Nurses' Infusion Manual
For Long Term Care Facilities

PHARMSCRIPT

V.20
Updated 05.16.22

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_____ hereby approves
(Facility)

the attached Infusion Therapy Manual as of _____
(Date)

This Infusion Manual contains guidelines regarding infusion therapy. It will be reviewed at least annually or more often when deemed appropriate. Updates will be applied as necessary. All new revisions should be discussed at the P&T meetings (or its equivalent).

Copies are given upon implementation of pharmacy services and are to be stored for reference at each nursing station. Facility will maintain updates in manuals.

I have reviewed this manual and agree to its approval.

_____
Administrator

_____
Director of Nursing Services

_____
Medical Director

_____
P&T Committee Chair

_____
PharmScript, LLC

_____
Consultant Pharmacist

Purpose

To identify licensed personnel who are designated by the facility to perform infusion therapy.

Policy

Nurses administering infusion therapies will practice within the scope of practice for their licensure as established in the State Nurse Practice Act, and within their clinical level of competency as established by the facility training and competency evaluation programs.

Scope of Practice for Specific Infusion Therapy for Nursing Functions

The following procedure/functions associated with infusion therapy must be verified with the State Nurse Practice Act regarding RN and LPN scope of practice, as the regulations differ from state to state.

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

Facility/Administration Responsibilities for IV Therapy

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

Purpose

To provide guidance for infusion medication orders to be consistent with principles of safe and effective order writing so that all prescribed medications are administered safely and accurately.

General Guidance

1. Only authorized, licensed healthcare practitioners or individuals who are authorized to take verbal or telephone orders from prescribers, shall be allowed to receive medication orders.

2. Each facility, in conjunction with the Consultant Pharmacist and the Medical Director, shall identify and approve appropriate order writing practices and related policies. They shall also approve any modifications to the facility's list of approved abbreviations.

Procedure

1. Upon receipt of a physician's order for IV therapy, the nurse will complete the 'Pharmscript Infusion Order Form' and fax to the pharmacy. Note: A bulk supply of this form can be requested from the pharmacy's medical records department.

2. Orders for infusion or IV medications should include the following elements:
    a. Resident name.
    b. Date ordered.
    c. Name of medication.
    d. Name of base solution, as appropriate for IV medication orders.
    e. Strength of medication, where indicated.
    f. Dosage.
    g. Route of administration, including type of IV line.
    h. Time, frequency or rate of IV administration.
    i. Quantity or duration/length of therapy.
    j. Diagnosis or indication for use.
    k. Physician and/or Prescriber name.
    l. Signature of Nurse noting order.

4. Additional resident information the Nurse should have on hand includes:
    a. allergies;
    b. age;
    c. height and weight; and
    d. pertinent laboratory results.

5. Stat orders should be communicated from the facility to the pharmacy immediately upon receipt from the Physician.

Purpose

To outline patient rights and responsibilities as they relate to infusion services

Considerations

1. The Nursing Home Reform Amendments of OBRA 1987 require that nursing facilities "promote and protect the rights of each patient."
2. The patient's rights must be displayed in the nursing facility along with a contact number for the state's Long-Term Care Ombudsman (a third-party patient advocate)
3. OBRA Rights have an impact on how nursing care, including infusion therapy services, are provided to the patient.

Guidance

1. Nurses performing infusion therapy services within serviced facility must be aware of patients' rights provided under OBRA. Examples of specific rights and their potential impact when providing infusion therapy follow.

OBRA RIGHT	POTENTIAL IMPACT ON INFUSION THERAPY
Right to Dignified Existence, Self-Determination and Communication	● Patient may not be compelled to submit to infusion therapy procedures by force. ● If a patient can understand the situation and express a preference, they must be informed of their options and their wishes respected to the degree practicable. ● Information on health status/treatments must be presented in a language that the patient can understand.
Right to Refuse Treatment	● Treatment is care provided for purposes of palliating symptoms, Improving functional level or maintaining/restoring health. ● Patients who withhold consent for treatment or explicitly refuse Treatment may not be treated against his/her wishes. ● Staff must determine what the patient is refusing and why; staff must then clarify and educate the patient as to the potential consequences of refusal. Staff must document this information in the patient record.
Right to Privacy and Confidentiality	● Privacy curtains may maintain privacy of patient's body. ● Only authorized staff participating in the treatment of the patient should be present. ● People not involved in the patient's care (i.e., observers, visitors, roommates) should not be present without the patient's permission while they are being treated or examined.

