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IV POLICY & PROCEDURES

While every effort is made to broadly incorporate the provisions of each state's Nurse Practice Act concerning infusion practice, please be aware that when the policies and procedures herein do not correspond with either those of the Facility Management Group or the state in which the facility is located, it is up to the Facility to provide written direction to the nursing staff as to specific guidelines to be followed. A copy of your state's Nurse Practice Act regulations, as they relate to infusion at the time of this printing, is located in the Appendix. Please refer to your state board of nursing's web site for updated regulations and advisory opinions.

All policies and procedures in this manual are to be reviewed and revised on an annual and as needed basis by both Guardian Pharmacy and facility.

All policies and procedures in this manual are based on the Infusion Nursing Society's standards of practice and the Infusion Nursing Society's policies and procedures for infusion nursing.

POLICY: ORDERING MEDICATIONS AND SUPPLIES

Infusion therapy orders will be obtained as outlined below.

<u>PROCEDURE</u>

- The pharmacist receives the medication order from a licensed nurse via facsimile machine. The pharmacy staff assists the nurse in compiling the necessary information needed to provide the infusion product. The following preliminary information must be provided by the Facility:
 - Facility name
 - Patient information including, but not limited to:
 - Name, room number, and nursing unit
 - All medical diagnoses, medical restrictions, advance directives
 - Diagnosis related to infusion therapy order
 - Allergy history
 - Reimbursement information
 - Medication order, including, but not limited to:
 - Medication/solution
 - Dose and rate
 - Frequency
 - Duration of Therapy or Stop Date
 - Route
 - Physician name
 - Name of nurse supplying information
 - Venous access information including:
 - Specific type of venous access device
 - Number of lumens
 - o Any pertinent laboratory orders
- The pharmacist reviews the order for clinical appropriateness including, but not limited to:
 - Drug/drug interactions
 - Drug/food interactions
 - o Drug/fluid interactions
 - Duplication of therapeutic classification
 - Appropriate therapy for stated diagnosis

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- Dosage based on patient status (height, weight, diagnosis, lab results)
- Quantity of medication delivered is determined on a case-by-case basis, using sound professional judgment, and taking into consideration:
 - Stability of compounded medication
 - Delivery schedule, including time of day medication arrives at Facility
 - Prescribed duration
 - o Patient acuity
- When compounded medication stability is the limiting factor, the number of doses sent never exceeds the maximum amount that can be prepared to retain maximum potency of the drug.
- Refrigerated admixed medication is shipped with sufficient coolant to insure safe delivery. When applicable, supplies are delivered in a separate, sealed container. Coolant is returned to the pharmacy. Immediately refrigerate contents.
- If a shipping list is included with the delivery, the nurse ensures that all items listed were received. The original copy is signed and returned to the pharmacy and a copy is left at the Facility.
- Throughout the course of infusion therapy when appropriate, the pharmacist, or designee, under the direct supervision of the pharmacist, contacts the Facility on or before each delivery day to determine medication, dose, and supply needs.
 - The Facility nurse must ascertain the number of doses and supplies needed for the specified time period.

POLICY: OBTAINING INTERIM INFUSION MEDICATION AND SUPPLIES

March 2011

• An emergency supply of IV medication and supplies will be available in the Facility for interim use, when appropriate (e.g., initiating therapy prior to pharmacy delivery).

<u>PROCEDURE</u>

- Facility nurse notifies the pharmacy of need, including time first dose to be administered. Any questions about compatibility or drug information are discussed with the pharmacist.
 - If required medication or supplies are not included in emergency I.V. kit (EDK), contact pharmacy to arrange for delivery.
- Pharmacist verifies order, restriction, and appropriateness of therapy when indicated.
- Facility nurse follows administration policies and manufacturer's instructions for the addmixing of medications. Medications/solutions removed from the emergency kit are labeled with the following:
 - Resident's name
 - Medication and dose
 - \circ Date and time
 - Name of nurse preparing medication
- Depending upon system utilized, Facility nurse is responsible for completing information on the e-kit log out sheet and proceeding appropriately. Failure to provide specific patient information will result in billing items to the Facility.
- Facility nurse re-locks the emergency kit with locks provided.
- Facility nurse must contact the pharmacy during regular business hours when the interim/EDK system is opened. Replacement boxes are exchanged by the pharmacy.
- Interim medication and supply systems (EDKs) are stored in designated and secured areas.
- Re-evaluation of contents is performed by the pharmacy on a regular and on-going basis in order to maintain compliance with changing state and federal regulations.

POLICY: "STAT" Orders

Every attempt will be made to deliver "STAT" infusion therapy orders within four (4) hours of the receipt of the order in the pharmacy or according to applicable state regulations.

<u>PROCEDURE</u>

- "STAT Order" definition: A prescription order, which must be initiated as soon as possible (i.e. within four (4) hours of order.)
- The Facility is advised to check the IV EDK or infusion medication storage unit to ascertain if medication prescribed is available.
- If not available in the EDK/interim system, the pharmacist makes every attempt to prepare the therapy and have it delivered to the Facility within four (4) hours, or according to applicable state regulations. The Infusion pharmacist discusses alternate interim orders (e.g., administration of oral medication until delivery of infusion medication) or use of alternate medication from interim stock.
 - Notify physician to discuss and obtain alternate order, if necessary.
- The pharmacy designates a "back-up" pharmacy service (when possible) to provide for emergency infusion therapy for Facilities located in areas that make it logistically impossible to comply with the four (4) hour delivery window. When service is accessed through the pharmacy, the pharmacist arranges for product delivery.
- The product is delivered by the pharmacy, a courier delivery service, or representative.

<u>POLICY: INFUSION DEVICE/PUMP & MANUAL FLOW REGULATOR</u> <u>CRITERIA</u>

Selection criteria for the use and handling of electronic infusion devices/pumps are outlined for the Facility.

<u>PROCEDURE</u>

- The Facility nurse determines and requests an electronic infusion device/pump if one is required. Determination is warranted by, but not limited to, the resident's age, medical condition, and prescribed therapy using the following guidelines:
 - The following therapies require an electronic infusion device/pump for the entire therapy:
 - Continuous Heparin drip
 - Inotropic Agents (e.g., Primacor, Dobutamine, Dopamine). <u>REQUIRES</u> <u>FACILITY CORPORATE APPROVAL. NOT RECOMMENDED FOR</u> <u>LTC USE! VERY HIGH RISK FACTOR!</u>
 - Parenteral Nutrition (PPN or TPN)
 - Continuous infusion of pain medication
 - Hydration containing more than twenty (20) mEq/Liter Potassium Chloride (KCI)
 - Continuous infusions of certain hazardous drugs
 - Best practice standards suggest that the following therapies should be on an electronic infusion device/pump for the entire therapy, but may be initiated using a manual flow regulator (e.g., Dial-A-Flow®) with increased level of monitoring.
 - All continuous infusions at a rate of fifty (50) ml or less per hour or rates greater than one hundred fifty (150) ml per hour administered through a peripheral catheter.
 - All continuous infusions administered through central venous access devices regardless of rate.
 - All continuous or intermittent therapies administered through a PICC or midline catheter.
 - D₁₀W infusions.
 - Vancomycin
 - Gentamicin
 - Continuous hydration administration through a peripheral catheter with rates of fifty (50) ml to one hundred fifty (150) ml per hour
 - Intermittent therapies administered through a central venous access device, **EXCEPTION**: PICC
 - Hydration containing less than twenty (20) mEq/liter of Potassium Chloride (KCI), EXCEPTION: PICC

All solutions containing KCL must be on a pump

- The following therapy may be administered using the gravity method for the entire therapy.
 - Intermittent therapies administered through a peripheral catheter.
 - **EXCEPTION**: (Per Best Practice Standards) Vancomycin, Gentamicin (See Procedure above).

<u>POLICY: OBTAINING, HANDLING, AND RETURNING INFUSION</u> <u>DEVICE/PUMP</u>

The Facility will utilize electronic infusion devices/pumps in accordance with regulatory Procedures.

PROCEDURE

- Infusion devices/pumps are delivered to the Facility with next scheduled delivery.
- While awaiting delivery of an infusion device/pump, a manual flow regulator (e.g., Dial-A-Flow[®]) may be used as per previous policy.
- Infusion devices/pumps are tagged with patient specific information.
- Infusion devices/pumps are returned to the pharmacy for cleaning and servicing at the completion of therapy for each patient. These devices are not to be interchanged between residents.
- The Facility nurse is responsible for:
 - Contacting the pharmacy at the completion of therapy.
 - Placing infusion pumps in biohazard bags provided by the pharmacy labeled "RETURN TO PHARMACY" and placing in a designated area for pick-up.
 - Advising pharmacy of location for pick up by a pharmacy representative.
- Timely return of pump to pharmacy upon completion of therapy
- Pumps that are lost or damaged will be charged to the Facility.

PLEASE NOTE: PUMPS MUST BE RETURNED TO THE PHARMACY AFTER EACH USE FOR CLEANING AND CALIBRATION. <u>DO NOT SWITCH THEM TO ANOTHER RESIDENT AS THERE IS A POTENTIAL FOR PATIENT HARM.</u>

POLICY: RESPONSIBILITIES OF LICENSED STAFF NURSES

- Duties of staff nurses with regard to the use and care of intravenous lines and the administration of medications and fluids by the intravenous route.
- Staff nurse must demonstrate competence in each IV -related procedure before performing the procedure independently.

REGISTERED NURSE

• R.N.s may perform all procedures related to the use and maintenance of intravenous lines, both peripheral and central, and may administer intravenous fluids and medications in accordance with state, facility, and pharmacy policies and procedures.

LICENSED PRACTICAL NURSE

• After satisfactorily completing a state approved IV course, LPNs may perform certain I.V. tasks as defined by the State Board of Nursing (please refer to the latest I.V./LPN advisory opinion located in the appendix).

