze over insertion site. Hold for approximately one minute or until bleeding stops.
9. May replace with new sterile gauze, if necessary and secure with tape or adhesive bandage.
10. Dispose of papers and gloves in trash.
11. Inspect catheter for damage and verify the catheter tip is intact.
12. Dispose of waste per OSHA, CDC, and facility policy.
13. Remove gloves and perform hand hygiene.
14. Assess resident for tolerance of procedure.

CATHETER INSERTION AND CARE

Documentation

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

1. Date, time of procedure, and resident tolerance.
2. Catheter length and integrity and location that it was removed from.
3. Dressing application
4. Reason for removal of catheter (end of treatment, complication, rotation of site, etc.).
5. Any complications and interventions taken.
6. Any communication with physician or oncoming shift.

Reporting

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

REMOVAL OF MIDLINE, PICC AND CENTRAL LINE 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. *Note that the facility can create a policy and procedures that are more restrictive than the state regulations. Please seek out facility position on catheter removals.
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 midline, PICC or 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.
6. Resistance is possible during removal. Never pull against resistance as the risk of catheter damage or breakage could occur or potential vein damage.
7. Do not remove an IV catheter in the presence of DVT. See out direction from the provider.

Equipment

Non-sterile gloves
CVAD dressing change kit
Suture removal kit (if sutures are present)
Sterile petroleum or petroleum-based gauze – Do not use Betadine based gauze as it will evaporate and dry out.
Sterile gauze (if not provided in CVAD dressing change kit)

Procedure

1. Ensure order is present for the removal of the midline, PICC, or CVAD.
2. Explain procedure to the resident. Place the resident in Trendelenburg position or supine flat unless contraindicated. This is to reduce potential air embolism risk. It is recommended that the resident also wear a disposable mask and turn their head away from the catheter site.
3. Perform hand hygiene and don non-sterile gloves.
4. Remove old dressing and discard in appropriate receptacle. Observe any IV related complications and address as appropriate.
5. Remove gloves and perform hand hygiene.
6. Open central line dressing kit. There should be a mask on top of items that can be retrieved and put on. Remove the drape and place under the resident's arm (if PICC line or midline). This drape can also be used as a sterile field to drop sterile supplies onto, if necessary.
7. Open suture removal kit, if applicable.
8. Open petroleum gauze onto dressing tray or squeeze the sterile petroleum ointment onto gauze.
9. Don sterile gloves and clean site using antiseptic supplied in dressing change kit and use per manufacture directions.

10. Remove sutures, if applicable.
11. Make note of the external catheter length present prior to removing the catheter. There is a disposable paper tape present in the dressing change kit, if catheter markings are not visible.
12. For CVADs: Explain and ask patient to perform the Valsalva maneuver and/or hold his or her breath during catheter removal and/or time catheter removal to coincide with end inspiration/beginning expiration. If the resident is unable to follow directions, remove the catheter during exhalation.
13. Grasp the catheter wings or hub and remove with a gentle pulling motion. Pull out 2", release grip, reposition near insertion site, pull another 2", reposition, and continue this motion until catheter is removed.
14. If resistance is encountered, DO NOT FORCE the removal. Reposition the resident's arm, have him/her turn their neck and make an additional attempt. If the catheter will not move, clamp the catheter, place a dressing over the site, and notify the provider for further directions.
15. After the catheter is removed, apply gentle pressure over the exit site with a dry sterile 2x2 until the bleeding resolves. Avoid checking the site and allow at least 2 minutes of direct pressure before evaluating if bleeding has stopped.
16. Apply petroleum gauze or sterile petroleum ointment on gauze over the insertion site.
17. Apply an air occlusive transparent dressing on top of the petroleum gauze which is to remain in place for a minimum of 24 hours or as ordered by provider. This is to decrease the risk of retrograde air emboli. Please note that if the resident is preparing for discharge, these instructions will need to be included.
18. For CVADS: Resident to remain in a flat or reclining position, if able, for 30 minutes after removal.
19. Assess the removed catheter to ensure it is fully intact, inspect the integrity of catheter and the tip. The catheter tip should be straight or beveled. Any uneven or jagged edge would be suspicious for catheter breakage and additional evaluation should be pursued immediately.
20. Dispose of waste per OSHA, CDC, and facility policy.
21. Remove gloves and perform hand hygiene.
22. Monitor the resident for potential post-removal complications such as signs and symptoms of air embolism, catheter fracture/embolism, dislodgement of thrombus or fibrin sheath, respiratory distress, or bleeding. If any post removal complications arise, nursing staff are to take appropriate action immediately.
23. Document procedure, catheter related information such as external length prior to removal, the overall catheter length, integrity, and tip of catheter, along with resident tolerance to procedure. In addition, document any education offered to the resident.

STABILIZATION AND SECUREMENT DEVICES

Policy

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

General Guidelines for Device Stabilization and Securement

1. Catheter stabilization devices may be used to prevent complications such as migration of the catheter, pistoning 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 includes assessment of:
   a. Skin integrity and turgor;
   b. Age;
   c. Anticipated duration of therapy;
   d. Type of vascular access device;
   e. Prior injury from adhesives; and
   f. Whether there is drainage from the insertion site.
4. The following devices may be used to stabilize catheters:
   a. Adhesive securement devices (ASD);
   b. Integrated (adhesive plus dressing) securement devices (ISD);
   c. Subcutaneous anchor securement system (SASS); and
   d. Tissue adhesive (TA).
5. The following are not used as primary methods of catheter securement:
   a. Sutures;
   b. Non-sterile tape;
   c. Dressings (transparent or gauze) alone; or
   d. Rolled bandages (with or without elastic properties).
6. Peripherally inserted central catheters (PICCs) are secured using SASS, ISD, TA or ASDs.
7. Stabilization/securement devices are assessed upon each dressing change and replaced according to manufacturer's directions:
   a. Remove and replace ASDs with each dressing change;
   b. Reapply TA with each dressing change; and
   c. Assess the integrity of the SASS during catheter care, but do not remove and replace regularly with dressing changes.
8. The skin is evaluated for adhesive injury during dressing change and skin antisepsis. Use skin barrier products as needed.

General Guidelines for Joint Stabilization

1. In general, areas of flexion are avoided as insertion sites.
2. Joint stabilization devices are applied only as necessary and in a way that:
   a. Maximizes resident comfort (padded as needed).
   b. Supports the area of flexion in order to maintain functional position.
   c. Allows for full visual access of the catheter insertion site.
   d. Does not cause circulatory constriction, skin damage, or nerve damage.

3. Arm boards, splints, and other devices designed to stabilize joints and prevent catheter complications are not considered restraints.
4. The device is removed regularly and the resident assessed for the following:
    a. Circulation.
    b. Skin integrity.
    c. Catheter functionality.
    d. Range of motion.
5. The reason for the use of the joint stabilization device (stabilization of the insertion site, which prevents catheter dislodgement) is documented in the medical record.

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.
5. Provide education to the resident regarding risk of using craft scissors at bedside. In addition, documentation of the education provided should be present in the medical record.

MEDICATION ADMINISTRATION

ADMINISTERING MEDICATIONS BY INTRAVENOUS PUSH

Policy

The purpose of this procedure is to provide guidelines for the safe and aseptic administration of a medication bolus (IV push) directly into the venous system through a vascular access device.

Preparation

1. A physician's order is necessary to administer medication via this route.
2. Review the resident's care plan to assess for any special needs of the resident.
3. Assemble the equipment and supplies as needed.
4. The licensed nurse responsible for intravenous (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 drug and to flush appropriately.

General Guidelines

1. Verify scope of practice and competency requirements for this procedure with State Nurse Practice Act and facility policies and procedures.
2. 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. Obtain anaphylaxis protocols/orders.
3. Administer IV push medications at the rate recommended by the pharmacy, or as ordered.
4. Follow with appropriate amount of normal saline flush at the same rate as the IV push medication.
5. Administer IV push medications through the port closest to the resident in an existing infusion.
6. Follow manufacturer recommendations and pharmacy/facility guidelines for approved routes of medication administration for particular medications. *Some medications cannot be administered via IV push*.

Equipment and Supplies

1. Medication vial or ampule;
2. Medication labels for syringe;
3. Saline (preservative-free 0.9% sodium chloride) for flush per facility protocol or flushing chart guidance;
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; and

8. Alcohol wipes, tape.

Assessment

1. Inspect intravenous catheter site and system for signs of complications. Review physician's order to confirm type of medication, amount, route, and rate of administration.
2. Verify the identity of the resident.
3. Inspect medication label and verify against the order.
4. Check vial for leaks, cracks, precipitate and expiration date.
5. Use a separate syringe for each medication. Give one medicine at a time, flushing with saline in between medications.

Steps in the Procedure

1. Perform hand hygiene. Apply non-sterile gloves.
2. Withdraw ordered amount of medication from vial or glass ampule (use filter straw to withdraw medication from glass ampule).
3. Vials labeled as "single dose" or "single use" are not used on multiple residents or multiple times for a single resident.
4. Dilute medication with appropriate diluent (follow manufacturer guidelines or consult pharmacy). Do not use NS flush syringe as the diluent.
5. When diluting or reconstituting medications, follow USP <797> guidelines for compounding sterile preparations and see P&P "Compounding at the Nursing Facility for Immediate Use".

To administer medication directly through an IV catheter:

1. Disinfect needless connection device;
2. Attach saline-filled syringe, aspirate for evidence of blood to ensure patency, then flush per orders or the flushing chart guideline;
3. Disinfect the needleless connector then attach medication-filled syringe and administer medication according to prescribed rate. If no rate is specified, administer over 1-2 minutes;

To calculate mL/minute
mL to be infused = mL/min **number of minutes** **Example:** Order is for 25 mg of medication to be administered over 5 minutes. Vial contains 25 mg/mL and must be diluted in 5 mL of sterile water. Total amount to be infused is 6 mL (1 mL of medication + 5 mL diluent). **6 mL = 1.2 mL/min** **5 mins**

4. Remove medication syringe;
5. Disinfect needleless connector and attach a new NS flush syringe and flush catheter with appropriate flush (saline or dextrose) at the same rate that medication had been given;
6. Clamp the extension set, if present and remove the NS flush syringe;
7. Discard waste per OSHA, CDC, and facility policy and procedures; and
8. Remove gloves and perform hand hygiene.

To administer through the side (Y) port of the administration set tubing:

1. Open IV clamp and allow primary solution to flow freely;
2. Disinfect the Y port closest to IV site with alcohol;
3. Attach medication-filled syringe to Y port and administer medication per calculated rate or prescriber/pharmacy instructions.. Stop intermittently to allow primary solution to flow;
4. Remove syringe. After medication is administered, allow the IV solution to flush the tubing and catheter;
5. Return infusion to prescribed rate;
6. Discard waste per OSHA, CDC, and facility policy and procedures; and
7. Remove gloves and perform hand hygiene.

Documentation

Document the following in the resident's medical record:

1. Medication;
2. Dose;
3. Total amount infused;
4. Total time infused;
5. Condition of the catheter site; and
6. Resident response to the procedure, including any results of the medication (adverse or desired).

Reporting

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

ADMINISTERING MEDICATIONS THROUGH A SECONDARY TUBING

Policy

The purpose of this procedure is to provide guidelines for the safe and aseptic administration of medications intravenously through a secondary ("piggy back") line. The licensed nurse is responsible for ensuring this task falls within scope of practice and follows all applicable state regulations, Board of Nursing, and facility policy and procedures.

Preparation

1. A physician's order is necessary to administer medication.
2. Check for medication allergies.
3. Assemble the equipment and supplies as needed.
4. The licensed 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. allergies.

General Guidelines

1. First dose of a medication should be given under clinical supervision with the ability to respond to a life-threatening hypersensitivity or anaphylactic reaction. It is recommended that the nurse remain with the resident for the first 5-10 minutes of infusion and checks on the resident every 5-10 minutes throughout the administration.
2. If a secondary administration set is disconnected from a primary administration set, the secondary administration set is considered intermittent and is then changed every 24 hours. Refer to policy concerning administration set/tubing changes.

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.
2. Review physician's order (resident name, medication, dose, concentration, route, rate, frequency and special instructions). Compare with medication dispensed by the pharmacy.
3. If no rate is ordered, calculate rate according to dose, volume and time ordered.
4. Check medication bag for leaks, sterility, precipitate, and expiration date.
5. Ensure compatibility of secondary solution and primary solution.
6. If multiple medications are to be infused through secondary tubing, check with pharmacy to determine if separate tubing is needed for each medication.