OBRA RIGHT	POTENTIAL IMPACT ON INFUSION THERAPY
Right to be Free of Physical/Chemical Restraints	● A physical restraint is any manual, physical, or mechanical device, material, or equipment attached or adjacent to the patient's body that the individual cannot remove easily which restricts freedom of movement or normal access to one's body. ● Examples include soft restraints, arm boards, mitts, soft ties, etc. ● A chemical restraint is the use of a sedating drug to manage or control behavior. ● The use of therapeutic interventions, like the above, to assist in maintaining an IV site or infusion must be justified through the care planning process and ordered by the physician/LIP in the patient's medical record. It is necessary to demonstrate that these interventions are justified by promoting the care and well-being of the patient and that no less-restrictive alternatives exist. All other State and Federal requirements must be met as well. If appropriate to maintain the patient's infusion therapy without interruption, obtain a specific physician/LIP order to use such interventions.

Purpose

To describe the procedure to obtain patient or legal guardian consent to receive infusion services.

General Guidance

1. The nurse shall advocate for the patient's or legally authorized representative's right to accept or refuse treatment.

Procedure

1. Consent shall be obtained by the health care provider who will perform the procedure and shall include full details of the procedure, risks, and benefits, alternatives, and complications associated with the treatment or therapy, in a language that the patient or legally authorized representative can understand.
2. The nurse should be knowledgeable of the protocol for obtaining informed consent from the patient or legally authorized representative, both verbally and written, and ensure the information give to the patient or legally authorized representative has included the discussion of risks, benefits, alternatives, and complications associated with the treatment or therapy. This should be done in a method such as asking the patient, or legally authorized representative, to recount or "teach back" the proposed treatment or procedure.
3. As elements of informed consent, the nurse should ensure that the patient or legally authorized representative should be able to explain, in everyday words, the diagnosis or health problem; the name, type and general nature of the treatment, service, or procedure; and the primary risks, benefits, and alternatives to therapy.
4. The nurses should ensure that informed consent includes the following elements:
    a. Documents written at or below the 5th-grade reading level and provided int eh primary language of the patient.
    b. Provision of a qualified medical interpreter or reader to assist patients with limited language proficiency, limited health literacy, and visual or hearing impairments.
    c. Patient-centered information that is adequate and meaningful to the individual.
    d. A dialogue with the patient and, as appropriate, the family and other decision makers, about the nature and scope of the procedure.
5. Refer to organizational policy for emergent and time-sensitive situations.

Purpose

To provide guidance for facilities to include infusion services as part of their quality improvement initiatives.

Considerations

1. The nurse shall participate in quality improvement activities that advance patient care, quality, and safety.
2. Licensed nurses caring for patients receiving infusion therapies are expected to follow infection control and safety compliance procedures.

Guidance

1. Quality improvement activities include:
    a. Evaluating patient or clinical outcomes
    b. Identifying clinical indicators, benchmarks and areas of improvement
    c. Providing the best evident; recommending and implementing changes in structures or processes
    d. Analyzing data and the outcomes data against benchmarks
    e. Considering the use of cost analysis
    f. Minimizing and eliminating barriers to change and improvement

2. The quality improvement programs should create a culture that fosters the reporting and analysis of quality and safety indicator outcomes, near-misses, errors, and adverse events. The program should focus on processes and systems that promote individual accountability and a just culture.

3. The knowledge gained through this process should be shared internally and externally with other healthcare providers and organizations.

4. The facility will integrate infusion therapy in its organizational quality improvement program.

5. The nurse shall follow organizational policies and procedures for data collection and analysis.

Purpose

To provide guidance in preventing infusion-related patient infections.