POLICY: DEMONSTRATION OF COMPETENCE IN IV RELATED PROCEDURES

To ensure that nurses have adequate clinical skills to perform IV-related procedures safely and correctly.

Both RNs and LPNs will have clinical competence in each IV-related procedure verified in writing by a licensed RN designated by the employer before performing the procedure independently.

The RN designated to verify competence may appoint preceptors to assist in evaluating performances

- Nurse and preceptor review procedure.
- Preceptor may demonstrate procedure if necessary
- Nurse performs procedure in clinical setting under supervision of preceptor
- Above step may be repeated as many times as necessary to satisfy preceptor that nurse is able to perform the procedure competently, according to facility Policy, using good aseptic technique.
- Preceptor verifies successful accomplishment of each procedure on checklist.
- After successful accomplishment of each procedure has been verified, nurse may perform that procedure independently or under supervision as required by facility policy.

POLICY: IV PUSH ADMINISTRATION

Due to the inherent risk associated with this procedure, any order by the physician for an IV push medication must first be reviewed and approved by the DON. Corporate policy in many nursing homes specifically limits or excludes IV push administration.

If the IV Push Order is approved by the DON, call the Pharmacy or On-Call Pharmacist for instructions on IV administration of ordered medications.

POLICY: PRIMING INTRAVENOUS ADMINISTRATION SET

Administration sets are to be fully primed with fluid immediately before use.

EQUIPMENT:

- IV solution
- IV pole
- IV administration set
- IV Pump (if applicable)

PROCEDURE:

- Wash hands
- Assemble equipment in med room.
- Check IV solution, container, label, and expiration date
- Remove administration set from package and inspect for defects
- Close clamp of administration set.
- Suspend solution bag from IV pole
- Wash hands
- Remove protective cap from entrance port on bag.
- Remove protective cover from the administration set spike.
- Holding the entrance port firmly, insert the spike with a twisting motion, taking care to maintain sterility of spike and internal aspect of port.
- Squeeze & release the drip chamber to fill to one-half full.
- Remove the protective cover from the end of the administration set tubing, taking care to maintain sterility of this portion of the tubing.
- Partially open the roller clamp and allow fluid to flow into the tubing. Check valves and injection sites. Filter may be inverted and tapped to free air bubbles. Purge air completely from tubing.
- Replace protective cover on end of administration set.

See Infusion Pump Reference in Appendix Section

POLICY: CONTINUOUS ADMINISTRATION OF IV FLUIDS BY GRAVITY

Continuous infusions of IV fluids may be administered via gravity flow through peripheral IV catheters. Infusions to central catheters may be administered via gravity flow only if an administration set with an air-eliminating filter is used, although the use of an electronic pump is recommended.

EQUIPMENT:

IV fluid to be infused Administration set with filter IV pole Alcohol/chlorhexidine wipes

- Check physician order
- Assemble equipment
- Wash hands
- Explain procedure to patient
- Inspect solution for discoloration, particulate matter, or leakage.
- Check label for correct patient, fluid or medication, dosage, route, and rate.
- Using impermeable tape, mark bag at one-hour intervals for ease of monitoring.
- Spike and prime administration set according to procedure.
- Attach appropriate connector to end of administration set. NOTE: connector not needed with NEEDLELESS injection cap.
- Prep injection cap of catheter with alcohol/chlorhexidine wipe.
- Insert set into injection cap and secure.
- Open tubing clamp and adjust flow rate according to physician's order.
- Secure tubing with tape.
- Before leaving patient, observe flow rate, site appearance, and patient response to initiation of therapy. Recheck patient at regular intervals for the duration of therapy.
- Document procedure and patient response.

POLICY: USE OF THE NEEDLELESS CONNECTOR

- Needles will not be used to access an intravenous line for any purpose a needleless alternative is available.
- Removable injection ports which require a needle access will be replaced on admission with Needleless connectors.

PROCEDURE: ATTACHING NEEDLELESS CONNECTOR TO IV ADMINISTRATION SET

- Wash hands
- Remove protective cap from needleless connector, using aseptic technique.
- Attach male luer of Needleless connector to IV catheter or extension set by pushing in and twisting until seated firmly. Do not over tighten.

PROCEDURE: ATTACHING IV LINES OR SYRINGES TO NEEDLELESS CONNECTOR

- Wash hands
- Swab Needleless connector with alcohol/chlorhexidine wipe
- Attach male luer lock at distal end of IV administration set or syringe into female luer of Needleless connector by pushing in and twisting until sealed firmly. Do not over tighten.

PROCEDURE: DISCONNECTING IV LINES AND SYRINGES

- Wash hands
- Grasping needleless connector with one hand and syringe or IV tubing with the other, twist until loose and pull apart. Do not remove needleless connector from IV catheter or extension set.
- Flush after each use per facility protocol.
- Needleless connector is closed. No capping is necessary.
- If IV administration set is to be reused, cover distal end of set with a sterile protective cover.

POLICY: USE OF NEEDLELESS VIAL ACCESS SPIKE

Needles will not be used to access single-or multi-dose vials: needleless alternative is available. Multi-dose vials accessed with the Needleless vial access spike will be discarded after seven days.

EQUIPMENT:

- Needleless vial access spike
- Vial
- Syringe of appropriate size
- Alcohol/chlorhexidine wipes

PROCEDURE: ATTACHING NEEDLELESS ACCESS SPIKE TO VIAL

- Wash hands
- Prep vial stopper with alcohol/chlorhexidine wipe.
- Peel open package and remove Needleless vial access spike (connector).
- Remove protective cover from end of spike, taking care not to contaminate spike.
- Center spike on vial stopper and press firmly until tip passes through stopper completely.

PROCEDURE: WITHDRAWING FLUID FROM VIAL

- Wash hands
- Prep top of needleless connector with alcohol/chlorhexidine wipe.
- Draw air, equal to amount of solution to be withdrawn from vial, into syringe.
- Attach male luer of syringe into female luer of Needleless connector by pushing in and twisting until seated firmly. Do not over tighten.
- Push air from syringe into vial. Invert vial and withdraw desired amount of solution.
- To disconnect, twist syringe until loose and pull apart. Needleless connector is closed- no capping is necessary.
- Repeat steps 1 through 5 for subsequent withdrawals.
- When vial is empty, dispose of as a single unit. Do not attempt to remove Needleless connector access spike from vial.
- Wash hands

POLICY: USE OF THE NEEDLELESS PIGGYBACK DEVICE

Needles will not be used to access IV administration sets if a needleless alternative is available

EQUIPMENT:

- IV administration set with back-check valve
- Needleless piggyback device
- Secondary (piggyback) administration set
- Alcohol/chlorhexidine wipes

<u>PROCEDURE</u>: ATTACHING NEEDLELESS PIGGYBACK DEVICE TO PRIMARY IV ADMINISTRATION SET

- Wash hands
- Peel open package and remove needleless piggyback device, taking care not to contaminate inner spike.
- Prep Y-site injection port nearest drip chamber of IV administration set with alcohol/chlorhexidine wipe.
- Center spike on injection port and push until spike penetrates port and locks in place.
- Needleless piggyback device is now in place. It should be considered a permanent part of the IV administration set and should not be removed.
- Wash hands

<u>PROCEDURE</u>: ATTACHING SECONDARY (PIGGYBACK) IV SET TO NEEDLELESS PIGGYBACK DEVICE

- Wash hands
- Prep Needleless connector with alcohol/chlorhexidine wipe.
- Attach male luer of secondary administration set to female luer of needleless device by pushing in and twisting until seated firmly. Do not over-tighten.
- To disconnect, twist and pull luer connector of secondary IV set from top of Needleless device. DO NOT REMOVE NEEDLELESS PIGGYBACK DEVICE FROM Y-SITE.
- Wash hands
- Needleless piggyback device should be left in place until IV administration set is discarded.

POLICY: INTERMITTENT ADMINISTRATION OF IV MEDICATIONS BY GRAVITY DRIP

EQUIPMENT:

- Premixed medication minibag
- Administration set with filter
- IV pole
- Alcohol/chlorhexidine wipes
- Normal saline flush solution in volume appropriate for type of catheter
- Heparin flush solution as appropriate for catheter/facility policy

- Check physician order
- Assemble equipment
- Wash hands
- Explain procedure to patient
- Inspect solution for discoloration, particulate matter, or leakage.
- Check label for correct patient, fluid or medication, dosage, and rate.
- Spike and prime administration set according to procedure
- Attach appropriate connector to end of administration set.
 NOTE: connectors not needed with Needleless injection cap.
- Prep injection cap with alcohol/chlorhexidine/chlorhexidine wipe.
- Flush with normal saline solution in volume appropriate to catheter lumen and length
- Insert set into injection cap and secure per manufacturer's recommendation.
- Open tubing clamp and adjust flow rate according to physician's order.
- Secure tubing with tape
- Before leaving patient, observe flow rate, site appearance, and patient response initiation of therapy.
- Wash hands
- Recheck patient at regular intervals for the duration of therapy.
- When therapy is complete, close roller clamp or adjust rate regulator to off position
- Wash hands
- Remove set from injection cap.
- Prep injection cap with alcohol/chlorhexidine wipe.
- Flush with normal saline solution
- Follow with heparinized saline solution in volumes appropriate to catheter if in keeping with facility policy
- Wash hands
- Document: Medication, dose, dilution, route of administration, duration of infusion, time administered, and patient tolerance of infusion.

POLICY: CONTINUOUS ADMINISTRATION OF IV FLUIDS BY PUMP

Continuous infusions of IV fluids or medications in volumes greater than 250 ml may be controlled via electronic pump.