Procedure

1. Perform hand hygiene and don non-sterile gloves.
2. Aseptically remove any protective covering present on the secondary bag where the tubing spike will be inserted.
3. Open secondary administration set.
    a. Note: secondary sets contain a plastic hanger which will be needed to hang the primary bag lower than the secondary bag.
    b. Clamp the tubing (move roller clamp to "off" position).
    c. Aseptically remove the protective covering from the spike end of the administration set and spike the secondary bag.
    d. Compress and release the drip chamber, filling it 1/3 to ½ full.
4. Prime the secondary tubing.
    a. Open the roller clamp and slowly prime with the secondary medication/solution.
    b. When solution fills the tubing, close the roller clamp.
5. Hang secondary bag on the IV pole.
6. Hang primary solution bag on hook provided with secondary administration set. *Secondary bag must be higher than primary bag.*
7. Disinfect upper port on primary tubing with alcohol wipe.
8. Aseptically attach secondary administration line to primary line at the Y port (above the infusion pump).
9. Open the roller clamp on the secondary line.
10. Administer medication according to prescribed rate.
11. Create two labels for the secondary tubing with date, time and initials. Attach one label close to the drip chamber and the other near the access port.
12. After the secondary infusion is completed, clamp the secondary tubing.
    a. **If infusing via gravity**: Readjust the infusion rate for the primary bag.
    b. **If infusing via pump**: Primary bag will automatically change back to set rates. Monitor pump actions.
13. Leave secondary administration set in place until next medication is scheduled to be administered.
    a. If next medication dose is given $\geq$ 24 hours after the first, the secondary bag and administration set are disconnected and discarded. Upon the next medication dose, repeat the steps for setup and priming.

b. If next medication dose is given in less than 24 hours, the secondary tubing should be back-primed from the primary infusion. (Note: this can only be done if primary and secondary infusions are compatible and if there is a back-check valve on the primary administration set.)

14. **Back-priming the secondary administration set tubing** (done immediately prior to next scheduled dose via secondary infusion).
    a. Do not disconnect the secondary administration set from the access port or the secondary bag.
    b. Hang (or hold) the primary bag above the already infused secondary bag.
    c. Open the roller clamp in the secondary administration set.
    d. Allow the primary solution to back-flow through the secondary tubing to flush leftover medication into the secondary bag.
    e. Close the roller clamp on the secondary tubing.
    f. Disconnect the old secondary bag, discard and aseptically spike the new secondary bag.
    g. Open roller clamp.
    h. Refer to above steps for infusion via pump or gravity.
15. Discard used supplies in appropriate receptacles.
16. Perform hand antisepsis.

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.

COMPOUNDING AT THE NURSING FACILITY FOR IMMEDIATE USE

Policy

The purpose of this procedure is to provide guidelines for the safe and aseptic compounding of a medication at the nursing facility for immediate use. The United States Pharmacopoeia (USP) regulates sterile compounding in all healthcare settings and requires that all sterile compounding for administration more than 4 hours after compounding be performed in a sterile work environment with specific environmental testing, personnel training and garbing, etc. This policy provides an exemption from USP compounding rules when the product will be used within 4 hours. It is the responsibility of the nursing facility's leadership to assure that these conditions are met.

Preparation

1. A physician's order is necessary to compound and administer medications.
2. Review the resident's care plan to assess for any special needs of the resident.
3. Check resident allergy list.
4. Assemble the equipment and supplies as needed.
5. The licensed nurse responsible for intravenous (IV) medications shall be knowledgeable in:
    a. aseptic compounding technique
    b. indications for use;
    c. appropriate routes of administration, doses and diluents;
    d. side effects;
    e. toxicities;
    f. incompatibilities;
    g. stability;
    h. storage requirements;
    i. potential complications; and
    j. length of time needed to administer drug.

General Guidelines

1. Medications that are reconstituted and/or added to an infusion solution in the nursing facility without sterile conditions or engineering controls (a sterile work environment) are considered to be at high risk for microbial contamination.
2. When all of the following conditions are met, compounding of sterile products for direct and immediate administration is not subject to the requirements for garbing and a sterile work environment of Category 1, Category2, or Category 3 compounding per USP standards:
    a. The compounded sterile preparation (CSP) must be for emergent use, short stability products, or for situations where a delay associated with lower-risk compounding would add risk for the resident.
    a. Aseptic techniques, processes, and procedures are followed, and written SOPs are in place to minimize the potential for contact with nonsterile surfaces, introduction of particulate matter or biological fluids, and mix-ups with other conventionally manufactured products or Compounded Sterile Products (CSP)s.
    b. Personnel are trained and demonstrate competency in aseptic processes as they relate to assigned tasks and the facility's SOPs.
    c. The preparation is performed in accordance with evidence-based information for physical and chemical compatibility of the drugs (e.g., approved labeling, stability and compatibility studies).
    b. The preparation involves the simple transfer of not more than three commercially manufactured packages of sterile, non-hazardous drugs in their original containers.

   d. Any unused starting component from a single-dose container must be discarded after preparation is complete. Single-dose containers must not be used for more than one patient.
   e. Administration begins within 4h following the start of preparation. If administration has not begun within 4h following the start of preparation, it must be promptly, appropriately, and safely discarded.
   f. Unless directly administered by the person who prepared it or administration is witnessed by the preparer, the CSP must be labeled with the names and amounts of all active ingredients, the name or initials of the person who prepared the preparation, and the 4-h time period within which administration must begin.
3. Verify scope of practice and competency requirements for this procedure with State Nurse Practice Act.
4. Follow manufacturer recommendations and pharmacy/facility guidelines for approved routes of medication administration for particular medications. *Some medications cannot be administered via IV push*.
5. Select an area with limited traffic and airflow, preferably with a closed door;
6. Clean and disinfect the countertop;

Equipment and Supplies

1. Medication vial or ampule;
2. Sterile diluent, if needed for reconstituting the vial;
3. Final solution container (usually D5W or normal saline), as appropriate;
4. Alcohol wipes;
5. Syringes and needles or needleless device;
6. Filter straw if withdrawing medicine from glass ampule;
7. Non-sterile gloves

8. Tape.

Assessment

1. Inspect intravenous catheter site and system for signs of complications. Review physician's order to confirm type of medication, amount, route, and rate of administration.
2. Verify the identity of the resident.
3. Inspect medication label and verify against the order.
4. Check vial for leaks, cracks, precipitate and expiration date.
5. Use a separate syringe for each medication. Give one medicine at a time, flushing with saline in between medications.

Steps in the Procedure

1. Perform hand hygiene. Apply non-sterile gloves.
2. If medication is a powder, first dilute medication with appropriate diluent (follow manufacturer guidelines or consult pharmacy).
3. Withdraw medication from vial or glass ampule (use filter straw to withdraw medication from glass ampule).
4. Add to diluent bag (usually 50-100ml of D5W or NS) unless administering via IV push.
5. When diluting or reconstituting medications, follow USP <797> guidelines for compounding sterile preparations.
6. Administer medication per the route as ordered, following proper policies and procedure for the route indicated.

Documentation

Document the following in the resident's medical record:

1. Medication;
2. Dose;
3. Total amount infused;
4. Total time infused;
5. Condition of the catheter site; and
6. Resident response to the procedure, including any results of the medication (adverse or desired).

Reporting

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

DEXTROSE 50 PERCENT INJECTION/INFUSION

Policy

Dextrose 50% is only administered by a nurse or physician for emergency treatment of severe hypoglycemia.

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.

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.

DOCUMENTATION OF MEDICATION ADMINISTRATION

Policy

A medication administration record is used to document all medications administered.

General Guidelines

1. A nurse documents all medications administered to each resident on the resident's medication administration record (MAR).
2. Administration of medication is documented immediately after it is given.
3. Documentation of medication administration includes, as a minimum:
   a. the resident's name;
   b. name and strength of the drug;
   c. diagnosis for use;
   d. dosage;
   e. frequency;
   f. route of administration;
   g. date and time of administration;
   h. reason(s) why a medication was withheld, not administered, or refused (as applicable);
   i. initials, signature and title of the person administering the medication;
   j. resident response to the medication, if applicable (e.g., PRN, pain medication, etc.); and
   k. the condition of the venipuncture or vascular access device site before and after medication administration (if administered intravenously).

HYPODERMOCLYSIS - SUBCUTANEOUS HYDRATION

Purpose

The purpose of this procedure is to provide guidelines for administration of subcutaneous infusion of fluids or medications to the resident as ordered.

General Guidelines

1. Hypodermoclysis is the administration of fluids or medication into the subcutaneous tissue through a small catheter. Hypodermoclysis does not require vascular access.
2. Hypodermoclysis reduces the chance of the following complications associated with intravenous therapy:
   a. Fluid overload;
   b. Phlebitis; and
   c. Infections.
3. Hypodermoclysis is appropriate for the slow administration of small volumes of fluid or medication.
   a. Reported hydration rates:
      (1) older adults – 5 to 167 mL/hr or 500 mL over 2-6 hours; or
      (2) palliative care – 42 to 72 mL/hr.
   b. Reported medication infusion rates:
      (1) up to 5 mL/hr.
4. When fluid is infused into the subcutaneous tissue it is absorbed slowly. While the fluid is absorbed, a fluid wheal will form. This is normal and is not an infiltration of fluids.
5. Verify with state Nurse Practice Act as to RN/LPN scope of practice and to facility policies and procedures regarding this procedure.
6. Subcutaneous infusion devices may be left in place between intermittent infusions if there is no inflammation, erythema, drainage or pain at the insertion site. No flushing is required.
7. SC sets will be changed when clinically indicated - order is complete or there is infusion related complications observed. Note that higher infusion rates or concentrated medication doses may require frequent site rotations.

Assessment and Site Selection

1. Assess the resident for appropriateness of the subcutaneous route, including:
   a. the prescribed medication;
   b. the resident's clinical condition; and
   c. adequacy of the subcutaneous tissue.
2. When selecting a site for subcutaneous access, consider the resident's comfort and mobility.
3. Select site area with intact skin and adequate subcutaneous tissue (1.0 – 2.5 cm).
4. Potential sites for needle placement include:
   a. abdomen;
   b. left iliac fossa;
   c. infraclavicular (just below the clavicle);
   d. deltoid;
   e. intrascapular;
   f. flank;
   g. hips; or
   h. thighs.

5. Avoid placement in the following areas:
    a. bony prominences;
    b. joints;
    c. surgical incisions;
    d. radiotherapy;
    e. damaged skin;
    f. intercostal space in patients with cachexia (due to high risk of pneumothorax);
    g. mastectomy;
    h. tumors;
    i. ascites;
    j. lymphedema;
    k. inner thigh if urinary catheter present;
    l. thigh if peripheral vascular insufficiency exists; or
    m. areas of frequent manipulation such as the resident's waistline or where undergarments are worn to avoid potential dislodgement.

Equipment and Supplies

1. Safety SC infusion device;
2. IV start kit;
3. Needleless connector;
4. Saline flush to prime the set (NOT to flush it);
5. Isotonic solution;
6. Antiseptic swabs;
7. Non-sterile gloves;
8. Transparent dressing; and
9. Connector or cap.

Steps in the Procedure

Preparation

1. Review the order. The order for hypodermocylsis should include:
    a. Type and quantity of solution or dose of medication;
    b. Rate of infusion; and
    c. Duration of treatment.
2. Explain procedure to resident.
3. Assemble supplies and solution or medication. Open packaging.

Insertion

1. Adhere to Standard-ANTT during device placement and infusion.
2. Wash hands. Don non-sterile gloves.
3. Disinfect the insertion site with cleansing solution (e.g., chlorhexidine swab) for 30 seconds. Allow to air dry.
4. Remove cover from hypodermocylsis needle.
5. Gently pinch skin with thumb and forefinger to raise area.
6. With the bevel up, insert needle into subcutaneous tissue at a 30-45 degree angle (20-30 degrees if subcutaneous

tissue is minimal).

7. Advance the needle until the wing reaches the insertion site.
8. If there is blood return during device placement, remove and insert new device at a different site.
9. Secure the catheter with transparent dressing.
10. Gently remove the guide wire from distal end of the device. Exchange the cap on the catheter with a neutral connector/cap.
11. Label dressing with the date of insertion and the solution.
12. Tape excess tubing to the skin.