Considerations

1. The patient receiving infusion therapy will be cared for in a safe environment that is developmentally appropriate.
2. Qualified nurses will comply with the standards for safe practice set forth by federal, state and local regulatory agencies as well as The Joint Commission (TJC) and Infusion Nurses Society (INS).
3. The facility must have policies and procedures in place for exposure to bloodborne pathogens.

Guidance

1. The use of aseptic and sterile technique as indicated per procedure, observation of standard precautions, and maintenance of product sterility is required for all infusion procedures.

2. Acceptable hand hygiene techniques must be employed before and immediately after all clinical procedures, before donning and after removal of gloves.

3. The nurse shall not wear artificial nails when performing infusion therapy procedures.

4. Maximum sterile barrier precautions must be employed for insertion of midlines and central vascular access devices (CVAD) and all methods of CVAD exchange or repair.

5. Perform a vigorous mechanical scrub for manual disinfection of the needleless connector prior to each VAD access and allow it to air dry.

6. Disposal of infusion products and supplies will follow the written guidelines and procedures of the facility.

7. Durable medical equipment requiring re-sterilization or disinfection must be handled according to the directions of the manufacturer and organizational policy.

8. Clean and disinfect durable medical equipment (e.g. IV poles) in between patient use, when visibly soiled, on a regular basis, and at intervals during long term single patient use as established by organizational policy.

9. All electronic infusion devices provided by the pharmacy must be returned to the pharmacy between each patient's use for terminal cleaning, disinfecting and verification of operational system.

10. Single patient use items shall be used whenever possible and disposed of appropriately after use.

11. Manipulation of all components of the entire infusion system (administration sets, catheter connectors, etc.)

12. The nurse shall educate the patient and caregiver about procedures and actions to prevent infection including signs and symptoms of infection to report to the healthcare provider.

Purpose

To outline the facility procedure for obtaining and transmitting infusion therapy orders.

General Guidance

All orders written for infusion therapies must be complete and promptly communicated to pharmacy staff to assure safe and appropriate care of the patient.

Procedure

1. Orders for solutions/medications will be communicated directly to the pharmacy.
2. Facility must notify pharmacy if order is needed by a specified time; otherwise, the order will be sent with the next scheduled delivery.
3. If an order is received outside of regular business hours and is needed before the pharmacy reopens, the facility must:
    a. Fax/transmit the order
    b. Call the pharmacy and/or answering service
4. A patient profile is required on all patients and is to include, but is not limited to:
    a. Height and weight
    b. Age
    c. Allergy history
    d. Diabetic status
    e. Hypertension status
    f. All know diagnoses
    g. Current medication
    h. Relevant lab values
    i. Payer status
5. Medication orders shall include, but are not limited to:
    a. Patient name and room number
    b. Solution/medication/diluent
    c. Dosage
    d. Volume
    e. Rate
    f. Frequency
    g. Route
    h. Catheter flushing/locking solutions, concentrations, and amounts
    i. Dressing change frequency/procedure
    j. Intake and output, if appropriate
    k. Daily weights, if appropriate
    l. Laboratory monitoring as required for therapy
    m. Therapy stop dates
6. The pharmacy must be notified immediately of any change in an infusion order to limit waste and unnecessary expense.

7. Facility should obtain an order from prescriber when prescriber asks the pharmacist to provide appropriate dosing for medications that may be dependent on lab results or other pharmaceutical calculations. Facility staff should obtain additional clarification order post pharmacist recommendation and communicate it to Pharmacy before the mediation is dispensed.

Purpose

To ensure interim supplies of medications and solutions for available for prompt administration.

General Guidance

1. Expired product will be replaced according to pharmacy procedure.
2. The facility nursing staff may contact the pharmacy, as needed, for box or supply replacement according to facility policy when expiration dates are reached.
3. The contents of each box will be determined by the pharmacy.
4. Controlled substance emergency supplies, when required, must be kept in a designated locked area, per facility policy.