EQUIPMENT:

- IV fluid or premixed medication to be infused Administration set with filter
- IV pole
- Alcohol/chlorhexidine wipes

- Check physician order
- Assemble equipment
- Wash hands
- Explain procedure to patient
- Inspect solution for discoloration, particulate matter, or leakage.
- Check label for correct patient, fluid or medication, dosage, route, and rate.
- Spike and prime administration set according to procedure.
- Insert administration set in pump.
- Turn pump on. Set rate and volume of infusion per doctor's order. (See pump manufacturer's instructions for setting)
- Prep injection cap of catheter with alcohol/chlorhexidine wipe.
- Insert set into injection cap and secure.
- Open tubing clamp and begin infusion by starting pump.
- Secure tubing with tape if appropriate.
- Wash hands
- Before leaving patient, observe flow rate, site appearance, and patient response to initiation of therapy. Recheck patient at regular intervals for the duration of therapy.
- Document procedure and patient response.

POLICY: PIGGYBACK INFUSION OF IV MEDICATIONS WITH IV <u>FLUIDS</u>

Premixed medications may be piggybacked into continuous IV fluids when compatible, as ordered by physician.

EQUIPMENT:

- IV fluid to be infused
- IV medication to be infused
- Primary administration set with back-check valve
- Secondary administration set
- Hangar
- IV pole
- Needleless Y -site adapter (piggyback adapter), if desired.
- Pump (optional)
- Alcohol/chlorhexidine wipes

PROCEDURE:

- Check physician order
- Assemble equipment
- Wash hands
- Explain procedure to patient
- Establish continuous fluid infusion as ordered, via gravity or pump, being sure to use administration set with a back-check valve to prevent medication from refluxing into maintenance fluid bag.
- Spike secondary administration set into premixed medication Minibag or ADD-Vantage set: prime set and close clamp.
- Attach end of secondary administration set to Y -site of the primary administration set nearest the bag of fluid, using a needleless adapter
- Hang maintenance fluid bag and medication from IV pole, using the hangar to lower the maintenance bag below the level of the medication.
- Open the clamp to the secondary set.
- Opening the roller clamp of the primary set, adjust the flow rate for gravity flow: or,
- Program the pump for maintenance and piggyback infusion according to manufacturer's directions.
- Check to see that the medication is infusing at the correct rate, that the bag is not refluxing into the maintenance fluid, and that the maintenance fluid is not infusing. NOTE: when the medication infusion is complete, the maintenance infusion will automatically resume.
- Before leaving patient, observe site appearance, and patient response to initiation of therapy.
- Wash hands
- Recheck patient at regular intervals for the duration of therapy.
- Document procedure and patient response.

POLICY: ADMINISTRATION OF IV PUSH MEDICATIONS VIA

INTERMITTENT INFUSION DEVICE

Only approved medications may be administered IV push. If unfamiliar with medication ordered, consult pharmacist and/or nursing drug reference for rate of administration, actions, drug interactions, and potential adverse effects.

EQUIPMENT:

- Prepared medication
- Alcohol/chlorhexidine wipes
- Normal.saline flush solution
- Heparinized saline flush solution as ordered for type of catheter and per facility policy

- Check physician's order.
- Identify patient.
- Explain procedure to patient.
- Observe IV site for signs of complications before injecting medication.
- Cleanse injection cap vigorously with alcohol/chlorhexidine wipe.
- Wash hands
- Flush with normal saline solution in volume recommended for catheter.
- Inject medication at recommended rate, observing patient for reaction.
- Flush with normal saline solution.
- If ordered, and per facility policy, flush with heparinized saline solution in volume recommended for catheter.
- Wash hands
- Document: Medication, dose, dilution route, rate of administration, and patient response.

POLICY: ADMINISTRATION OF IV PUSH MEDICATIONS WHEN CONTINUOUS FLUIDS ARE INFUSING

Only approved medications may be administered IV push. If unfamiliar with medication ordered, consult pharmacist and/or nursing drug reference for rate of administration, actions, drug interactions, and potential adverse effects.

NOTE:

If pharmacist or drug reference indicates that medication ordered is incompatible with fluid infusion, briefly discontinue the infusion and administer medication according to procedure for intermittent infusion device, being certain to flush with at least 10 ml normal saline before and after injection of medication.

EQUIPMENT:

- Prepared medication
- Alcohol/chlorhexidine wipes
- Adaptor for needleless injection

- Check physician's order.
- Identify patient.
- Explain procedure to patient.
- Observe IV site for signs of complications before injecting medication.
- Wash hands
- Cleanse administration set injection site closest to IV site vigorously with alcohol/chlorhexidine wipe.
- **NOTE**: Needleless piggyback adaptor may be added to injection site for needleless injection.
- Inject medication at recommended rate, observing patient for reaction.
- Wash hands
- Document: Medication, dose, dilution, route, rate of administration, and patient response.

POLICY: CHANGING THE IV ADMINISTRATION SET

Primary and secondary continuous administration sets used to administer fluids <u>other than</u> lipids, blood, or blood products should be changed no more frequently than every 96 hours. If a secondary administration set is detached from the primary administration set, the secondary administration set is considered a primary intermittent administration set and should be changed every 24 hours.

Primary intermittent administration sets should be changed every 24 hours.

Administration sets for nonlipid-containing parenteral nutrition should be routinely changed no more often than every 96 hours.

When administering intermittent intravenous fat emulsions, the administration set should be changed with each container. When administered consecutively, the set should be changed every 24 hours.

Administration sets used for blood and blood components should be replaced every 4 hours.

Add-on devices such as filters and flow regulators shall be changed with the administration set. Administration set shall be labeled with the date and time changed, and the initials of the person performing the procedure.

EQUIPMENT:

- Administration set
- Flow regulator, filter, etc. as needed
- IV solution or mini-bag

- Wash hands
- Prepare IV solution, insert new administration set, and prime.
- Hang new IV with administration set on IV pole.
- Close roller clamp on old set and remove from pump (if pump is being used).
- Insert new administration set in pump.
- Remove tape from old set, taking care not to disrupt the tape, which secures the catheter.
- Remove protective cover from new set.
- Anchoring catheter with one hand, carefully detach old set connector from site and attach new set. Tighten connection but avoid using excessive force. Check for leaks before securing set with tape.
- Open the roller clamp and adjust the flow rate
- Tape new set in place, looping to avoid pulling at site. Leave area immediately above insertion site free of tape for easier observation.
- Label new set with date, time & your initials.
- Check flow rate before leaving room.

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- Wash hands
- Document procedure

POLICY: INITIATING PERIPHERAL INTRAVENOUS ACCESS

Peripheral intravenous access may be established by order of a physician for administration of fluids or medications. Short peripheral catheters should be selected for therapies expected to last than 1 week. Midline catheters should be considered for therapies anticipated to last 1 to 4 weeks. Therapies NOT appropriate for short or midline peripheral catheters include continuous vesicants, parenteral nutrition, infusates with pH less than 5 or greater than 9 and infusates with an osmolality greater than 600 mOsm/L.

Consider replacement of the short peripheral catheter when clinically indicated and when infusion treatment does not included peripheral parenteral nutrition. The decision to replace the short peripheral catheter should be based on assessment of the patient's condition, access site, skin and vein integrity, length and type of prescribed therapy, venue of care, integrity and patency of the access device and stabilization device. Peripheral midline catheters are indicated for peripheral infusion therapies prescribed for duration of 1 to 4 weeks. For extension of catheter dwell greater than 4 weeks, the nurse's decision should be based on professional judgment considering the above listed factors.

Avoid the lateral surface of the wrist approximately 4-5 inches because of potential risk of nerve damage.

Site selection should be initiated routinely in the distal areas of the upper extremities; subsequent cannulation should be made proximal to the previously cannulated site.

VAD sites should avoid areas of flexion.

Veins of the lower extremities should not be used in the adult population due to risk of tissue damage, thrombophlebitis and ulceration.

EQUIPMENT:

- Gloves
- Start kit
- IV catheter of appropriate size & type
- Primed extension set with injection cap
- Syringe with 5ml normal saline solution.

- Check physician order
- Gather equipment
- Identify patient
- Explain procedure to patient
- Wash hands and apply gloves
- Apply tourniquet above site. NOTE: check for radial pulse-tourniquet should not be tight enough to impede arterial flow.

Guardian Pharmacy IV Policy & Procedures

• Select vein.

NOTE: Take into account duration & type of therapy, patient activity level.

- Prep site with antiseptic solution (chlorhexidine solution is preferred) and allow to dry for 30 to 60 seconds; if using povidone-iodine apply in circle beginning at the catheter insertion site, moving outward; it must remain on the skin for at least 1 minute or longer to dry completely for adequate antisepsis
 - NOTE: If patient is allergic to Betadine, alcohol/chlorhexidine alone may be used as a prep.
- With bevel up, insert the IV cannula at a 15 to 45 degree angle. When flashback of blood is noted, gently advance the catheter into the vein to the hub of the catheter.

NOTE: If unsuccessful, attempt once more in a different location using a new catheter. NEVER reuse the same catheter, and do not make more than two attempts: instead, call for assistance.

- Remove the tourniquet.
- Remove the stylet from the cannula and discard immediately into a safe container.
- Connect extension set with injection cap. NOTE: The extension set is NOT changed with administration set changes.
- Secure catheter with tape.
- Flush with saline solution.
- Apply transparent dressing or gauze dressing with chlorhexidine ointment.
- Secure tubing with tape.
- NOTE: Do not apply tape directly over insertion site. The site must be visible for observation.
- Begin infusion or lock as ordered.
- Label dressing with date & time of venipuncture, catheter size, and your initials.
- Wash hands
- Chart date, time, size and type of catheter inserted, location of site, and any difficulties.

POLICY: FLUSHING A PERIPHERAL IV CATHETER

Peripheral IV catheters that are infused through a saline lock shall be flushed <u>at least</u> once every 12 hours.

EQUIPMENT:

- Alcohol/chlorhexidine wipes
- Syringe with 5ml normal saline

PROCEDURE:

- Check physician order.
- Assemble equipment.
- Wash hands and glove.
- Explain procedure to patient.
- Observe site for signs of complications (e.g. edema, redness, drainage, leaking, tenderness or pain)
- Cleanse injection cap vigorously with alcohol/chlorhexidine wipe and allow to dry.
- Slowly inject normal saline solution, continuing to observe site.
- Maintain positive pressure on the plunger of the syringe while removing it from injection cap, if using a negative pressure cap. If using a positive pressure cap, disconnect, and then clamp the line after flushing. If using a positive pressure cap with a valved catheter, clamping is not required.
- Remove gloves. Wash hands
- Document:
 - Time of administration.
 - Volume of flush.
 - Route of administration.