Infusion

13. Prior to infusion, connect a syringe and gently aspirate to ensure there is no blood return. If there is blood return, remove and insert new device at a different site.
14. Connect solution administration set to catheter connector. Start fluid and adjust flow to ordered rate of infusion.
15. Monitor for fluid wheal formation. This is affected by metabolic rate of resident.
16. If necessary, the site may be lightly massaged to help fluid absorption.
17. Monitor the resident for any discomfort. Observe for any signs of peripheral edema (not the fluid wheal), leakage or fluid overload.

Site Care

18. Change dressing with site rotation, or immediately if the integrity of the dressing is compromised.
19. Assess the site and monitor the resident each shift.
20. Rotate site:
    a. As clinically indicated;
    b. For hydration solutions, every 24-48 hours or after 1.5-2.0 liters of solution have infused;
    c. For continuous infusion, every 2-7 days; and
    d. For intermittent infusions, with each infusion.

Documentation

1. Document the following in the resident's medical record upon insertion:
    a. Procedure;
    b. Size of catheter;
    c. Insertion site; and
    d. Resident's tolerance of the procedure.
2. Document the site rotation date on the medication administration record.
3. Document the following in the resident's medical record every shift:
    a. The location of catheter;
    b. Type, amount and rate of infusion. Time infusion was started and stopped;
    c. Condition of skin at insertion site, any leakage, peripheral edema (not fluid wheal), statement from resident regarding how they are tolerating the treatment;
    d. Date and time of site change and reason for changing (leakage, skin irritation, scheduled site change); and
    e. Any communication with physician.

Reporting

1. Report to physician or supervisor if the resident is experiencing discomfort or the infusate is not absorbing as

expected (there is leaking, edema or discomfort).

2. Report to oncoming shift nurses the type of treatment, needle insertion site, any complications, and any objective information concerning treatment.

INFUSION PUMPS AND FLOW CONTROL DEVICES

Policy

1. Devices used for controlling infusion rates are 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 are easily damaged and will be treated with care by facility staff.

General Guidelines

1. Intravenous (IV) therapies are 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. Type of vascular access device;
   f. Type of therapy;
   g. Frequency and rate of infusion;
   h. Medication stability;
   i. Medication dosage;
   j. Potential for side effects or adverse effects of therapy;
   k. Education and training required for staff;
   l. Safety issues related to use in facility; and
   m. Payor source
2. Non-electronic flow-control devices - used for low-risk infusions due to small variation in flow rate.
   a. Gravity infusions – can be used for small volume, peripheral infusions.
      (1) The use of a manual flow regulator (instead of a roller clamp) is recommended when easier regulation and/or more consistent flow are needed.
      (2) Electronic drip monitors can also be used with gravity administration sets.
3. Electronic infusion pumps – used for therapies that require precise flow-control.
4. Factors that play an important role in the decision to use a particular type of electronic 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.

5. Intravenous solutions to be administered via pumps are prepared in the clean room with appropriate supplies following hand hygiene and personal protective equipment procedures.
6. Each pump has specific instructions 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.
2. Whenever possible, pumps are plugged into an electrical wall outlet to preserve the battery charge.
3. Pumps are dispensed per resident. Once intravenous therapy is complete, pumps are returned to the pharmacy for disinfection and inspection between resident uses.
4. While in use in the facility, pumps are 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).
5. When a pump is determined to be faulty, the pharmacy is notified and the malfunctioning pump is returned to the pharmacy for inspection and repair.
6. The malfunctioning pump is 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.
7. All pumps undergo servicing (arranged by the pharmacy) at least once annually, or at the manufacturer's recommendation.
8. Preventative maintenance stickers are on all pumps.
9. Facilities are informed of the pharmacy's 24 hour emergency services for pump problems or replacement.
10. The pharmacy manager shall notify the pharmacy and nursing staffs of equipment hazards, defects and recalls as alerted.
11. Equipment is secured prior to transport to prevent damage.
12. Administration sets/tubing, medication cassettes or other attachments are removed and disposed of properly before returning pump to the pharmacy.
13. Dirty pumps are handled with gloves on, placed in plastic bags, and labeled as dirty prior to transport.

Documentation

1. Facility is responsible for maintaining documentation of staff education regarding the use/function of Intravenous Pumps used for their residents. Resource materials can be provided upon request.

INTRAVENOUS ADMINISTRATION OF FLUIDS AND ELECTROLYTES

Policy

The purpose of this procedure is to provide guidelines for the safe and aseptic administration of intravenous (IV) fluids and electrolytes for hydration.

General Guidelines

1. Monitor the residents frequently, per facility policy, when continuous fluids are infusing.
2. Monitor for signs and symptoms of fluid overload, catheter patency, insertion site complications, and the resident's tolerance of procedure.
3. The licensed nurse who is responsible for administering fluids and electrolytes must be knowledgeable of the following:
   a. indications for use;
   b. side effects;
   c. toxicities;
   d. incompatibilities;
   e. stability and storage requirements;
   f. potential complications; and
   g. appropriate rates, doses and routes of administration.
4. Assess the resident before and during infusion for fluid volume excess (hypervolemia). Signs and symptoms of fluid volume excess including dyspnea, shortness of breath, crackles, tachycardia, confusion and increased blood pressure.
5. Fluids should be stopped immediately if signs or symptoms of hypervolemia or other complications arise.

Preparation

1. A physician's order is necessary to administer intravenous fluids and electrolytes.
2. Review the resident's care plan and medical history for any special needs, including history of lung or heart disease, and allergies.
3. Assemble equipment.
4. Verify that the catheter is patent and there are no signs/symptoms of complications.

Assessment

1. Prior to administration of intravenous fluids and electrolytes, assess the resident's:
   a. overall health status;
   b. cardiovascular and respiratory status;
   c. history of allergies;
   d. vital signs;
   e. applicable lab reports; and
   f. appropriateness of therapy.
2. Inspect intravenous catheter and insertion site for signs and symptoms of complications.

3. Review physician's order. Confirm solution type, volume, route, and rate of administration.
4. Verify the identity of the resident.
5. Inspect solution for leaks, cracks, precipitate, and expiration date.

Equipment and Supplies

1. Infusion solution;
2. Administration set;
3. Pre-filled syringe with preservative-free 0.9% sodium chloride for flush;
4. Needleless access device/adapter;
5. Flow control device;
6. Gloves;
7. Alcohol swabs; and
8. Tape.

Steps in the Procedure

1. Perform hand hygiene and apply non-sterile gloves.
2. Hang solution on IV pole.
3. Ensure that the Rx label matches the order and medication rights are observed.
4. If solution removed from e-kit supply, the nurse shall properly label the infusion bag with all pertinent information.
5. Setting up infusion bag:
   a. Open administration set package and close the roller clamp.
   b. Carefully spike the solution bag with the injection spike of the primary IV tubing.
   c. After spiking the bag of solution or medication, it must be used or discarded within 24 hours.
6. Squeeze the drip chamber until 1/4-1/2 full. *Follow manufacture direction of whether to prime the tubing or not based on the infusion device used (i.e. IV pump, flow regulator tubing, etc.). Close clamp.*
7. Disinfect needleless access device on catheter port with alcohol swab.
8. Attach NS flush syringe, aspirate for evidence of blood return to determine patency, then flush catheter according to order or flushing chart guideline.
9. Connect primed administration set to needleless access device
10. Open roller clamp.
11. Establish prescribed rate of flow.
    a. If infusing via gravity:
       (1) check orders for amount to be infused and duration;
       (2) calculate drops per minute; and
       (3) adjust clamp to achieve desired flow rate.
    b. If infusing via pump:
       (1) check orders for amount to be infused and duration;
       (2) follow manufacturer's directions to program pump; and
       (3) program to achieve desired flow rate.

12. When infusion is complete:
    a. For intermittent therapy:
        (1) clamp tubing and disconnect from catheter;
        (2) if tubing will be reused, attach a single-use sterile cap on the end of the IV tubing; and
        (3) Scrub needleless connector on resident's catheter with alcohol wipe, attach NS flush syringe, aspirate for blood return and flush according to order or flushing chart guidelines.
    b. For continuous therapy:
        (1) mark solution container with label that states when bag was started and approximate time of completion.
        (2) Always use a label or tape (never write directly on the bag with ink or marker).

Documentation

1. Document procedure in the resident's medical record. The following information should be included:
    a. The date and time the infusion was administered.
    b. The type of solution administered.
    c. The amount of solution administered.
    d. The route of administration.
    e. The rate of administration.
    f. The condition of the IV site before and after administration.
    g. Notification of the physician if there are any complications.
    h. How the resident tolerated the procedure.
    i. The signature and title of the person recording the data.

Reporting

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

INTRAVENOUS PAIN MANAGEMENT

Policy

The purpose of this procedure is to provide guidance for situations in which there is an order for administration of an intravenous pain infusion.

Pain infusion pumps, especially those used for patient-controlled analgesia infusions are complex. Due to infrequent use, many staff people administering pain infusions will have limited experience and confidence. Also, pain infusions may require compounding and complex pump programming by the pharmacy. As other routes of administration and new delivery systems have become available, pain infusions have become less popular. These factors make other alternatives for pain management preferrable. Consequently, Consonus Pharmacy does not provide this service any longer.

General Guidelines

1. If an order for an IV pain infusion is received, the following options are available:
    a. Transdermal patch
    b. Oral short or long-acting medications
    c. Via enteral tube
    d. IV push analgesics
    e. IM or subcutaneous analgesics
    f. Rectal
    g. Buccal or sublingual
    h. Nasal
2. A provider's order is necessary for the particular medication strength, dose, route and frequency selected.
3. The facility staff are responsible for the knowledge and skills ability to safely perform any medication administration to the resident within state and Board of Nursing regulations.
4. Verify anaphylaxis and naloxone medication protocols/orders/medications prior to the administration of any opioids.

Assessment

1. Common indications for use of an intravenous pain infusion include but are not limited to: Residents with advanced stages of disease experiencing chronic, severe pain due to tumor recurrence, metastatic disease or other disease processes.
2. Prior to administration of pain medications assess resident's:
    a. Level of pain using appropriate pain scale;
    b. Level of consciousness and cognitive abilities;
    c. History of allergies; and
    d. Baseline vital signs, height and weight.
3. Prior to administration of any narcotic medication, assess the resident for risk factors of respiratory depression and other adverse events, including:
    a. Other medications that may cause respiratory depression:
    b. Age;
    c. Morbid obesity;
    d. Obstructive sleep apnea or other known/suspected sleeping disorder;
    e. COPD, other breathing/pulmonary problems;
    f. Cardiac disease: and/or
    g. Renal or hepatic insufficiency.
4. Results of the assessment process will guide the selection of an alternative to the IV pain infusion which was ordered.

MEDICATION ADMINISTRATION

Procedure

1. Perform patient assessment.
2. Obtain order for analgesic via appropriate route.
    a. Utilize references for equianalgesic doses as needed
3. Review provider's order. Confirm type and amount of medication, route, and frequency of administration.
4. Refer to policies and procedures for administering medications by the route selected.
5. Verify the identity of the resident.
6. Check medication label and verify against the order.

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 administration, 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 completed, following local and state guidelines regarding waste of controlled medications and who is authorized to do so along with required documentation.
    e. Effectiveness of pain treatment, per resident statement or use of scale.
    f. Any changes in orders.
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.

MEDICATION BEYOND-USE DATING

Policy

All compounded medications have a beyond-use 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 compounded sterile preparation, or compounded non-sterile preparation shall not be stored, transported or used.
2. An expiration date is the last date that the manufacturer can guarantee the potency and safety of a medication.
3. The beyond-use date is determined by the pharmacy for compounded sterile and compounded non-sterile preparations.
4. Beyond-use dates for vials and ampules opened for admixtures are labeled with the BUD after opening.
5. The person who is administering the medication/solution is responsible for checking the beyond-use date prior to administering.
6. Medications are not administered after the beyond-use date. If a medication is dispensed after the beyond-use date, contact the pharmacy for guidance. Otherwise, discard the medication into the appropriate receptacle following local, state and facility guidelines.