Procedure

1. Verify prescriber's order and process per facility policy. Notify the pharmacy to replace emergency doses per protocol.
2. Obtain necessary supplies and communicate with the pharmacy for replacement and charge per protocol.
3. Initiate infusion therapy per all other facility policies and procedures
4. Document interim drug and supply replacement per facility protocol

Purpose

To provide guidance for communicating, documenting and reporting suspected adverse reactions from intravenous medications.

General Guidance

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

Procedure

1. When a suspected ADR is encountered, the following protocol should be followed:
    a. The nurse shall immediately contact the Physician, Director of Nursing and Pharmacy.
    b. The nurse shall document the suspected ADR per facility's policy and procedure.

2. A MedWatch FDA Form #3500 (found at www.fda.gov/medwatch/getforms.htm) may also be completed.

3. When ADRs are reported to the MedWatch program, the Pharmacy Manager shall also be notified. A copy shall be kept on file in the pharmacy.

Purpose

To assist in the determination of and treatment of an anaphylactic reaction.

General Guidance

1. Complete nursing assessment before administration of all medications to obtain baseline, vital signs, and review allergies with resident or family member.

2. Instruct resident as to signs and symptoms to report at once including: respiratory distress (dyspnea, wheezing, choking, cyanosis), dermatologic changes (urticaria, erythema, angioedema or hives, pruritus), gastrointestinal complaints (nausea, vomiting, abdominal cramps, diarrhea), vascular response (rapidly falling blood pressure, chills, sweating, weakness, anxiety, dizziness)

3. During IV Medication Administration, if signs and symptoms of anaphylactic response are present, nurse should follow facility's anaphylaxis protocol. An EXAMPLE of anaphylaxis protocol is described below:
    a. Stop the flow of drug
    b. Rapidly evaluate signs and symptoms
    c. If anaphylaxis is suspected, proceed with the following immediately:
        i. Administer epinephrine 1:1,000 0.3ml IM (intramuscularly) stat (may repeat in 3-5 minutes x 2 doses).
        ii. Give diphenhydramine (Benadryl), 50mg, IV push. If no intravenous line or disallowed by state regulations (i.e. Connecticut waiver required) then administer intramuscularly (IM) when permissible by state regulations.
        iii. Start intravenous infusion of sterile normal saline 250ml, to run as fast as possible. Use new IV tubing, discard IV tubing with drug.

4. Monitor resident's vital signs: blood pressure, pulse and respirations every 2-5 minutes. If resident is hypotensive, keep patient supine and elevate patient's legs.

5. Notify physician and call ambulance as needed. Notify responsible party.

6. Provide constant observation for signs of shock, such as cold, clammy skin, cyanosis and loss of consciousness.

7. If cardiopulmonary arrest occurs, begin resuscitation unless patient's documented wishes (advanced directives) state otherwise.

8. Document the event on nurse's notes and other appropriate forms per facility policy.

Purpose

To assist facility personnel in managing latex sensitivities in infusion patients.

Considerations

1. Latex allergies pose serious and potentially disabling threats to the health and safety of employees and patients.
2. Allergies that may cause cross reactions with latex include, but are not limited to:
   a. Avocados
   b. Mangoes
   c. Pears
   d. Bananas
   e. Citrus fruits
   f. Chestnuts
   g. Tropical fruits

Guidance

1. The facility will receive from the pharmacy latex-free infusion equipment, when necessary, for use by latex sensitive individuals.

2. The facility will screen patients for potential latex sensitivity according to facility policy and alert the infusion pharmacy of sensitive individuals.

3. Prior to bringing infusion supplies to the patient's bedside, the nurse will check labels for the presence or absence of latex.

Procedure

For latex sensitive patients:

1. All health care workers shall use latex-free gloves and products when caring for the patient.

2. Verify that the administration sets and supplies are latex-free.

3. If a container is used which is not latex-free, a method to alert the nurse must be included (e.g., highlighting "not Latex-Free" on the label, etc.).

4. Anaphylaxis orders for any patient having a latex allergy must be obtained from the physician/licensed independent practitioner prior to initiation of therapy. (Refer to Procedure 1.4, Anaphylaxis Management).