******NOTE: Heparin flush solution is not necessary if peripheral catheters are flushed with saline at least every 12 hours, but may be used as approved by Facility Protocol.

HINT: Turbulent flushing, using a push-pause technique aids in maintaining the patency of the line.

POLICY: REMOVING PERIPHERAL IV CATHETER

Short peripheral and midline peripheral catheters may be removed after obtaining a physician's order. Please refer to your State Board of Nursing for nursing scope of practice. **EQUIPMENT:**

- Sterile 2x2 gauze pad
- Tape or adhesive bandage
- Gloves.

- Assemble equipment.
- Wash hands. Don gloves
- Explain procedure to patient.
- Open sterile gauze pad and adhesive bandage
- Wash hands and glove.
- If fluid is infusing, stop pump and close roller clamp to stop flow. Detach administration set from catheter extension set.
- Gently loosen dressing and tape from skin, being cautious not to disturb catheter.
- Grasp the hub of the catheter and gently pull straight back, removing the catheter. NOTE: Examine catheter to be sure it is intact. If any portion of the catheter cannot be retrieved from the vein, immediately apply a tourniquet above the site and notify the physician at once.
- Immediately apply firm pressure with 2x2 gauze pad. Do not rub.
- Maintain pressure long enough to ensure that all bleeding has been controlled, then apply a small occlusive dressing, using a 2x2 and tape or adhesive bandage. This dressing should be left in place for several hours. (If removing midline, a petroleum-based ointment and sterile dressing should be applied to the access site to seal the skin-to-vein tract.)
- Remove gloves and wash hands.
- Document procedure and condition of site.

POLICY: PICC DRESSING CHANGE

PICC dressing shall be changed every seven days and prn if dressing is compromised (i.e. Example loose, soiled, or moist).

EQUIPMENT:

- Central line dressing change kit with securement device
- Gloves and mask

- Explain procedure to patient.
- Wash hands.
- Put on gloves and mask
- Carefully remove old dressing and old securement device. Avoid tugging at the catheter, and do not use scissors or other sharp objects near the catheter. Assess the insertion site for redness, tenderness, swelling or drainage.
- Wash hands.
- Put on sterile gloves.
- Open dressing kit using sterile technique and set up sterile field for supplies.
- Clean catheter site with antiseptic solution; allow to dry completely; cholorhexidine solution is preferred; apply using a back and forth motion for at least 30 seconds; If using povidone-iodine apply in circle beginning at the catheter insertion site, moving outward; it must remain on the skin for at least 2 minutes or longer to dry completely for adequate antisepsis
- Apply skin prep if available and securement device
- Apply transparent dressing.
- Loop tubing and tape it to prevent pulling on the catheter.
- Label dressing with date and your initials.
- Remove gloves and wash hands
- Chart procedure and observations.

POLICY: PICC CATHETERS: REMOVAL

PICCs may be removed by trained Registered nurse, on order of physician *Daily assessment of the CVAD need and removal when no longer needed. The maximum dwell time of the nontunneled CVAD is unknown.

EQUIPMENT:

- Tape measure
- Sterile gloves
- 2X2 sterile gauze pads
- Petroleum-based ointment
- Tape

- Check physician's order.
- Assemble equipment.
- Wash hands. Don gloves.
- Explain procedure.
- Remove old dressing, wearing exam gloves.
- Using dressing change kit, clean site using same steps as for a dressing change
- Wearing sterile gloves
- Loosen the tape and withdraw the catheter slowly and steadily. NOTE: If resistance is felt, DO NOT forcibly withdraw the catheter. Secure it with tape, wait a few minutes, and try again to gently withdraw the catheter. IF ANY RESISTANCE IS FELT, STOP IMMEDIATELY, SECURE THE LINE, NOTIFY THE PHSYCIAN AND IV NURSE. <u>THIS COULD CONTRIBUTE TO A LIFE THREATNEING EVENT.</u>
- Immediately apply pressure to the site using sterile gauze pads. Maintain pressure for minimum of 30 seconds or until hemostasis is achieved.
- Check catheter tip to confirm that it is intact.
- Apply petroleum-based ointment and sterile pressure dressing. This dressing should be left in place for 24 hours and change until the site is healed.
- Measure and record length of catheter removed. Compare this measurement with the length charted at time of insertion to be certain the entire catheter has been removed.
- Inspect site at intervals for hematoma or delayed bleeding through dressing.
- Remove gloves. Wash hands.
- Document the procedure, including length of catheter removed and patient response.

POLICY: CENTRAL VENOUS CATHETER DRESSING CHANGE

Gauze dressings shall be changed every 24 hours. Transparent dressings shall be changed every 7 days. In addition, dressings shall be changed if they become wet or soiled, or if they fail to adhere to the skin. If signs of infection such as redness, induration, or drainage are present, dressings shall be changed daily until site is free from such signs.

EQUIPMENT:

- Central venous catheter dressing change kit.
- Gloves

PROCEDURE:

- Assemble equipment
- Explain procedure
- Position patient with head turned away from site.
- Wash hands and put on exam gloves.
- Carefully remove old dressing.
- Remove exam gloves & wash hands.
- Open kit using sterile technique and set up sterile field for supplies.
- Put on mask.
- Inspect site for signs of infection and for migration of catheter.
- Put on sterile gloves.
- Cleanse skin around the site with antiseptic solution (preferably cholorhexidine solutions); apply using a back and forth motion for at least 30 seconds. Allow to dry completely.
- If using povidone-iodine apply in circle beginning at the catheter insertion site, moving outward; it must remain on the skin for at least 2 minutes or longer to dry completely for adequate antisepsis

NOTE: If patient is sensitive to chlorhexidine, site may be cleansed with alcohol only.

- Apply transparent dressing without ointment, or gauze dressing with antibiotic ointment.
- Remove gloves and mask.
- Loop catheter and secure to the chest wall with tape.
- Label dressing with date, time, & initials.
- Remove gloves. Wash hands.
- Chart procedure and observations.

POLICY: CENTRAL VENOUS CATHETER BLOOD WITHDRAWAL

EQUIPMENT:

- Gloves
- Alcohol/chlorhexidine wipes
- Two 10 ml syringes filled with normal saline
- Empty syringe of appropriate size for blood sample
- Syringe with 5ml 10 units/ml heparin flush solution (if continuous fluids are not infusing) 2
- Appropriate laboratory tubes

- Assemble equipment.
- Explain procedure to patient.
- Wash hands and put on gloves.
- If fluids are infusing, stop infusion.
- Vigorously cleanse injection cap with alcohol/chlorhexidine
- Flush catheter with 10ml normal saline. Do not remove syringe.
- Using the same syringe, aspirate 5ml blood. Safely discard this syringe and blood.
- Using the empty syringe withdraw blood sample.
- Place a needle on syringe, and carefully transfer blood into appropriate laboratory tubes
- Immediately flush catheter with 10ml saline solution.
- Attach saline or heparin syringe to a new injection cap and pre-flush.
- Clamp catheter and change injection cap.
- Flush catheter with 5ml of 10 units/ml heparin *if ordered and per facility protocol* or commence infusion of fluids.
- NOTE: Groshong catheters need not be heparinized.
- Safely discard used syringes & needles.
- Wash hands. Remove gloves.
- Label laboratory tubes with patient name and number, date, time, and your initials.

POLICY: CHANGING INJECTION CAP OF A CENTRAL VENOUS CATHETER

Injection caps shall be changed weekly and following each blood draw. A cap, which has been removed from the catheter for *any* reason, shall not be replaced on the catheter. A new catheter cap must be used. Only Luer-locking caps shall be used. Flush new injection cap with saline.

EQUIPMENT:

- Alcohol/chlorhexidine wipes
- Injection cap
- Gloves

PROCEDURE:

- Wash hands.
- Explain procedure to patient.
- Wash hands
- Put on gloves.
- Clamp catheter.

NOTE: Groshong catheters need not be clamped during cap change.

- Cleanse thoroughly around catheter hub with alcohol/chlorhexidine wipes and remove old cap.
- Cleanse around threads of catheter hub with alcohol/chlorhexidine wipe, taking care to maintain sterility of the hub.
- Attach new cap to catheter hub by clockwise rotation, making sure it is securely seated.
- Unclamp catheter.
- Remove gloves. Wash hands
- Document procedure

POLICY: CENTRAL VENOUS CATHETERS: FLUSHING & HEPARINIZING

Non-tunneled, non-valved catheters (such as certain PICCs, subclavians and jugular catheters) shall be flushed and heparinized at least every 24 hours when not in use, or at interval specified by physician's order.

Tunnelled catheters, non-valved (including accessed nonvalved ports) should be flushed at least 1-2 times per week.

Valved catheters (Groshong catheters) shall be flushed with normal saline solution at least weekly when not in use, or at interval specified by physician's order.

EQUIPMENT:

- Alcohol/chlorhexidine wipes
- Normal saline solution in volume appropriate for catheter in 10ml or larger syringe <u>as</u> <u>ordered</u>.
- Heparinized saline solution (10 *u/ml* or strength *if ordered and per facility protocol*) in volume appropriate for catheter in 10ml or larger syringe (<u>Note: If Facility follows a Saline</u> <u>Only Protocol, Heparin will be omitted for this procedure</u>)</u>

- Assemble equipment.
- Wash hands.
- Explain procedure to patient.
- Wash hands. Don gloves
- Vigorously cleanse injection port with alcohol/chlorhexidine wipe.
- Unclamp catheter.
- Slowly inject Normal saline solution.
- If catheter is to be heparinized, slowly inject heparinized saline solution.
- Maintain positive pressure on the plunger as the syringe is withdrawn.
- Remove gloves. Wash hands
- Document time of injection, concentration & volume of flush/es.