MEDICATION ADMINISTRATION

MEDICATION OR SOLUTION COMPATIBILIY/INCOMPAITBILITY

Definitions

1. **COMPATIBILITY** indicates that when two or more medications or solutions are mixed together there are no negative effects on the physical, chemical or therapeutic properties of the medication(s) or solution(s).
   a. Compatibility means that medications and/or solutions can be mixed in the same infusion bag or given through the same tubing and catheter.
   b. When administering medications through an IV catheter, flush with normal saline[1] between each medication to avoid interaction potential.
2. **INCOMPATIBILITY** results when two or more substances react or interact which alters the expected activity of one or more components. Medication or solution incompatibility can result in a loss of therapeutic effect or harm to resident. Types of incompatibility include:
   a. Physical: occurs when combining a medication or solution causes physical changes to the mixture that are often visible. Signs can include any of the following: precipitate (floating particles), gas bubbles, cloudiness/haze, or color changes.
   b. Chemical: occurs when there is a reaction between medications or solutions which results in an alteration of the integrity or potency of the active ingredient. Example: a reaction between acidic and alkaline medications/solutions resulting in a change of pH which makes environment unstable for the medication.
   c. Therapeutic: occurs when the concomitant administration of medications or solutions leads to an altered or reduced therapeutic effect of the medication.

General Guidelines

1. Follow manufacturer's instructions and warnings regarding appropriate volume and type of diluent and compatible solutions.
2. Flush catheters between medication administration per facility protocol or physician order.
3. Consult current pharmacy guidelines for medication incompatibilities prior to mixing multiple medications in a single syringe for IV push.
4. Be knowledgeable of medications that are known to be incompatible with other medications (e.g., phenytoin, heparin, furosemide, diazepam, etc.).
5. Observe for changes in the appearance of IV solutions in the bag or tubing after adding any medication.
6. Do not piggy back any medications into a parenteral line unless the pharmacist has verified the compatibility of the mixtures.
7. If there are any signs of incompatibility DO NOT ADMINISTER THE MEDICATION OR SOLUTION. Notify the Physician and pharmacy.

1. Preservative-free 0.9% sodium chloride

PARENTERAL NUTRITION - LIPID ADMINISTRATION

Policy

Nurses have training and demonstrated clinical competency prior to administering lipids (injectable liquid emulsions [ILE]) through a venous access device.

General Guidelines

1. Lipids are used to provide calories and/or essential fatty acids to residents who are not able to get sufficient oral intake.
2. Lipid administration requires a provider's order. Lipid strength, volume, rate and frequency must be included in provider's order.
3. Lipids are commonly ordered in conjunction with total parenteral nutrition (TPN) and peripheral parenteral nutrition (PPN) solutions.
   a. Lipids may be administered mixed with parenteral nutrition or separately.
   b. The pharmacy may mix a 3 in 1 solution of PN with lipids which is delivered and administered as one bag.
4. An electronic infusion pump must be used with lipids and/or PPN.
5. Administration sets used to administer lipid-based infusates such as injectable liquid emulsions (ILE), total nutrient admixture (TNA), or total parenteral nutrition (TPN), are free of diethylhexyl-phthalate (DEHP).
6. When lipids are administered concurrently with PN, the lipid solution may be infused through a secondary tubing or administered via a separate VAD/lumen.
7. PN solutions are filtered with the correct filter pore size.
   a. The filter is placed as close to the resident as possible on the administration set.
   b. A 0.2-micron filter is used for PN solutions without lipids.
   c. A 1.2-micron filter is used for PN solutions containing lipids.
   d. Change all filters used for PN solutions in accordance with manufacturers' directions for use, which is generally every 24 hours.
   e. Change all filters used for lipid emulsions every 12 hours.
   f. Prime filters immediately before use.
8. Lipids can be administered through peripheral or central catheters if separate from PN.
   a. Administer PN solutions/emulsions containing final concentrations that result in an osmolarity greater than 900 mOsm/L through a central line.
   b. Reserve the administration of PPN solutions/emulsions with a final concentration of 10% dextrose or lower through a short peripheral catheter for situations in which a central line is not currently feasible and delay of feeding would be detrimental to the resident.
   c. There is increased risk for phlebitis with PPN; limit duration of PPN administration through a peripheral line to no more than 14 days.
   d. Do not use midline catheters for continuous vesicant therapy, PN, or solutions with extremes of pH or osmolarity.
9. Standard aseptic non-touch technique (ANTT) should be used at all times when administering lipids.
10. Lipids that are not mixed with PPN solutions expire 12 hours after being started. If part of TNA, lipids expire 24 hours after being started.
11. Lipids that are not mixed with PPN solutions do not require refrigeration.

12. 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.
13. NEVER SHAKE LIPID CONTAINER or add anything to lipids; this could cause aggregation of fat globules.
14. No other medications or fluids are to be attached or added to the lipid solution.
15. 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.
16. 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.
17. Administration set (tubing), needleless connection device, and container must be changed every 24 hours and with each new container.

Equipment and Supplies

1. Lipid solution;
2. Needleless connection device;
3. Electronic infusion pumps;
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. Spike PN container with primary administration set and prime tubing.
6. Close clamp on tubing and cap the needleless connection device with a sterile end cap.
7. Spike lipid container with secondary administration set and prime tubing.
8. Close clamp on tubing and cap the needleless connection device with a sterile end cap.
9. Disinfect the port on the primary administration set with alcohol wipe and attach secondary administration set to the primary (PN) administration set.
10. Disinfect and flush the IV catheter with normal saline (per protocol).

11. Attach distal end of primed PN tubing to the catheter
12. Release roller clamp on primary administration set. Observe for patency.
13. Place primary (PN) administration set in pump and set rate as ordered.
14. Place secondary (lipid) administration set into second pump and set rate as ordered.
15. Open roller clamp on secondary set.
16. Start both pumps and observe flow.
17. 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.

PARENTERAL NUTRITION

Policy

The purpose of parenteral nutrition (PN) is to provide guidelines for the safe and aseptic administration of partial or total nutrition to residents who have a need for supplemental nutrition.

Definitions

1. **Parenteral Nutrition (PN)** – 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.
2. **Partial (Peripheral) Parenteral Nutrition (PPN)** – Final dextrose concentration ≤10% and osmolarity of ≤900mOsm/liter.
   a. May be infused through large gauge peripheral catheter (20 gauge or larger). Central lines are preferred.
   b. Must be regulated by an electronic pump.
   c. Short term treatment (not to exceed 14 days).
3. **Total Parenteral Nutrition (TPN)** – Final dextrose concentration > 10% and osmolarity of >900mOsm/ liter.
   a. Must be given through a central venous access device.
   b. Must be regulated by an electronic pump.
   c. Treatment for short or long term therapy.

Preparation

1. A physician'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. Parenteral nutrition should be started in a hospital setting due to a high risk of complications.
3. Residents will have had stable glucose levels and no complications for at least 48 hours in the hospital before being transferred to long term care.
4. Verify with State Nurse Practice Act the role of the nurse and requirements for RN coverage on the unit while PN is infusing.
5. The long term care facility is responsible for having the proper staffing (per State Nurse Practice Act) before resident arrives in facility.
6. The assessment and management of PN residents is a multidisciplinary function involving the dietitian, physician, nursing and pharmacist.
7. The physician may write orders for the pharmacist to monitor and change the PN solution orders, in accordance with state practice laws.

General Guidelines

Handling and Storage

1. Do not accept PN bags from any facility other than the pharmacy. Keep PN bags refrigerated and protected from light until shortly before use.

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. Administer PN via an electronic pump. 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 injectable lipid emulsions (ILE). Change 0.2 micron filter every 24 hours.
   b. A separate 1.2 micron filter is used for injectable lipid emulsions (ILE). Attach this filter to the tubing below the 0.2 micron filter (so that the lipid emulsion does not flow through the 0.2 micron filter), or use a different lumen. Change 1.2 micron filter every 12 hours.
6. Prime filters immediately before using, following manufacturer's directions.
7. Use standard aseptic non-touch technique when handling PN.
8. For multi-lumen catheters, specify/label one lumen for PN use only. Do not use this lumen for other infusions or blood sampling.
9. Use only administration sets that are free of diethylhexyl-phthalate (DEHP) to administer PN.

Infusions

1. For PN solutions containing amino acid/dextrose formulas, or TNA (total nutrient admixture), change filter, administration set and needleless connection device with every new bag (at least every 24 hours).
2. For PN solutions containing ILE, change filter, administration set and needleless connection device with each new infusion. Hang time for ILE should not exceed 12 hours. If part of TNA, change every 24 hours.
3. Do not administer medications via secondary tubing or IV push through the PN tubing/lumen.
4. Do not disconnect PN tubing from catheter to administer medication. The system must stay intact to maintain sterile system.
5. 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:
   a. Hypo/hyperglycemia;
   b. Fluid/electrolyte imbalance;
   c. Infection;
   d. Malnutrition;
   e. Catheter complication;
   f. Change of mental status; and
   g. Other potential complications associated with PN therapy.
2. Include the following clinical monitoring at regular intervals (per physician or pharmacy order):
   a. Intake/output;
   b. Weight;
   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. Saline or heparin for flush, as appropriate;
5. Needleless access device/adapter;
6. Electronic infusion pump;
7. Gloves;
8. Alcohol swabs; and
9. Tape.

* These may be in a 3 in 1 mixture.

Steps in the 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 the intravenous (IV) access site and catheter for any 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.
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 antisepsis. Don non-sterile gloves.
12. Clean end of needleless access device on catheter with alcohol (70%).
13. Flush catheter with 0.9% sodium chloride (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 (continuous or intermittent).
16. Clean end of needleless access device on catheter with alcohol (70%).
17. Connect end of filter (or tubing if filter is attached to catheter) into catheter connection device.
18. Check connections. Secure tubing to resident with tape.
19. Start infusion and monitor for proper flow and any complications.
20. Ask the resident to notify the nurse if any problems develop such as shortness of breath, heart palpitations, catheter-related pain, or signs/symptoms of hypoglycemia/hyperglycemia.
21. Monitor resident, insertion site, and flow at regular intervals (at least every 2 hours).
22. Dispose of flush syringes and equipment packaging properly.

Pressure Alarms – Potentially Occluded Filter

1. Verify that the infusion pump is set to the appropriate pressure.
2. Check for kinks in the tubing, tracing from the pump to the VAD.
3. Confirm that all appropriate clamps are open.
4. Assess patency of the catheter.
5. Inspect the dressing to ensure that tubing is not kinked or twisted under the dressing.
6. Verify that the correct sized filter is being used.

7. Stop the infusion and replace the filter. Do not allow an unfiltered PN admixture infuse without a filter.

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.

1. Infusion rate, and changing of PN bag, tubing, needleless access device, filter, and flushes.
2. 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 physician, supervisor, and oncoming shift.
2. Report any changes in PN formula and lab results.

MEDICATION ADMINISTRATION

PARENTERAL NUTRITION - CONTINUOUS VS. CYCLED

Purpose

The purpose of this procedure is to explain the difference between continuous and cycled parenteral nutrition (PN) and to establish the guideline for tapering the rate of infusion when starting or stopping parenteral nutrition infusions.

Definitions

1. **Continuous Parenteral Nutrition** – The PN is infused at the **same rate** for **24 hours** a day. The solution bag and equipment are changed at approximately the same time each day. The system stays intact without interruption.
2. **Cycled Parenteral Nutrition** – The PN is infused for a shorter interval lasting **less than 24 hours**. The PN infuses for a time interval according to physician order. Many times this is done to accommodate resident schedules and allows for more freedom in lifestyle.

General Guidelines

1. The nurse must have received training and demonstrated competency related to the handling of PN prior to performing this procedure.
2. Use aseptic technique at all times when administering PN.
3. Parenteral nutrition should be delivered by midline or central line, according to the concentration of dextrose.
4. Guidelines for tapering **cycled parenteral nutrition** are as follows:
   a. The rate **tapers upward for 1-2 hours** when starting the infusion.
   b. Then the PN runs at a set rate for a determined time.
   c. The rate **tapers downward for 1-2 hours** before the infusion is stopped or discontinued.
   d. The time intervals and tapering rates will be determined by the physician or the pharmacist.
   e. The bag is then disconnected from the catheter and discarded.
   f. The catheter is flushed with saline/heparin per protocol.
5. **Never stop or discontinue parenteral nutrition suddenly**.
   a. The PN rate must be tapered downward over several hours to allow the pancreas to adjust to the decrease in glucose intake (and the subsequent decreased need for insulin). This will help prevent hypoglycemia.
   b. Total parenteral nutrition (TPN) (>10% dextrose) orders should include dextrose 10% IV fluid to be used if for some reason the TPN has to be stopped suddenly or is not available.
   c. The Dextrose 10% should be run at the same rate that the TPN was running. The Dextrose 10% can be run on an IV flow regulator tubing until TPN and pump are available.