POLICY: CENTRAL VENOUS CATHETERS: REMOVAL

Directly inserted subclavian and jugular catheters may be removed only by trained Registered nurse, on order of physician. Tunneled (long-term) catheters such as Hickman and Groshong may be removed only by physician.

EQUIPMENT:

- Suture removal kit, if catheter is sutured in place Sterile gloves
- 2X2 sterile gauze pads
- Antibiotic ointment
- Tape
- For culture of tip: Sterile scissors
- Labeled sterile specimen container
- Laboratory requisition slip
- Central line dressing kit

PROCEDURE:

- Check physician's order.
- Assemble equipment.
- Wash hands. Don Gloves
- Explain procedure.
- Elevate head of bed 15 to 30 degrees.
- Remove old dressing, wearing exam gloves.
- Wash hands.
- Put on sterile gloves.
- Remove sutures, if any.
- Cleanse site using same procedure as for a central line dressing change.
- Have patient turn head away from site and exhale. At the same time, withdraw the catheter slowly and steadily.

NOTE: IF ANY RESISTANCE IS FELT, STOP IMMEDIATELY, SECURE THE LINE, NOTIFY THE PHYSICIAN AND IV NURSE. <u>THIS COULD CONTRIBUTE TO A LIFE THREATNEING EVENT.</u>

- Immediately apply pressure to the site using sterile gauze pads. Maintain pressure for five minutes or longer to control bleeding.
- Check catheter tip to confirm that it is intact.
- If culture is ordered, cut off approx. two inches of tip of catheter with sterile scissors and place in sterile specimen container to be sent to lab. Label with patient name, description of catheter, date & time, and your initials.
- Apply antibiotic ointment and sterile pressure dressing. This dressing should be left in place for 24 hours or longer.
- Remove gloves. Wash hands.
- Inspect site at intervals for hematoma or delayed bleeding through dressing

• Document

POLICY: ACCESSING AN IMPLANTABLE PORT

Access to an implantable port may be established by physician's order for administration of medications or fluids, for withdrawal of blood, or for routine flushing and heparinizing. Ports not in use for more than 24 hours should be flushed and heparinized and the Huber needle removed. Ports not in regular use should be accessed, flushed and re-heparinized at least monthly or according to manufacturer's recommendation. Ports in continuous use must be re-accessed with a new sterile Huber needle every seven days.

EQUIPMENT:

- Central line dressing change kit
- Non-coring right angle needle (Huber needle) of the appropriate gauge and length, with attached extension set (use the smallest gauge non-coring needle to accommodate therapy; length should allow the needle to sit flush with the skin and secure within the port)
- Injection cap
- Prefilled syringe with 10ml normal saline solution
- As ordered, prefilled syringe with 5ml heparin flush solution (100u/ml), or volume and concentration as ordered by prescriber.

PROCEDURE:

- Check physician order.
- Gather equipment.
- Wash hands.
- Explain procedure to patient.
- Open central line dressing kit, establishing a sterile field.
- Apply mask.
- Using aseptic technique, open Huber needle, injection cap, and pre-filled syringe and add these to the sterile field.
- Palpate to check position of port if necessary.
- Apply sterile gloves.
- Prep port site with antiseptic solution preferably chlorhexidine solution; apply using a back and forth motion for at least 30 seconds and allow to dry for 30 seconds. If using povidone-iodine apply in circle beginning at the catheter insertion site, moving outward; it must remain on the skin for at least 1 minute or longer to dry completely for adequate antisepsis.
- While site is drying, attach injection cap to Huber needle extension set.
- Prime cap, extension set, and needle with normal saline solution. Reserve remaining saline solution for flush.
- Stabilizing the port with one hand, grasp the Huber needle firmly and press it straight into the port until it touches the bottom. The right angle portion of the needle should be even with or slightly above the level of the skin. If it presses into the flesh, the needle is too short and should not be left in place.
- Insert syringe into injection cap and withdraw slightly to check for blood return. When

placement is confirmed by blood return, flush with Normal saline solution.

- Stabilize needle with tape, supporting the right angle portion with 2x2 gauze pads if necessary. If 2x2 gauze pads do not obscure the insertion site, the dressing is considered still a transparent dressing and is thus changed at least every 7 days.
- Apply transparent dressing.
- Proceed with therapy as ordered or flush with heparinized saline solution.
- Label dressing with needle gauge & length, date, time, and initials.
- Remove gloves and wash hands
- Chart procedure and patient response.
- NOTE: *Needle may be left in place no longer than seven days*. If duration of therapy is more than seven days, needle must be removed and port re-accessed using a new Huber needle.

POLICY: REMOVING HUBER NEEDLE FROM IMPLANTABLE PORT

Port needle is to be removed when therapy is complete, or whenever therapy is to be interrupted for 24 hours or more. When infusion therapy is continuous, needle is to be removed and port reaccessed using a new non-coring needle every seven days, or according to doctor's order.

EQUIPMENT:

- Gloves
- 10ml normal saline solution.
- <u>If ordered by prescriber</u>, 10ml syringe filled with 5ml heparin flush solution (100u/ml), or volume and concentration as ordered.
- Alcohol/chlorhexidine wipes;

PROCEDURE:

- Check physician's order.
- Gather equipment.
- Wash hands.
- Explain procedure to patient.
- Apply gloves.
- Cleanse injection cap with alcohol/chlorhexidine wipe and allow to dry for two minutes.
- Insert saline syringe into injection cap and withdraw slightly to check for blood return. When placement is confirmed by blood return, flush with normal saline solution.
- Flush with heparin flush solution <u>as ordered</u>, maintaining positive pressure on plunger of syringe as you withdraw it from the injection cap.
- Stabilizing the port with one hand, grasp the Huber needle firmly and withdraw it from the port. Immediately discard it safely in a sharps container.
- Remove gloves. Wash hands
- Chart procedure and patient response.

POLICY: INITIATION OF TPN OR PPN THERAPY

Infusion therapy orders will be obtained as outlined below.

PROCEDURE

- As soon as the facility enters into discussion with a discharging hospital about transfer of a patient with TPN/PPN, the facility should immediately contact the pharmacy manager or lead pharmacist to begin set up with the IV vendor pharmacy.
- The pharmacist receives the medication order from a licensed nurse via fax AND phone as soon as possible prior to admission. The pharmacy staff assists the nurse in compiling the necessary information needed to provide the infusion product and then arranges for vendor services to provide the therapy. The facility is reminded that a request should be made to the transferring hospital to send a full dose of the TPN/PPN solution, having an adequate expiration date, with the patient upon discharge.
- The following preliminary information must be provided by the Facility:
 - Facility name
 - Patient information including, but not limited to:
 - Name, room number, and nursing unit
 - All medical diagnoses, medical restrictions, advance directives
 - Diagnosis related to infusion therapy order
 - Allergy history
 - Reimbursement information
 - Name of the transferring hospital and contact information
 - Medication order, including, but not limited to:
 - Medication/solution
 - With or without lipids
 - Dose and rate
 - Frequency
 - Duration of Therapy or Stop Date
 - Route
 - Physician name
 - Name of nurse supplying information
 - Venous access information including:
 - Specific type of venous access device
 - Number of lumens
 - All required laboratory orders

- The pharmacist reviews the order for clinical appropriateness including, but not limited to:
 - Drug/drug interactions
 - Drug/food interactions
 - Drug/fluid interactions
 - Duplication of therapeutic classification
 - Appropriate therapy for stated diagnosis
 - Dosage based on patient status (height, weight, diagnosis, lab results)
 - Appropriate carrier solution
- The pharmacist contacts the IV Vendor Pharmacy to arrange service coverage as appropriate and notifies the facility of agreement.
- The facility notifies Guardian as soon as patient is confirmed for transfer. This will trigger the delivery of solutions, pump, and supplies. Once mixed, IV solutions are not accepted for return or credit.
- If therapy is interrupted for any reason, the physician and pharmacy must be contacted immediately. Once orders are given by the physician, the Pharmacy of Record must be contacted by both <u>fax and phone</u> to arrange for ongoing services.
- After Hours:
 - A pharmacist can be contacted via the regular pharmacy number.
 - A determination of need is discussed and appropriate measures taken.
 - If the therapy is not available, the physician should be contacted for interim orders. Should an order be given for D10 IV, the facility nurse may obtain it from the Facility's IV emergency supply. The Facility nurse accesses that system and follows administration and documentation instructions to administer required therapy. The after-hours pharmacist should be contacted immediately to arrange for subsequent deliveries.
 - Whenever possible, the facility should request that the transferring hospital send a complete dose of the ordered TPN/PPN with an adequate expiration date, with the patient upon transfer so as not to precipitate or contribute to, a break in therapy.
 - $\circ~$ The pharmacy personnel record after hours inquiries, with time and resolution in the patient's IV chart.

POLICY: CENTRAL VENOUS CATHETERS: TOTAL PARENTERAL NUTRITION

- Solutions with more than 10% Dextrose will be given through a central venous catheter.
- TPN solutions will be stored in a refrigerator and brought to room temperature prior to infusion.
- The catheter lumen through which TPN is infused is not to be used for any other purpose (blood draws; medications, etc.) except by order of physician.
- TPN fluids will be discarded 24 hours after hanging if not completely infused.
- Administration sets and filters will be changed every 24 hours if cyclic, intermittent, or continuous with intravenous fat emulsion. If TPN is continuous without fat emulsion, then the administration set is changed every 96 hours.

EQUIPMENT:

- Parental nutrition solution prepared by pharmacy
- Infusion pump
- IV administration set
- 0.22 micron filter (for solution without added lipids) or 1.2 micron filter (for solution with lipids)
- Alcohol/chlorhexidine wipes

PROCEDURE:

- Wash hands
- Assemble equipment
- Examine bag for leaks and check expiration date and time and bag number.
- Examine fluid for cloudiness, precipitates, or unstable lipids (pools of yellowish or clear oil floating on the surface of the fluid).
- Cleanse central venous catheter injection cap thoroughly with alcohol/chlorhexidine wipes and attach administration set.
- Set up infusion on pump at rate ordered by physician. NOTE: Infusion rates are often increased and decreased slowly (" ramped up" and "ramped down") to avoid abrupt changes in blood glucose level.
- Wash hands
- Document
- Monitor patient for signs & symptoms *of* glucose intolerance, sepsis, and fluid & electrolyte imbalance.

Signs of trouble include:

HYPERGLYCEMIA (high blood sugar)

• increased urine output

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- exceptional thirst
- headaches
- positive urine glucose test
- high blood glucose test
- drowsiness or fatigue

HYPOGLYCEMIA (low blood sugar)

- headaches
- feeling *of* intoxication
- shakiness or dizziness
- inability to concentrate
- cold sweats
- loss of consciousness

FLUID & ELECTROLYTE IMBALANCE

- shortness of breath
- vomiting
- diarrhea
- sudden increase in fistula or stoma output
- less than 500ml urine output per day for two days in a row
- weight gain of more than two pounds in a day
- sudden increase in urine output
- muscle cramps
- weakness
- body aches
- inability to concentrate
- cardiac arrhythmias

INFECTION

- fever chills
- sweats
- rapid labored breathing
- weakness
- persistent positive urine glucose
- persistent high blood glucose

POLICY: TOTAL PARENTERAL NUTRITION: SUBSTITUTION OF D-10-W

- TO PREVENT HYPOGLYCEMIA WHEN TOTAL PARENTERAL NUTRITION CANNOT BE ADMINISTERED AS ORDERED DUE TO UNAVAILABILITY OF TPN SOLUTION OR OF CENTRAL VENOUS CATHETER, SUBSTITUTION IS SUGGESTED.
- 10% Dextrose in water may be substituted for total parenteral nutrition solutions for up to 36 hours, or longer as ordered by physician, in cases where either the solution is unavailable or the central venous catheter cannot be used for some reason.

EQUIPMENT:

- 10% Dextrose in water
- Other supplies as needed for TPN administration

PROCEDURE:

- Follow procedure for TPN administration, substituting D-IO-W for TPN at the rate ordered for TPN.
- Notify physician of the substitution as soon as possible.

NOTE: D-10-W must be hung within one hour of discontinuing TPN. Do not delay if physician cannot be reached.

POLICY: CLEARING OCCLUDED CATHETERS (DE-CLOTTING)

If occluded, central IV catheters may require de-clotting. Catheter occlusions are cleared to restore patency of the VAD (vascular access device). This procedure is performed only by an experienced RN. Guardian recommends that the contract IV nursing service be contacted for assistance. Due to inherent risks with the procedure, thrombolytic agents are not available in the emergency drug supply. Please fax and phone physician orders to the pharmacy.

EQUIPMENT:

- Alcohol/chlorhexidine wipes
- 3 way Stopcock
- Needleless access cap
- ~ 5 Syringes
- Flush solutions
 - Preservative -free sodium chloride 20 ml
 - Heparin (10 units per ml unless a port, then 100 units/ml)
- Thrombolytic agent

PROCEDURE:

- Check physician order.
- Assemble equipment.
- Wash hands and glove.
- Explain procedure to patient.
- Determine catheter volume. (check manufacturer for catheter fill volumes.)
- If resistance or complication occurs at any time during catheter clearance, discontinue procedure and notify physician.
- If catheter is multi-lumen, assess if all lumens require instillation of the precipitate-clearing thrombolytic agent.
- Obtain the order for the thrombolytic agent
- Clamp catheter, remove injection or access cap.
- Cleanse catheter hub vigorously with alcohol/chlorhexidine wipe.
- Attach stopcock to catheter hub.
- Turn stopcock to off position
- Unclamp catheter
- Connect empty syringe to one port of stopcock
- Connect syringe filled with thrombolytic agent to second port of stopcock.
- Open stopcock port to connected empty syringe.
- Gently aspirate empty syringe to 8 or 9 ml, then close port, creating negative pressure within catheter lumen.
- Open stopcock connected to syringe filled with thrombolytic agent
- Gently instill thrombolytic agent into catheter. Do not force.
- Close stopcock to catheter.

- Allow agent to dwell in catheter for the amount of time recommended by manufacturer.
- Open stopcock to catheter, aspirate 3-5 ml of blood and discard.
- Attach syringe with 10 ml preservative –free 0.9% sodium chloride and flush VAD.
- *If unable to aspirate, repeat procedure. If still unsuccessful, notify physician.

PROCEDURE: POST CATHETER CLEARANCE

- Clamp catheter
- Remove stopcock
- Disinfect catheter hub with alcohol wipe.
- Attach needleless access cap, purged with 0.9% preservative- free sodium Chloride.
- Flush catheter with 0.9% preservative free sodium chloride.
- If using heparin protocol, flush with heparin according to facility policy and procedure.
- Discard used supplies.
- Remove gloves.
- Wash hands
- Document in patient's permanent medical record.
 - Time of administration.
 - Volume of flush.
 - Route of administration.

******NOTE: Heparin flush solution is not necessary if peripheral catheters are flushed with saline at least every eight hours, but may be used as approved by Facility Protocol.

POLICY: EPIDURAL AND INTRATHECAL CATHETERS- GENERAL GUIDELINES:

FACILITY POLICY MAY PROHIBIT MEDICATION ADMINISTRATION VIA THIS ROUTE. SEEK VERIFICATION FROM DON BEFORE INITIATING THERAPY

- Pharmacy must be notified 24 hours in advance of initiation of infusion per epidural or intrathecal catheter
- Only trained RNs may administer medications via the epidural/intrathecal route...
- Only preservative-free solutions and surfactant-free filters may be used with epidural/intrathecal catheters.
- Alcohol/chlorhexidine **MUST NOT** be used as a prep for access, medication administration, dressing change, or any other use or care of the catheter. (Rationale: Alcohol/chlorhexidine may migrate into the epidural or intrathecal space.)
- Catheter irrigation (flushing) is not required to maintain catheter patency and should not be performed.
- Epidural/intrathecal catheters should be clearly labeled to avoid confusion with intravenous or other lines.
- A physician's order for emergency administration of Naloxone (Narcan) must be obtained prior to the initiation of epidural/intrathecal pain management therapy. Naloxone must be available at the facility before therapy can be initiated.

Infusion therapy orders will be obtained as outlined below.

PROCEDURE

- As soon as the facility enters into discussion with a discharging hospital about transfer of a patient with an epidural or intrathecal catheter, they should immediately contact the pharmacy manager or lead pharmacist.
- The pharmacist receives the medication order from a licensed nurse via fax AND phone <u>as soon as possible prior to admission/order initiation</u>. The pharmacy staff assists the nurse in compiling the necessary information needed to provide the infusion product and then arranges for vendor services to provide the therapy and supplies. The facility is reminded that the pharmacy must be notified as soon as the resident arrives in the facility.
- The following preliminary information must be provided by the Facility:
 - Facility name
 - Patient information including, but not limited to:
 - Name, room number, and nursing unit
 - All medical diagnoses, medical restrictions, advance directives
 - Diagnosis related to infusion therapy order
 - Allergy history
 - Reimbursement information

- Medication order, including, but not limited to:
 - Medication/solution
 - Dose and rate
 - Frequency
 - Duration of Therapy or Stop Date
 - Route
- Physician name
- Name of nurse supplying information
- Venous access information including:
 - Specific type of venous access device
- o All required laboratory orders
- The pharmacist reviews the order for clinical appropriateness including, but not limited to:
 - Drug/drug interactions
 - Drug/food interactions
 - Drug/fluid interactions
 - o Duplication of therapeutic classification
 - Appropriate therapy for stated diagnosis
 - Dosage based on patient status (height, weight, diagnosis, lab results)
 - Appropriate carrier solution
- The pharmacist contacts the IV Vendor Pharmacy to arrange service coverage as appropriate and notifies the facility of agreement.
- The facility notifies Guardian as soon as patient is confirmed for transfer. This will trigger the delivery of solutions, pump, and supplies. Once mixed, IV solutions may not be returned for credit..
- If therapy is interrupted for any reason, the physician and pharmacy must be contacted immediately. Once orders are given, the Pharmacy of Record must be contacted by both **fax and phone** to arrange for ongoing services.
- After Hours:
 - A pharmacist can be contacted via the regular pharmacy number.
 - A determination of need is discussed and appropriate measures taken.
 - If the therapy is not available, the physician should be contacted for interim orders. If PO or IM medication is ordered until IV therapy may be

resumed, the facility nurse may obtain it from the Facility's IV EDK Box. The Facility nurse accesses that system and follows administration and documentation instructions to administer required therapy. The after-hours pharmacist should be contacted immediately to arrange for subsequent deliveries as well as that of an IV pump (as appropriate).

 \circ The pharmacy personnel record after hours inquiries, with time and resolution in the patient's IV chart.

POLICY: EPIDURAL AND INTRATHECAL CATHETERS- BOLUS INJECTION

FACILITY POLICY MAY PROHIBIT MEDICATION ADMINISTRATION VIA THIS ROUTE. SEEK VARIFICATION FROM DON BEFORE INITIATING THERAPY

- See general guidelines for epidural/intrathecal catheter use and care.
- Only trained RNs may administer medications via the epidural/intrathecal route.
- A complete neurological assessment must be performed before administering medication by this route.

EQUIPMENT:

- Exam gloves
- Povidone-iodine prep solution
- Medication syringe
- Hypoallergenic tape

PROCEDURE:

- Check physician's order
- Assemble equipment.
- Wash hands thoroughly. Don gloves. Observe Universal Precautions.
- Explain procedure.
- Complete neurological and physical assessment.
- Inspect catheter site for redness, tenderness, swelling, crusting or drainage
- Clean Injection cap for 30 seconds with povidone-iodine solution. Allow to dry for two minutes.
- Insert syringe into injection cap.
- Aspirate plunger of syringe. Resistance is expected. Some air may return or a small amount of fluid (less than 1/2 ml) may drip into syringe.