PARENTERAL NUTRITION - PLACEMENT OF ADDITIVES

Policy

Nursing staff follow established guidelines for placing additives in the parenteral nutrition (PN) mixture. See the Policy on "Compounding at the Nursing Facility for Immediate Use" for specifics on USP rules around this process

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 receives training and demonstrates competency related to the handling of PN prior to performing this procedure.
3. Use standard aseptic non-touch technique (ANTT) when working with PN.
4. Use a clean room away from general traffic when placing additives in the PN bag.
5. Check expiration dates on additive bottles/vials and inspect the PN solution for deterioration or breakdown before placing additives.
6. 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 (a sterile work environment) 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 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 within 4 (four) hours 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.

PATIENT-CONTROLLED ANALGESIA

Purpose

The purpose of this procedure is to provide guidance for situations in which there is an order for administration of intravenous pain medication through patient-controlled analgesia (PCA). PCA is no longer a popular mode of providing analgesia as other routes or delivery systems have become available. Consequently, Consonus Pharmacy no longer provides this service.

General Guidelines

1. The patient can be given control over their analgesia by use of PRN (as needed) pain medication orders. It may be advised to order routine analgesics, as needed analgesics or a combination of routine and as needed.
2. If an order for PCA is received, the following alternate options are available:
    a. Transdermal patch
    b. Oral short or long-acting medications
    c. Via enteral tube
    d. IV push analgesics
    e. IM or subcutaneous analgesics
    f. Rectal
    g. Buccal or sublingual
    h. Nasal
3. For more details regarding alternatives to IV pain infusions see the policy on Intravenous Pain Management

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. A medication vial is sealed 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. Discard any vial with noted or suspected contaminants or abnormal properties.
3. Reconstitute medication in accordance with manufacturer's recommendations.
4. Prepare medication and assemble needed supplies in a clean area using a general aseptic field or micro critical aseptic field in accordance with ANTT.
5. Do not used prefilled flush syringes for dilution of medications.
6. Prepare medications immediately prior to administration.
7. Single-dose vials may be used for up to one hour after initial puncture.
8. After initial opening, the beyond-use date of multiple-dose medication vials is 28 days unless otherwise specified by the manufacturer.
9. Do not use vials labeled as "single dose" or "single use" on multiple residents. Use only for one resident in a single procedure.

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. Refer to the *Withdrawal and Transfer of Fluid from a Vial* policy for general guidelines on medication withdrawal from a vial.
2. Read medication package literature, medication label, or other appropriate reference to determine the correct diluent and quantity of diluent to be used.
3. Note any special steps required (such as shaking and for how long to completely dissolve powder).
4. Wash hands thoroughly.
5. Break and remove seal from diluent and medication vials and wipe rubber stoppers with separate alcohol swabs.
6. Inject air into diluent bottle using a sterile syringe.
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.
10. 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.
11. Administer medication or add to intravenous solution as directed and complete documentation.

12. 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 in the nursing facility 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, short stability products, 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 within four hours 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.

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. See Policy on Compounding at the Nursing Facility for Immediate Use for details on USP compliance.
2. Ampules with noted or suspected contaminants or abnormal properties will be discarded.
3. Single dose ampules will be discarded after opening and not stored for any time period.

Equipment and Supplies

1. Medication ampule;
2. Clean gloves;
3. Alcohol wipes;
4. 5-micron filter straw;
5. Safety syringe of appropriate size;
6. Needle of appropriate gauge;
7. Sterile cap if applicable; and
8. Sharps container.

Procedure

1. Verify medication order and resident allergies.
2. Perform hand hygiene and don clean gloves.
3. Assemble equipment and supplies needed.
4. Disinfect the neck of the ampule completely with an 70 percent alcohol wipe. Allow to dry before breaking the ampule.
5. 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.
6. Connect the syringe to the filter straw (leave it in the protective packaging until you're ready to use it), expel any air present in the syringe.
7. 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. Sit the ampule on a flat surface and break the neck away from you in a snapping motion. Most ampules are scored at the neck making it easier to break.
8. Pull the head off so the broken parts of the ampule are away from your body/hand to reduce potential injury to yourself.
9. Discard the head of the ampule into the sharps container.
10. Remove the protective covering from the filter straw. To withdraw medication from the ampule, insert the filter straw that is attached to the syringe, into the ampule. Do not touch the edges of broken ampule as it is contaminated. Do not inject air into the ampule.
11. 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.
12. 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.

13. After obtaining the desired volume from the ampule, remove the filter straw from the ampule. Discard ampule.
14. Tap the barrel of the syringe and remove any excess air bubbles.
15. Place a sterile cap at the end of the syringe for transportation to the resident's room or place of medication administration or attach the syringe's needle, if applicable, based on medication order and route.
16. Dispose of any waste per OSHA, CDC, or facility policy.
17. Remove gloves and perform hand hygiene.
18. Document.

WITHDRAWAL AND TRANSFER OF FLUID FROM A VIAL

Policy

Staff will be knowledgeable regarding proper medication withdrawal and transfer from a vial. Please refer to local and state guidelines for nursing scope of practice

General Guidelines

1. This procedure is for withdrawal of medication from a vial and not specific to preparation for IV infusion, reconstitution, direct injection, etc. Consult with IV pharmacist as needed.
2. See Policy on Compounding at the Nursing Facility for Immediate Use for details on USP compliance.
3. A medication vial is sealed 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. Therefore disinfecting with an alcohol swab is imperative prior to puncturing the rubber stopper.
4. Discard any vial with noted or suspected contaminants or abnormal properties. After initial opening, the beyond-use date of multiple-dose medication vials is 28 days unless otherwise specified by the manufacturer.
5. Do not use vials labeled as “single dose” or “single use” on multiple residents. Use only for one resident in a single procedure. Appropriately discard any remainder.

Equipment and Supplies

1. Medication vial;
2. Alcohol wipes;
3. Clean gloves;
4. Safety syringe of appropriate size. If syringe will be used to directly administer medication into an existing IV catheter line, it must be 10mL barrel size;
5. Safety needle of appropriate gauge;
6. Sterile cap, if applicable; and
7. Sharps container.

Procedure

1. Verify medication order and resident allergies.
2. Perform hand hygiene and don clean gloves.
3. Assemble equipment and supplies.
4. Review medication vial for correct medication, strength and expiration date.
5. Inspect the vial’s protective cap and rubber stopper for physical integrity. Remove the vial’s protective cap.
6. Disinfect by wiping the rubber stopper with alcohol wipe, allow to air dry.
7. Attach safety needle securely to a syringe of appropriate size.
8. Pull the syringe plunger back equal to desired volume of medication, not touching any part of the plunger except the flat portion at the end.
9. Remove the needle’s protective cover by pulling straight off. Do not twist.
10. Grasp the vial base with one hand.
11. With the other hand hold the syringe barrel and place the needle at a 45 degree angle to the rubber stopper.
12. Place the needle with the bevel facing upward and with a slight pressure away from the bevel, applying lateral and downward pressure. Pierce the self-sealing stopper in the center with the needle tip and inject the measured air into the space above the solution. (Do not inject air into the solution as it can cause bubbles or foaming).
13. Once the needle has penetrated the rubber closure, bring the needle and syringe to a vertical position and

complete the penetration.

14. Keeping the needle inserted into the vial, invert the vial and syringe so that the vial is now above the syringe. Keep the tip of the needle below the fluid level.
15. While holding the vial in one hand, use the other to withdraw the prescribed amount of medication while holding the syringe vertically and at eye level.
16. 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.
17. 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.
18. 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.
19. The syringe is turned upward after withdrawal to prevent leakage out of the needle.
20. 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.
21. Depending on administration order - some facilities require changing the needle if one was used to withdraw the medication.
22. If syringe with medication will be used to administer directly into an IV line, the needle is to be removed and sterile end cap placed on syringe to transport to resident room for administration.
23. If the vial is multi-dose, label with the BUD. If single dose, discard within one hour of puncturing.
24. Dispose of waste materials according to OSHA, CDC, and facility policy.
25. Remove gloves and perform hand hygiene.
26. Document in resident record.

MEDICATION MONITORING

ADVERSE CONSEQUENCES AND MEDICATION ERRORS

Policy

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

General Guidelines

Adverse Consequences

1. An "adverse consequence" refers to an unwanted, uncomfortable or dangerous effect that a drug may have, such as a decline in 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.
2. The staff and practitioner 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.
3. Residents receiving medication are monitored for adverse consequences.
4. Adverse consequences are promptly identified and reported.

Adverse Drug Reactions

1. An "adverse drug reaction" (ADR) is a form of adverse consequences. It may be either a secondary effect of a medication that is usually undesirable and different from the therapeutic and helpful effects of the drug; or any response to a medication that is noxious and unintended and occurs in doses for prophylaxis, diagnosis or therapy.
2. Adverse drug reactions are reported to the attending physician and pharmacist, and to federal agencies as appropriate.

Medication Errors

1. A "medication error" is defined as the preparation or administration of drugs or biologicals which is not in accordance with physician's orders, manufacturer specifications, or accepted professional standards and principles of the professional(s) providing services.
2. 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).

3. A "significant medication-related error" is defined as:
   a. Requiring medication discontinuation or dose modification. (Consult the current list of medications that should not be abruptly discontinued.)
   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.
4. Medication errors are managed according to facility policy.

Procedures

1. Review 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 order, review 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. Medication allergies.
   d. Presence of a boxed warning for specific side effect(s).
   e. Current medications, nutritional supplements, including herbal products, or foods that are incompatible with the prescribed medication.
   f. Any condition, history, or sensitivity that precludes the use of the medication.
   g. Documentation of the clinical rationale for using the medication if prescribed outside the accepted standard of practice.
3. Evaluate the resident for possible medication-related adverse consequences when the resident has clinically significant change in condition/status, including:
   a. Unexplained decline in function, cognition or behavior.
   b. Worsening of an existing problem or condition.
4. Monitor the resident for medication-related adverse consequences when there is a (an):
   a. Addition of a new medication.
   b. Discontinuation of an existing medication.
   c. An increase or decrease in dose or frequency.
   d. Addition or discontinuation of enteral feedings.
   e. Significant changes in diet that may affect medication absorption.
   f. Medication error, e.g., wrong or expired medication.

5. In the event of a significant medication-related error or adverse consequence, take action, as necessary, to protect the resident's safety and welfare.
   a. Promptly notify the provider of any significant error or adverse consequence.
   b. Implemented the provider orders and monitor the resident for 24 to 72 hours, or as directed.
   c. Communicate the event to the oncoming shift as needed to alert staff of the need for continued monitoring.
   d. Document the following information in an incident report and in the resident's clinical record:
      (1) The resident's name and age;
      (2) Medication, route, dose, date and time of administration;
      (3) Factual description of the error or adverse consequence;
      (4) Name of provider and time notified;
      (5) Provider's orders;
      (6) Treatment therapy or interventions; and
      (7) Resident's condition for 24 to 72 hours or as directed.
6. Each incident report is forwarded to:
   a. Director of nursing;
   b. QAPI Committee;
   c. Medical director; and
   d. Consultant pharmacist.
7. Data regarding medication adverse consequences and errors (e.g., total number of incidents, number of incidents by category/type, trends) is compiled and presented to the QAPI committee on a monthly or quarterly basis.
8. The QAPI committee is responsible for:
   a. Conducting a root cause analysis of medication administration errors to determine the source of errors;
   b. Creating and implementing process improvement steps; and
   c. Comparing results over time to determine that system improvements are effective in reducing errors.
9. Adverse events associated with contaminated or defective medications or infusion devices are reported to the Food and Drug Administration (FDA) through the MedWatch system, or to the Institute for Safe Medication Practices (ISMP).
   a. The following information is included in a product contamination, defect, or quality report to the FDA or ISMP:
   b. Suspected or known contamination;
   c. Product damage;
   d. Product tampering;
   e. Poor, confusing, or unclear labeling and/or instructions;
   f. Packaging defects;
   g. Product or device name; and
   h. Product or device model, lot, serial number and any other identifying information.
10. Follow additional instructions on FDA form 3500A (https://www.fda.gov/safety/medwatch-fda-safety-information-and-adverse-event-reporting-program)
    for reporting details when a medication or device defect results in resident injury or other adverse event.

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. Note that Consonus does not provide narcotic pain infusions.

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.

CLINICAL MONITORING OF PARENTERAL NUTRITION

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. 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.
3. Total nutrition admixture, also known as "3-in-1" or "all in one" solutions, consist of dextrose, amino acids, and lipid emulsion admixed into one container for parenteral administration.
4. Total parental nutrition, also known as "TPN", is used to indicate therapy in which all needed nutrients are provided parenterally.
5. 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.
6. 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.
7. 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.

d. Functional:
(1) Restricted movement due to catheter and continuous infusions; or
(2) Limitations secondary to clinical status.

e. Psychological:
(1) Inability to eat food; or
(2) Social isolation.

8. Laboratory tests commonly recommended for PN therapy:
a. Blood chemistries every week or every other week; monthly for stable residents. More frequent monitoring may be needed if patient unstable or early in therapy.
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.

9. 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.

LABORATORY MONITORING OF INTRAVENOUS 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 pharmacist whether dose of medication should be held until results are received.
   d. Blood draw technique per facility policy and procedures. Ensure all requirements of the lab company used are completed to avoid rejected lab samples.
   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.

THERAPEUTIC MEDICATION MONITORING GUIDELINES

Policy

The purpose of this policy is to provide guidelines for clinical monitoring in order to assist pharmacists in providing effective infusion medication therapy while minimizing the potential for adverse drug reactions or toxicities.

General Guidelines

Definitions Pertinent To Clinical Monitoring Guidelines:

1. APPARENT VOLUME OF DISTRIBUTION: The size or volume of a theoretical compartment found in the serum; accounts for the total amount of medication in the body present throughout the body in the same concentration.
2. BIOAVAILABILITY: The amount of unchanged medication reaching the systemic circulation after extravascular administration compared with the amount administered.
3. CLEARANCE, METABOLIC: A measure of how well the body can biotransform a medication into either an active or inactive compound in order to enhance removal from the body.
4. CLEARANCE, RENAL: A measure of the kidney's ability to remove a substance from plasma or serum; expressed as a volume/unit of time. This may involve one or more of the following processes: glomerular filtration, tubular secretion and tubular reabsorption.
5. CLEARANCE, TOTAL SYSTEMIC: A measure of the ability of the body to remove a substance from a specific body fluid by all processes.
6. DISPOSITION: The processes that occur after absorption of the medication. These include, but are not limited to, distribution, metabolism and elimination.
7. DISTRIBUTION: The movement of medication within the intravascular space and from the intravascular space to extravascular fluids and tissues. This movement may be reversible.
8. ELIMINATION: Irreversible loss of medication which primarily occurs by two processes, metabolism and excretion.
9. ELIMINATION RATE CONSTANT (k): The fraction or percentage of the total amount of medication removed per unit of time. The elimination rate constant is a function of clearance and volume of distribution.
10. FIRST PASS EFFECT: The hepatic or gastrointestinal wall metabolism of a medication that occurs upon oral absorption, but before the medication reaches the systemic circulation.
11. FREE MEDICATION CONCENTRATION: The concentration of a medication in a biologic fluid (plasma, serum) that is not bound to protein. The unbound medication is presumed to be the fraction which is pharmacologically active.
12. HALF-LIFE (t1/2): The time required for the serum concentration to fall by one half.
13. LEAN BODY WEIGHT (Ideal Body Weight or IBW): The actual body weight minus the excess of adipose tissue.
14. LOADING DOSE: Dose of a medication that can be given to rapidly achieve a desired serum concentration.
15. NON-LINEAR KINETICS (zero order kinetics): Shown by medications for which the absorption, excretion or metabolism is capacity limited and therefore may become saturated at high serum concentrations. These medications use Michaelis-Menton kinetics for estimating level predictions.
16. PEAK SERUM CONCENTRATION (Cpmax): The maximum serum concentration attained following administration of a dose of a medication.
17. PHARMACOKINETICS: The study of the time course of medication and metabolite concentration in different biological fluids and tissues of the body and the mathematical relationships which can be used to interpret those values in a particular patient.
18. TROUGH SERUM CONCENTRATIONS (Cpmin): The concentration of medication in the serum immediately

before the next dose approximating the lowest serum concentration between doses.

19. USUAL THERAPEUTIC RANGE: The range of concentrations in which a therapeutic effect is most likely to occur in a majority of patients.

Therapeutic Monitoring Principles:

1. Sampling:
   a. Accurate and precise timing, both in administration of the medication and in obtaining blood samples, are of utmost importance in medication monitoring.
   b. For meaningful interpretation, timing and duration of dosing and samples is imperative.
   c. For long-term therapies, the samples should be collected after a "steady state" has been reached (approximately 4-5 half-lives).
   d. The sample is drawn at the time of maximum serum medication concentration (peak) and/or immediately before the administration of another dose (trough) depending on the clinical indication.
   e. To obtain a peak serum concentration the clinician must allow for the medication to be distributed before drawing a sample.
   f. For most medications the initial distribution phase is between 1-2 hours.
2. Relationship between dose, serum level and clinical response:
   a. The intensity of the pharmacological action of many medications correlates better with serum concentrations than with dose.
   b. For most medications, the dose administered corresponds to some extent with the intensity of the pharmacological effect, but a significant variability in the dose-response relationship is observed among many patients due to several factors.
   c. Serum medication concentrations may depend on:
      (1) Compliance or medication adherence;
      (2) Correct medication for indication;
      (3) Absorption;
      (4) Distribution;
      (5) Biotransformation; and
      (6) Excretion.
   d. In addition, the medication concentration is influenced by regional blood flow, binding to serum proteins, fluid status of the patient, and transport mechanisms.
   e. Tissue responsiveness, the presence of other medications, disease state and the patient's age are additional factors that alter the intensity of the pharmacological effect of the medication.
3. Medications that should be monitored should be assessed based on the following guidelines:
   a. Dangerous toxicities with poorly defined clinical endpoints;
   b. Steep dose response curves;
   c. Narrow therapeutic ranges;
   d. Indicated or used for long-term therapy;
   e. Used in the treatment of life-threatening diseases;
   f. Considerable inter-individual pharmacokinetic variability;
   g. Non-linear pharmacokinetics;
   h. Wide distribution in the body; and/or
   i. Reliable analytical methods for serum measurements.
4. Interpretation of serum medication concentrations and dose adjustments:
   a. Medication concentration determinations must always be interpreted in the context of all clinical data.
   b. Therapeutic ranges have been established to aid in the interpretation of serum medication concentrations. These therapeutic ranges vary not only in medical literature, but also from one laboratory to another and must be used only as a general rule when monitoring.

c. Many factors alter the effect of a medication concentration at the site of action:
   (1) Occasionally patients will exhibit an adequate therapeutic effect while demonstrating a medication concentration in either the subtherapeutic or toxic range.
   (2) Patients may develop a tolerance to certain medications during long term therapies, in these cases, the upper limit of the therapeutic range may be raised.
   (3) In addition, therapeutic ranges of serum medication concentrations require adjustment when other medications with synergistic or antagonistic actions are administered concurrently.
   (4) The existence of pharmacologically active metabolites and changes in protein binding must be considered when interpreting serum concentrations.

d. The following may produce unexpected serum medication concentrations:
   (1) Non-compliance;
   (2) Inappropriate dosage;
   (3) Malabsorption;
   (4) Poor bioavailability of the medication;
   (5) Medication interactions;
   (6) Changes in liver/kidney function;
   (7) Altered protein binding;
   (8) Fever;
   (9) Genetically determined fast or slow metabolism of certain medications; and/or
   (10) Drawing blood samples from central lines with improper or inadequate flushing of the line.

5. Clinical indication for measuring medication concentrations:
   a. When a medication overdose is suspected or in cases in which the expected therapeutic effect has not been observed.
   b. Establishing the optimum medication dose in cases which no means of response, by simple reliable parameters, is available.
   c. The knowledge of a medication concentration is important when symptoms resulting from toxicity and under-treatment are similar, especially when symptoms of the disease to be treated are already present.
   d. The knowledge of the serum medication concentration is useful in establishing a dose level.
   e. Determining serum medication concentration is necessary when a change in bioavailability is suspected or when persistent adverse reactions occur.
   f. Determination of concentrations may be particularly important during clinical trials of new or experimental medications.

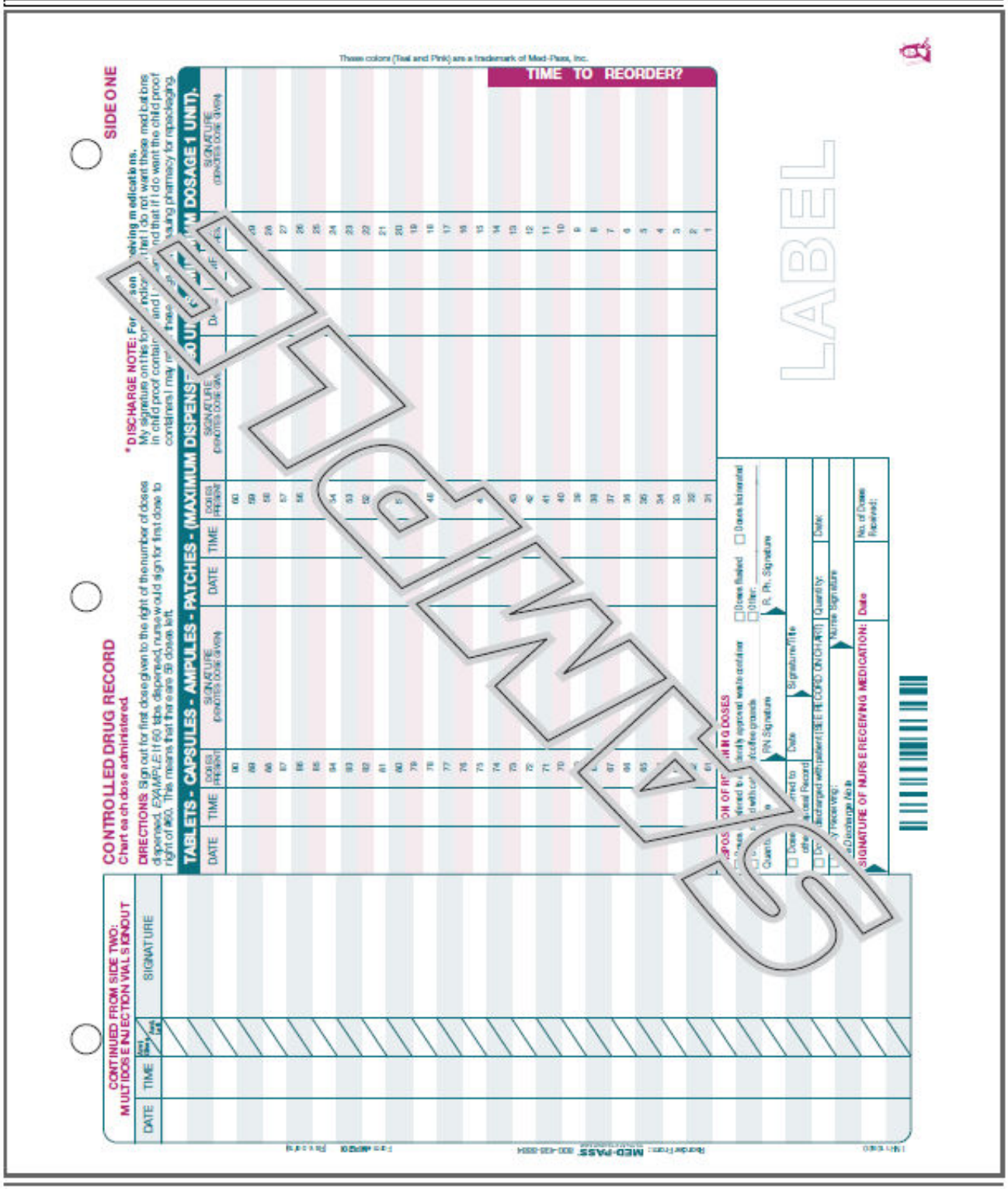
Procedure

1. All residents receiving medications should be routinely monitored by a collaborative process with the resident which involves the Pharmacist, Nurse, Physician and other disciplines.
2. Each resident shall have updated Physician's orders with a complete list of all medications.
3. The Consultant Pharmacist shall monitor the resident's Physician's orders at the facility at least monthly and more often if appropriate. The Dispensing Pharmacist shall also monitor orders upon admission and receipt. Monitoring may consist of reviewing:
   a. Potential interactions (drug-drug, drug-food, drug-nutrient);
   b. Adverse drug reactions;
   c. Medication allergies or sensitivities;
   d. Resident's response to medication;
   e. Potential medication complications;
   f. Potential medication interference’s or incompatibilities;
   g. Managing adverse effects from administering any recalled medication;
   h. Reviewing laboratory tests, which determine adverse drug reactions or therapeutic and toxic levels;
   i. Keeping the medication profile updated; and/or

j. Making pharmacokinetics evaluations of the dosage regimen when appropriate.