NOTE: If blood or more than 1/2 ml of fluid flows into the syringe, remove the syringe from the injection cap. **DO NOT REINJECT THE FLUID WITHDRAWN AND DO NOT INJECT THE MEDICATION**. Recap the syringe and reserve the fluid for examination by the physician. Immediately contact the physician for instructions.

- If less than 1/2 ml of fluid is aspirated, slowly inject the medication using steady, gentle pressure.
- When injection is completed, detach the syringe and discard it safely.
- Remove gloves. Wash hands
- Document:
 - Date and time of procedure.
 - Medication dose, route, and rate.
 - Condition of catheter and site.

- Neurological and physical assessment.
- Problems encountered.
- Patient response.
- Patient/family teaching.
- Notify charge nurse and physician of significant findings.

POLICY: EPIDURAL OR INTRATHECAL CATHETER REMOVAL

<u>Non-cuffed temporary epidural/intrathecal catheters may be removed by a trained RN only by</u> physician order. All other types of epidural/intrathecal catheters may be removed only by the physician.

EQUIPMENT:

- Exam gloves
- Suture removal set (if catheter is sutured)
- Sterile gloves
- Povidone-iodine
- Sterile gauze dressing
- Tape or transparent dressing
- Sterile container and sterile scissors if culture of catheter is ordered. Tape measure

PROCEDURE:

- Check physician order.
- Gather equipment.
- Identify patient.
- Explain procedure.
- Wash hands.
- Put on exam gloves.
- Carefully remove old dressing and discard it safely.
- Cleanse skin around the site with Povidone-iodine swab, moving outward from the site in a circular motion to a diameter of two inches. Allow to air dry.
- Remove and discard exam gloves.
- Open suture removal set (if sutures are present).
- Open sterile gauze dressing, taking care to maintain sterility.
- Don sterile gloves.
- Remove sutures, if present.
- Hold gauze pad over the exit site with one hand and remove the catheter using a slow, steady,
- motion. If resistance is felt, DO NOT force removal. Re-dress the catheter site and notify the
- charge nurse and the physician.
- Measure the length of the catheter and observe the catheter for integrity.
- If culture is to be obtained, use sterile scissors to cut off the tip of the catheter, letting it drop
- directly into the sterile container.
- Apply sterile gauze dressing to exit site.
- Remove gloves. Wash hands.
- Document procedure, including type, length and integrity of catheter removed, observations of site, and client tolerance of procedure.

CONSENT FOR IV CATHETER PLACEMENT

	Peripherally Inserted Central Venous Catheter (PICC) Midline Peripheral Catheter
	_Femoral Central Venous Catheter Multilumen Subclavian Central Venous Catheter
1.	I,, agree to have a
	PICC IV -Catheter placed in my arm.
	Midline IV -Catheter placed in my arm.
2	Multilumen Subclavian Central Venous Catheter placed in my chest/shoulder.
2.	I understand both the insertion and location of the catheter tip have been ordered by my physician.
3.	I understand that this is not the only way I can receive my medication. I understand that my health care team has determined that the above line would be the safest and most effective means of giving my medication at this time. The other methods of giving my medication have been explained to me, and I have chosen this one.
4.	I realize this procedure will be performed only by a nurse or physician who has been
т.	specially trained and certified to insert the above lines. My catheter will be inserted by
5.	I realize that this is an invasive procedure and has certain risks such as catheter or air embolism, arterial puncture, infection, irregular heartbeat. All appropriate measures to reduce or eliminate the chances of these occurring will be taken.
6.	I understand that while the'
	P.I.C.C. catheter will be placed in my middle arm, the end of the catheter will come to rest in my upper chest or in an area near my heart.
	Midline will be placed in my middle arm, the end of the catheter will come
	to rest approximately six inches above the site of entry.
	Multilumen Subclavian Central Venous Catheter will be placed in my upper chest area toward the shoulder, the end of the catheter will come to rest in an area near my heart.
7.	I realize that there is a slight chance this procedure may not be successful for me, though
	the procedure will only be attempted if I seem to be a good candidate for it. Should
	attempts to place the above line fail, I will have explained to me all of the options I then
	have to receive my medication.
8.	I have the right to voice any questions I may have about this procedure, and I can expect knowledgeable answers.
PAT	ENT: DATE:

WITNESS: _____ DATE: _____

COMPLICATION	CAUSE	SIGNS & SYMPTOMS	NURSING ACTION	PREVENTATIVE MEASURES
Phlebitis • Mechanical • Chemical • Bacterial	 Irritation of vein wall Predisposing factors Length of time catheter is left in place Site of infusion (i.e., in areas over joint flexion, veins in lower extremities, small veins when used for infusion of irritating solutions) Composition of solution (i.e., hypotonic, hypertonic, solutions with a PH significantly different from that of the plasma) Technique (i.e., minimal trauma with skillfully inserted venipuncture, thorough skin preparation, maintenance of asepsis during therapy) 	 Phlebitis scale No clinical symptoms Erythema at access site with or without pain Pain at access site with erythema and streak formation Pain at access site with erythema, streak formation, and/or palpable venous cord > I inch in length Pain at access site with erythema, streak formation, palpable venous cord > I inch in length, and/or purulent drainage 	 Stop infusion Remove catheter Restart infusion in other extremity if possible Evaluate for midline or PICC on initiation of therapy 	 Evaluate site frequently for pain, redness, and warmth Change PIV site at least q 72 hrs and as needed Select vein with ample blood supply when infusing irritating substances Select smallest gauge and shortest length catheter appropriate to infusate Infuse over recommended times Avoid multiple venipunctures Avoid lower extremities Avoid veins over joint flexions Anchor catheter to prevent movement Thorough prep of skin with aseptic technique and maintenance of asepsis during irritation and throughout course of treatment
Infiltration	 Inadvertent administration of non vesicant medication/solution into surrounding tissue 	 Pain at site Swelling around site Cool to touch Blanching Sluggish flow rate Skin tightness 	 Stop infusion Remove catheter Restart infusion in opposite extremity Elevate extremity Warm or cold compress based on type of solution infiltrated, with physician order 	 Monitor sites frequently Tape cannula securely to prevent movement Utilize natural splinting in selecting Infusion sites Avoid areas of flexion Evaluate fragility of veins

COMPLICATIONS OF IV THERAPY

Extravasation	 Inadvertent administration of vesicant medication/solution into surrounding tissue (agent which damages tissue) 	 Pain or burning at site of insertion with progression to 	 If extravasatio n is suspected, discontinue infusate immediately Notify pharmacy and physician for specific treatment protocol 	 Nurse administering medications with extravasation potential needs to be fully aware and closely monitor patient for untoward side effects — this is a serious complication Drugs with extravasation potential are, but not limited to, certain chemotherapeutic agents, hyperosmolar solutions Monitor sites frequently Always determine integrity of access device prior to therapy Administer medications with extravasation potential via a central line (CVAD)
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COMPLICATION	CAUSE	SIGNS & SYMPTOMS	NURSING ACTION	PREVENTATIVE MEASURE
Pulmonary Embolism	substance, usually a blood clot, becomes free floating and is	 Tachypnea Possible decreased level of consciousness due to anoxia 	 KVO IV Semi-fowlers position to facilitate breathing Monitor vital signs Notify physician Oxygen per physicians order 	 Frequent monitoring of patient and access device Avoid use of small syringes in CVAD's; use at least a 10 ml syringe Do not irrigate IVs or use positive pressure to relieve possible clot formation Use of filters for blood products and to remove particulates from medications/solutions being administered Avoid lower extremities Examine solution for particulate matter
Catheter Embolism	piece of catheter is broken in the vein and		 Minimize patient anxiety Tourniquet is placed on resident's arm above venipuncture site if a peripheral, midline, or PICC catheter is broken. Bed rest to minimize rapidity of catheter travel in the vascular system Notify physician for order to transfer to acute care for evaluation Monitor for signs of further distress and treat for shock Arrange for 	 Never reinsert needle/stylet Do not use scissors near an infusion site Confirm catheter integrity prior to insertion Do not use sharp-edged clamps on central catheter care Avoid use of small syringes in central lines, use at least 10 ml Do not consider patient who pulls out IVs as a midline or PICC candidate

		 radiographic studies to determine exact location of catheter fragment Save portion of catheter removed 	
Air Embolism when bubble accum dange and for tenact	of a of air ne ular m al blism occur small les mulate erously orm cious les that the onary	 Position patient on left side in trendelenburg's position trapping air in right heart chambers If embolism results from open or leaking infusion line, change line immediately Stop source of air; clamp catheter Monitor vital signs Notify physician Oxygen per physician's order 	 Prime all infusion tubing and filters Luer lock connections Avoid allowing infusion container to run dry: change before empty Clamp catheters when tubings are changed Have patient lie flat and perform Valsalva maneuver when central lines inserted, discontinued, and when tubing changed

COMPLICATION	CAUSE	SIGNS & SYMPTOMS	NURSING ACTION	PREVENTATIVE MEASURE
Pulmonary Edema	Presence of more fluid volume than circulatory system can manage Usually occurring in the elderly patient and those with impaired renal and cardiac function	 Cough Rales at lung bases Rapid pulse Increased blood pressure Pitting edema Distended neck veins Frothy, pink sputum 	 Slow infusion rate Place in Fowler's position to facilitate breathing Monitor vital signs Notify physician Oxygen per physician's order 	 Frequent monitoring Time tape infusion Maintain at flow rate ordered which should be appropriate to resident's clinical condition Never play "catch up" when fluids behind schedule Evaluate for signs and symptoms of overload Carefully monitor I & 0 Be aware of piggy back fluid volume
Pyrogenic Reaction	• Pyrogens are introduced into the blood stream producing a febrile reaction	 Abrupt onset of fever (100 - 106"F) Chills Malaise Headache Vascular collapse Shock If signs and symptoms are not treated, death can result 	 Discontinue infusion immediately Restart in opposite extremity using new bag of solution and all new equipment Monitor vital signs Notify physician Culture site per order Culture tip of catheter per order Aseptically reserve assembled infusion set for possible laboratory investigation 	 Inspect solution prior to hanging for: Expiration date Cloudiness; color change Sedimentation Maintain asepsis at all times Cap ends of tubing No infusion solution to hang longer than 24 hours Change infusion tubing per Facility policy and procedure Label tubing with date and time
Speed Shock	 A substance foreign to the body is infused rapidly into the circulation causing concentration in plasma to reach toxic proportions, flooding the blood-rich heart & vessels 	 Flushing Headache Hypotension Syncope Shock Cardiac arrest 	 Slow infusion rate Notify physician Treat symptoms Resuscitate, if necessary 	 Maintain infusion at appropriate rate Prevent runaway infusion by checking for positional flow
Catheter migration	 Tip of catheter is displaced from a documented satisfactory position to another position Spontaneous migration Forceful flushing Excessive pulling or tension on catheter 	 Inability to flush, infuse or aspirate "Gurgling in the ear" if catheter in jugular vein External catheter length increase 	 Notify physician Obtain order for venographic studies Discontinue existing infusions 	 Prevent trauma to the catheter site Properly secure catheter and extension set to avoid pull on catheter

Anaphlaxis Protocol

Policy

Prior to administration of medication, the nurse will obtain and review resident's medication and allergy history and nursing assessment including baseline vital signs.

During IV administration, the nurse will monitor resident for signs of anaphylaxis:

Respiratory: dyspnea, wheezing, and cyanosis Cardiovascular: sudden hypotention, thread/rapid pulse, chills, diaphoresis, pallor, dizziness, anxiety Skin changes: erythema, pruritis, angioedema Gastrointestinal: nausea, vomiting, abdominal cramping, diarrhea

Procedure

If anaphylaxis is suspected:

- 1) Stop the infusion; maintain a patent IV; assess the resident
- 2) Notify EMS and physician
- 3) Administer medications for anaphylaxis as ordered
- 4) Continue to monitor until EMS arrives

Documentation

Medication given, resident's response to the treatment, assessments performed and nursing actions taken

QUICK VIEW OF IV PROTOCOL GUIDELINES:

PLEASE NOTE THAT THE FOLLOWING ARE RECOMMENDATIONS <u>ONLY.</u> PHYSICIAN OR ARNP ORDERS ARE <u>REQUIRED</u> FOR ALL FLUSHES

NOTE: The nurse administering the flush must assess each patient for any condition that may require a change in concentration and/or volume.

DEVICE	FLUSH PROTOCOLS			Tropoporon		TUBING CHANGES			
	Maintenance	Intermittent	TPN	Blood Draws	DRESSING CHANGES	NEEDLELESS DEVICES	Primary & Secondary Continuous (piggyback)*	Primary Intermittent	PPN or TPN
	hrs. Minimum 2	Before & after each dose of medication Minimum 2 ml normal saline	N/A	N/A	When compromised	 With each new insertion 	• 96 hrs and with each IV start	24°	24° PPN ONLY
Midlines	At least q 12 hrs Minimum 3 ml normal saline	Before & after each dose of medication. Minimum 3 ml normal saline <i>then, IF</i> <i>ORDERED</i> <i>3</i> ml 10 u/ml heparin	N/A	N/A	24 ° post insertion <i>then</i> Q week & PRN	• Q week • PRN	No more than every 96 hrs.	24°	24° PPN ONLY
	hrs. each lumen 5 ml normal saline <i>then, IF ORDERED</i> 5 ml 10 u/ml heparin	medication 5 ml normal saline <i>then,</i> <i>IF ORDERED</i> 5 ml 10 u/ml heparin	5 ml normal saline infuse TPN <i>then,</i> 5 ml normal saline <i>then, IF</i> ORDERED 5 ml 10 u/ml heparin	5 ml normal saline, 5 ml discard, draw labs, <i>then</i> 10 ml normal saline <i>then, IF</i> <i>ORDERED</i> 5ml 10 u/ml heparin	24 ° post insertion then Q week & PRN	 Q week & PRN QD with TPN After blood draws After blood transfusion 	No more than every 96 hrs	24°	24°
Non Tunneled	hours each lumen	Before & after each dose of medication 5 ml normal saline <i>then,</i> <i>IF ORDERED</i> 5 ml 10 u/ml heparin	5 ml normal saline infuse TPN <i>then,</i> 5 ml normal saline <i>then, IF</i> ORDERED 5 ml 10 u/ml heparin	5 ml normal saline, 5 ml discard, draw labs, <i>then</i> 10 ml normal saline <i>then, IF</i> ORDERED 5ml 10 u/ml heparin	Q week & PRN	 Q week & PRN QD with TPN After blood draws After blood transfusion 	No more than every 96 hrs	24°	24°
Tunneled Open Ended	times/week each lumen 10ml normal saline <i>then,</i> <i>IF ORDERED</i> 5 ml 10 u/ml	medication 5 ml normal saline <i>then,</i>	5 ml normal saline infuse TPN <i>then,</i> 5 ml normal saline <i>then IF</i> ORDERED 5ml 10 u/ml heparin	5 ml normal saline, 5 ml discard, draw labs , <i>then</i> 10 ml normal saline <i>then, IF</i> <i>ORDERED, 5</i> ml 10 u/ml heparin	Q week & PRN	 Q week & PRN QD with TPN After blood draws After blood transfusion 	No more than every 96 hrs	24°	24°

*If gauze dressing is used, change every 24 hours.

MIDLINE – Up to 8 inches in length

MIDCLAVICULAR – Midline over 8 inches in length

TUNNELED – Hickman, Broviac, Hohn

NON-TUNNELED – Subclavian, Jugular

See next page for catheter types in more detail

Quick View of IV Protocol Guidelines:

PLEASE NOTE THAT THE FOLLOWING ARE RECOMMENDATIONS <u>ONLY.</u> PHYSICIAN ORDERS ARE <u>REQUIRED</u> FOR FLUSHES

NOTE: The nurse administering the flush must assess each patient for any condition that may require a change in concentration and/or volume.

		FLUSH PROTOCOLS					TUBING CHANGES		
DEVICE	Maintenance	Intermittent	TPN		DRESSING CHANGES	NEEDLELESS DEVICES	Primary & Secondary Continuous (piggyback)*		PPN or TPN
Tunneled Closed Ended	lumen	each dose of medication 5 ml normal	10 ml normal saline infuse TPN <i>then</i> 10 ml normal saline	10 ml normal saline 10 ml discard draw labs then 10 ml normal saline	Q week & PRN	 Q week & PRN QD with TPN After blood draws After blood transfusion 	No more than every 96 hrs	24°	24°
Implanted Venous Port	Deaccessed q month 5 ml normal	Before & after each dose of medication. 5 ml normal saline then	5 ml normal saline infuse TPN	5ml normal saline 10 ml discard draw labs <i>then</i> 10 ml normal saline <i>then</i> 5 ml 100 u/ml heparin	Q week	 Q week & PRN QD with TPN After blood draws After blood transfusion 	No more than every 96 hrs	24°	24°

 Maintenance Flushes:
 If medication is to be administered less than the minimal maintenance flush protocol, flush with minimum listed for maintenance.

 PICC Flushes:
 If catheter is closed ended (e.g. Groshong), flush with normal saline only.

Dressing Changes: Gauze dressings are only used if patient has allergy or problem with transparent dressing. Physician order required with frequency of change individualized per patient - at least every forty eight (48) hours.

Measurements: For PICCs and Midlines: Measure upper arm circumference upon insertion, admission, every 3 days, and PRN.

Syringe Size: To prevent catheter damage, the size of the syringe used for flushing and obtaining blood specimens should be in accordance with the catheter manufacturer's guidelines for maximum pressure limit in lbs per square inch.

Implanted Port: When accessed, requires weekly Htuber needle change.

* Once a secondary administration set is detached from the primary administration set, the secondary administration set should be considered a primary intermittent administration set.

*NOTE: POST TPN, BLOOD REFLUX BLOOD IN CATHETER OR TUBING REQUIRES A 20ml SALINE FLUSH

* PN continuous without intravenous fat emulsion administration set change frequency is every 96 hours

* Tip location for CVADs shall be determined radiographically or by other approved technology prior to initiation of infusion therapy.

Types of Intravenous Catheters

Peripheral - short, less than 3 inches in length, used for short term therapy; (less than 1 week).

Central venous catheter- any IV catheter with tip confirmation within the vena cava

Mid-Line- longer than 3 inches, inserted by specially trained RN, tip is in the axilla area, may remain in for \sim 4 weeks unless complications occur. THIS IS NOT A CENTRAL LINE.

Non-tunneled, non-cuffed catheters- one or more lumens, inserted through the skin into a vein, common names include triple lumen, dual lumen, PICC (peripherally inserted central catheters).

Tunneled, cuffed central lines- tip is in vena cava, line then exits from the vein, is under the skin to the exit site. These lines must be placed and removed by physicians. The tunnel may appear as a line under the skin. The cuff becomes attached to scar tissue in the tunnel over a period of time reducing the risk of infection.

Open end catheters- open at the tip

Closed end catheters- have a closed tip, usually a valve, eg. Groshong catheters

PICC- peripherally inserted central catheter, may be open or closed tip, inserted by specially trained RN, or physician.

Port – implanted by a surgeon, accessed through the skin using a non-coring needle, tip in vena cava, long term IV line, must be flushed at least monthly when not being used

Peripheral Ports- placed in upper extremities, under the skin, tip is in vena cava, long term IV line, use non-coring needle, no BP or venipunctures in the extremity, must be flushed at least monthly when not being used

I.V. Pump Manual