4. The Pharmacist shall verify that medications are administered:
   a. In proper amounts (dosage);
   b. In proper frequency; and
   c. By the optimal route in the prescribed formulation.
5. Periodic medication pass observations are monitored by the Consultant Pharmacist or designee.
6. The Consultant and Dispensing Pharmacists communicate and share information about medication monitoring on a regular basis. This process may be formal or informal.

CONTROLLED DRUG RECORD MP5201



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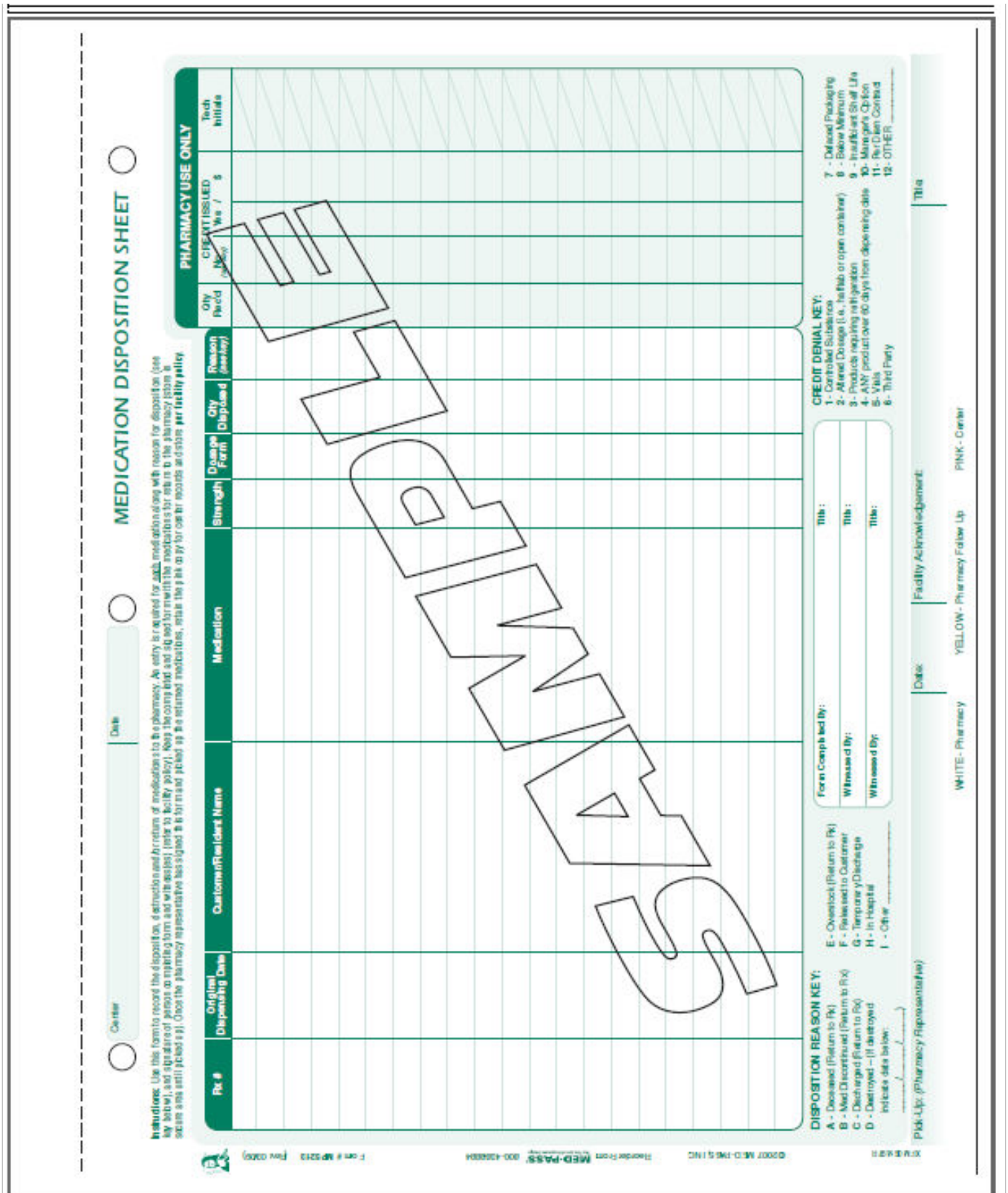
MEDICATION DISPOSITION SHEET MP5213



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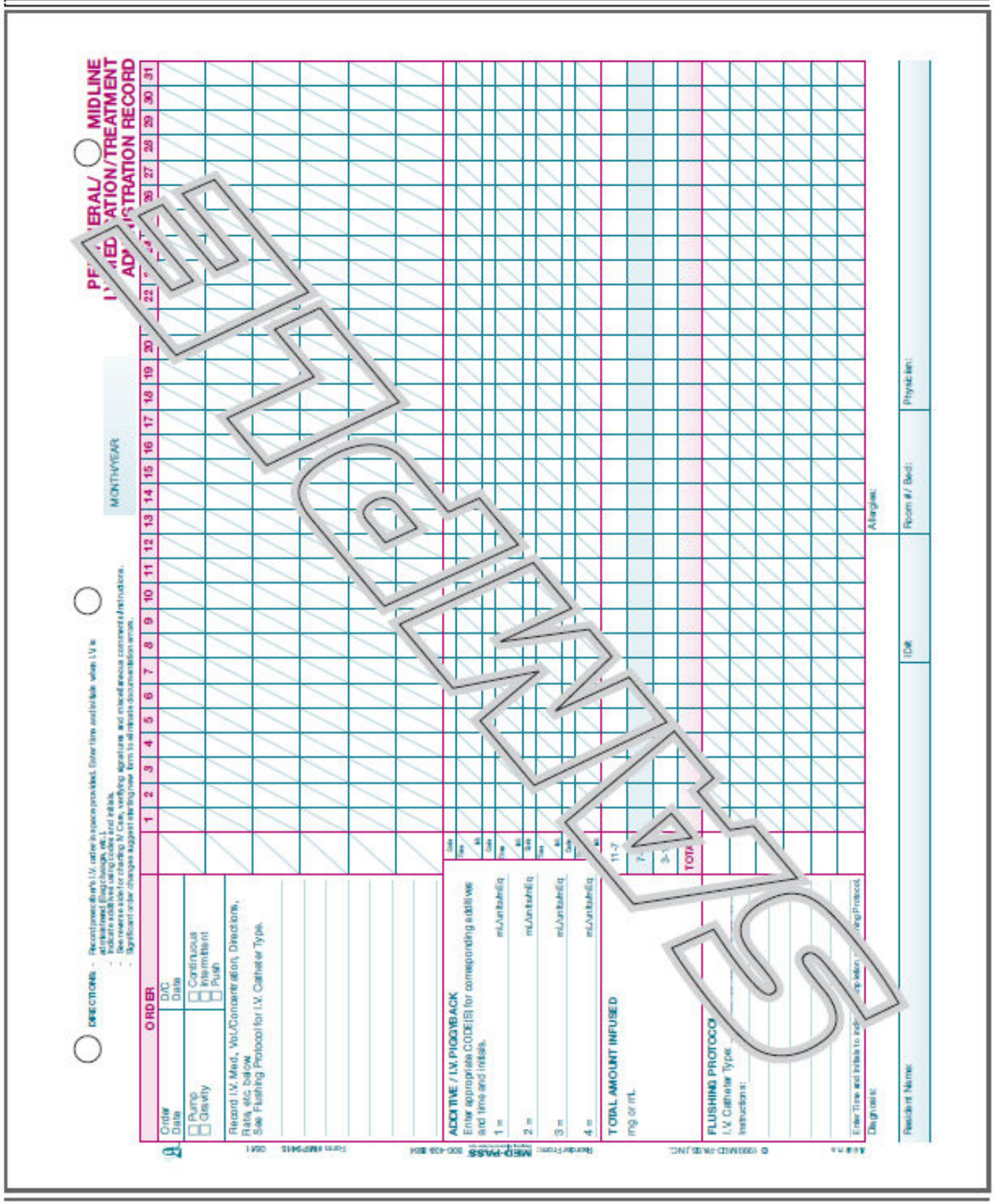

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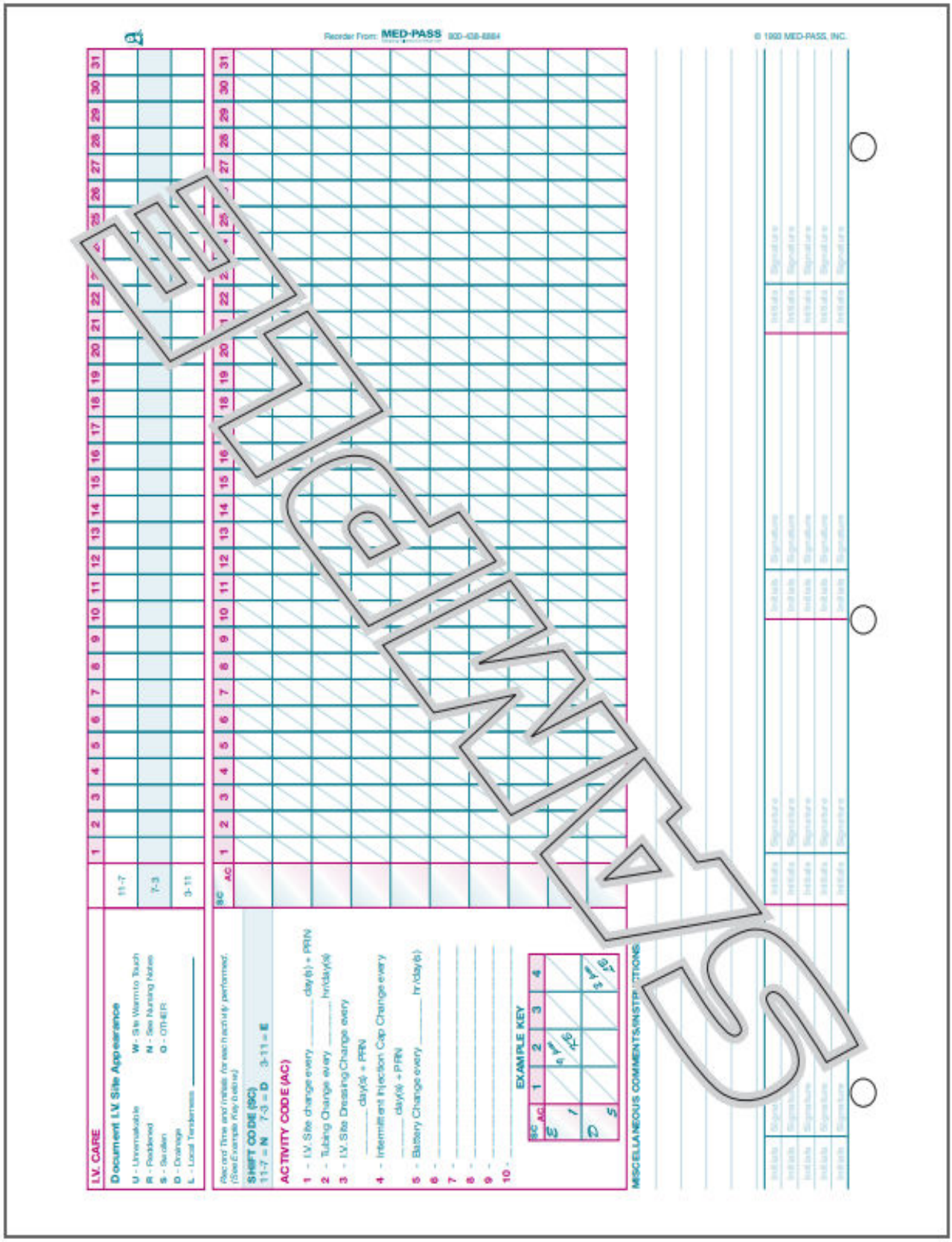

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APPENDIX B: INFORMATIONAL RESOURCES

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.

COMPLICATIONS ASSOCIATED WITH INTRAVENOUS THERAPY

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).

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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):
4. Notify the provider immediately.
5. Obtain orders for thrombolytic agent and catheter clearance.
6. For mechanical occlusion:
7. Troubleshoot the catheter line (e.g., observe for kinks, clogged in-line filter, sutures causing occlusion).
8. If occlusion cannot be resolved, notify provider.
9. If occlusion is due to precipitates (medication or mineral) or lipid residue, notify provider.
10. Obtain orders for catheter clearance and catheter clearing agent.
11. Notify the provider immediately if pinch-off, catheter rupture, or migration is suspected. These can be medical emergencies.
12. Document observations, interventions, resident's response and outcome in the resident's medical chart.

Pharmacy: **Effective Date:**

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.

Signs/Symptoms

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.
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.

Prevention

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.
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.

Nursing Interventions/Treatment

1. Assess degree of phlebitis using a standardized Phlebitis Scale. Determine the etiology of phlebitis, if possible.
2. For chemical phlebitis:
   a. Discontinue or slow rate of infusion.
   b. Determine if catheter removal is needed.
3. For bacterial phlebitis:
   a. Disinfect the access site. (Note: If purulent drainage is present, obtain a culture sample prior to disinfection.)

   b. If infection is suspected, culture catheter tip.
4. For mechanical phlebitis:
   a. Stabilize catheter.
   b. Apply heat.
   c. Elevate affected extremity.
   d. Monitor for 24-48 hours; if symptoms persist, consider removing catheter.
5. For post-infusion phlebitis:
   a. Monitor for signs and symptoms of sepsis if bacterial source.
   b. 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.

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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.

Pharmacy: **Effective Date:**

6. Complete an Incident Report if required by facility policy.
7. Document observations, interventions, resident's response and outcome in resident's medical chart.
8. When inserting a new catheter, use the non-affected extremity if possible.

Extravasation

- An infiltration of vesicant medication into surrounding tissue causing a chemical burn and major damage to surrounding areas.

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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;

Pharmacy: **Effective Date:**

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).

Signs/Symptoms

1. Inflammation or purulent drainage at catheter insertion site.
2. Tenderness.
3. Erythema.
4. Induration.
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.

Prevention

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.
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.

Nursing Interventions/Treatment

1. Removing catheter may not always be needed.
2. 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.
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.

Signs/Symptoms

1. Septicemia:
   a. Fever.
   b. Chills.
   c. Hypotension.
   d. Backache.
   e. Nausea.
   f. Headache.
   g. Diarrhea.
   h. Vomiting.
   i. Flushing.
2. Late Stage Septicemia:
   a. Cyanosis.
   b. Hyperventilation.
   c. Vascular collapse.
   d. Shock.
   e. Death.

Prevention

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.

Nursing Interventions/Treatment

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.

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.

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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.

APPENDIX B: INFORMATIONAL RESOURCES

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.

Signs/Symptoms

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.

Prevention

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.
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.

Nursing Interventions/Treatment

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. Stay with resident; prepare to call emergency services to transport to hospital.
5. Place oxygen, as ordered.
6. Monitor resident closely until ambulance arrives.
7. Document observations, interventions, resident's response and outcome in the resident's medical chart.
8. Complete an Incident Report.

Pharmacy: **Effective Date:**

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.

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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.

Pharmacy: **Effective Date:**

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.

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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.

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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.

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.

Signs/Symptoms

1. Mild symptoms:
   a. Flushing, rash.
   b. Severe headache.
   c. Dizziness.
2. Advanced symptoms:
   a. Irregular heart rate.
   b. Tachycardia.
   c. Hypotension.
   d. Syncope.
   e. Shock.
   f. Cardiac arrest.

Prevention

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.

Nursing Interventions/Treatment

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.

Signs/Symptoms

1. Chills and fever.
2. Urticaria.
3. Erythema.
4. Pruritus.
5. Shortness of breath.

Pharmacy: **Effective Date:**

6. Respiratory distress.
7. Anaphylactic shock.
8. Cardiac arrest.

Prevention

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.

Nursing Interventions/Treatment

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.

Local Reaction

A reaction that occurs usually at insertion site or immediate surrounding area.

Signs/Symptoms

1. Redness.
2. Edema.
3. Pain.
4. Purulent drainage.
5. Itching.

Prevention

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.

Pharmacy: **Effective Date:**

Nursing Interventions/Treatment

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."

Signs/Symptoms

1. Generalized, specific, or systemic itching or rash.
2. Nausea, vomiting.
3. Headaches, general malaise.

Prevention

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.

Nursing Interventions/Treatment

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.

Signs/Symptoms

Sudden, severe onset of one/all of the following:

1. Respiratory distress: dyspnea, wheezing, choking, cyanosis.
2. Gastrointestinal: nausea, vomiting, abdominal cramps, diarrhea, incontinence.
3. Dermatological: urticaria, erythema, hives, rash.
4. **Vascular response: severe hypotension, chills, sweating, weakness, anxiety, weak pulse, dizziness**.

Prevention

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.
5. Inspect any medication/solution bag for problems and contamination.

Nursing Interventions/Treatment

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.

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.

Signs/Symptoms

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.

Prevention

1. Prevent trauma to the catheter site.
2. **Properly secure catheter** and extension set to avoid pull on catheter.

Pharmacy: **Effective Date:**

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.

Nursing Interventions/Treatment

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.

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.

Signs/Symptoms

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.

Prevention

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.

Nursing Interventions/Treatment

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.

Signs/Symptoms

1. Respiratory difficulty.
2. Unusual pain or sensation during or after catheter insertion.

Pharmacy: **Effective Date:**

3. Symptoms of paresthesia:
   a. Tingling
   b. Burning
   c. Numbness

Prevention

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.

Nursing Interventions/Treatment

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.

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"

INFUSION RATE SCHEDULES

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	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

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IV MAINTENANCE / FLUSHING CHART GUIDELINES

	Peripheral (1-3")	Midline (3-8")	PICC	Non-Tunneled CVAD	Implanted Port
INTERMITTENT ***Flushing***	10mLs NS before 10mLs NS after **Removal based* *on clinical indication*	10mLs NS before 10mLs NS after *If ordered;* 3mLs Heparin 10 units/ml	10mLs NS before 10mLs NS after *If ordered;* 5mLs Heparin 10 units/ml	10mLs NS before 10mLs NS after *If ordered;* 5mLs Heparin 10 units/ml	10mLs NS before 10mLs NS after *If ordered/accessed:* 5mLs Heparin 10 units/ml
MINIMUM MAINTENANCE ***Flushing***	10mLs NS q 8 hrs	10mLs NS q 8 hrs *If ordered;* 3mLs Heparin 10 units/ml	10mLs NS q 8 hrs *If ordered;* 5mLs Heparin 10 units/ml	10mLs NS q 8 hrs *If ordered;* 5mLs Heparin 10 units/ml	10mLs NS q 8 hrs *If ordered/accessed:* 5mLs Heparin 10 units/ml ***If not accessed*** *: 10mLs NS* *5mLs Heparin 100 units/mL*
DRESSING ***CHANGES***	New start & PRN	*24 hrs post insertion *Q 7days & PRN *If gauze: Q48 hrs & PRN	*24 hrs post insertion *New Admission *Q 7days & PRN *If gauze: Q48 hrs & PRN	*24 hrs post insertion *New Admission *Q 7days & PRN *If gauze: Q48 hrs & PRN	*24 hrs post insertion *Q 7days & PRN *If gauze: Q48 hrs & PRN
NEEDLELESS CONNECTOR ***CHANGES***	New Start *After blood draw *Before blood culture *PRN	*On admission *With dressing changes *PRN	*On admission *With dressing changes *After blood draws *Before blood cultures *Q96 hrs with TPN *PRN	*On admission *With dressing changes *After blood draws *Before blood cultures *Q96 hrs with TPN *PRN	*On admission *With dressing changes *After blood draws *Before blood cultures *Q96 hrs with TPN *PRN
PRIMARY IV ***Tubing Changes***	24 hours	24 hours	24 hours *Lipid tubing; q 12 hours	24 hours *Lipid tubing; q 12 hours	24 hours *Lipid tubing; q 12 hours
BLOOD DRAWS	*Flush 10mLs NS before *Draw 1-2mLs blood for discard *Draw lab(s) *Flush 10mLs NS after	No evidence is available regarding blood draws	*Flush 10mLs NS before *Draw 4-5mLs blood for discard *Draw lab(s) *Flush 20mLs NS after **If ordered;* *Follow with 5mLs of Heparin 10 units/mL	*Flush 10mLs NS before *Draw 4-5mLs blood for discard *Draw lab(s) *Flush 20mLs NS after **If ordered;* *Follow with 5mLs of Heparin 10 units/mL	*Flush 10mLs NS before *Draw 4-5mLs blood for discard *Draw lab(s) *Flush 20mLs NS after **If ordered;* *Follow with 5mLs of Heparin 10 units/mL

Check with manufacturer guidelines for specific protocols, if available. It is the facility's responsibility to properly identify intravenous lines and their maintenance protocols, ensure their policy and procedures are consistent with practice and follow laboratory requirements and facility corporate policies and procedures, including pharmacy specific guidelines. Consonus Healthcare is not responsible for how staff interpret or perform above guidelines.

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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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

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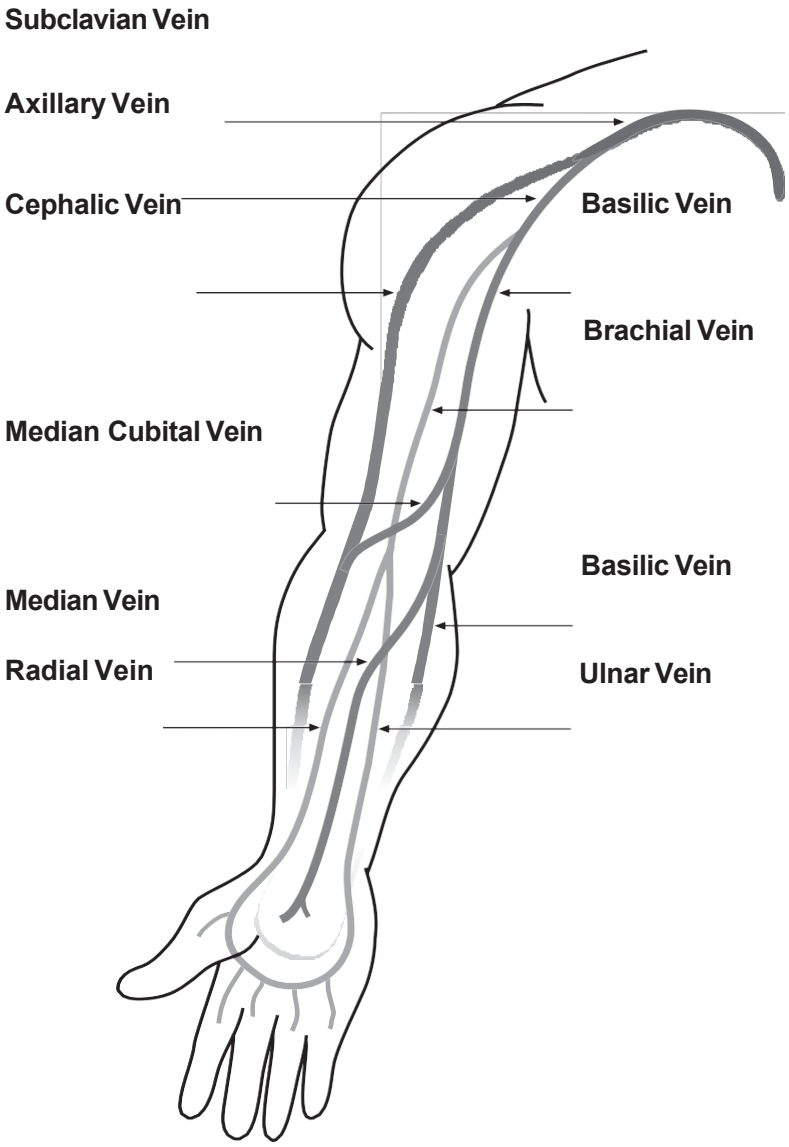
Hypoglycemia	Sweating Palor Palpitations Nausea Headache Shakiness Blurred vision Lightheadedness	Abrupt decrease or cessation of PN Excessive insulin administration	Notify MD, orders may include: Hang 10% Dextrose at same rate as PN if unable to hang PN Give IV glucose STAT, 50% may be needed Maintain 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
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

PHLEBITIS SCALE

Grade	Clinical Criteria
0	No symptoms
1	Erythema at access site with or without pain
2	Pain at access site with erythema and/or edema
3	Pain at access site with erythema and/or edema Streak formation Palpable venous cord
4	Pain at access site with erythema and/or edema Streak formation Palpable venous cord > 1" in length Purulent drainage

VEINS OF THE ARM



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