Purpose

To provide guidance on obtaining contracted nursing services related to the insertion of intravenous access devices and the care/maintenance of such devices.

Considerations

1. Vascular access services may include but are not limited to: placement of peripheral catheters, midlines, and PICCs; assessment of all IV catheters; implanted port access/de-access and vascular access removal.

2. Vascular access services are available in selected geographic locations.

3. Vascular access services may be provided by Pharmscript specially trained infusion nurses or outsourced to a contracted vascular access agency. These outsourced agencies will provide exceptional patient care in accordance with PharmScript's high quality standards.

4. Vascular access nurses, while providing vascular access services to a Pharmscript serviced facility, must comply with all policies and procedures of the facility/organization in which services are provided.

Procedure

1. Upon receipt of the initial request for service from the facility or pharmacy, the vascular access nurse must notify the facility of receipt of request for services, verify the type of service needed, patient demographic information and will provide the estimated arrival time.
2. The facility must provide the vascular access nurse/associate with the following patient information upon request:
   a. Name
   b. Unit/Room #
   c. Physician/Licensed Independent Practitioner (LIP) first and last name
   d. Diagnosis
   e. Infusion therapy orders
   f. Type of service needed
   g. Verification that appropriate orders for requested service have been obtained from physician/LIP
   h. Patient's ability to consent or availability and contact information for Healthcare Power of Attorney (POA), if activated (Refer to Procedure 1.8, Informed Consent)
   i. Pertinent history that may impact insertion or removal of prescribed vascular access device
   j. All pertinent available labs

   Note: In the event that pertinent information is not available, patient care may be delayed until proper assessment information is provided by the facility.
3. Upon arrival at the facility; the vascular access nurse will communicate with the patient's nurse or unit supervisor announcing arrival and provide all required information per organizational policy.
4. The facility nurse will provide the vascular access nurse access to the patient's medical record for review prior to performing any vascular access procedure.

5. A licensed facility nurse must escort the vascular access nurse to the patient room:
   a. To witness positive identification using appropriate identifiers
   b. To confirm the need for placement of the prescribed vascular access device, if indicated
   c. To perform time out procedure with signature for PICC/midline insertion
6. The vascular access nurse must obtain appropriate informed consent per organizational policy prior to any insertion procedure.
7. Upon completion of assessment/procedure, the vascular access nurse will provide the facility nurse with a report of service provided, follow up care instructions, vascular nurse contact information, and the original written documentation to be place in the patient's medical record.
8. The facility nurse must sign acknowledgement of receipt of the report on the original documentation form.

Purpose

To provide instruction on the safe use of multi-dose vials.

Considerations

1. Single-use systems including single-dose vials and pre-filled syringes are the preferred choices for flushing and locking.
2. If multiple-dose vials must be used (e.g., insulin, folic acid), each container should be dedicated to a single patient.
3. Licensed nurses caring for patients receiving infusion therapy are expected to follow infection control and safety compliance procedures.

Guidance

1. If a multi-dose vial is received from the pharmacy, the multi-dose vial will be dispensed and labeled as a patient-specific prescription item.
2. Multi-dose vials will be stored, until opened, in the dedicated space for patient's infusion supplies.
3. Once accessed, multi-dose vials will be stored according to manufacturer's instructions for use.
4. Vials will be accessed using aseptic technique.
5. Vial adapters are for single vial use and shall be discarded once the vial is empty.
6. Vials will be labeled, after opening, with:
   a. Patient's name
   b. Date and time of initial entry
   c. Nurse's initials
7. Multi-dose vials are to be discarded if:
   a. Open and undated
   b. Contamination is known or suspected
   c. Beyond manufacturer's stated expiration date
   d. Within 28 days of opening or as specified by manufacturer for an open vial

Equipment

- Multi-dose vial adapter
- Appropriately sized syringes with sterile caps
- Alcohol pad(s)

Procedure

1. Verify physician/licensed independent practitioner order.
2. Perform hand hygiene.
3. Assemble equipment and supplies on clean work surface.
4. Inspect vial for:
   a. Medication name and strength
   b. Patient name

c. Expiration date
d. Evidence of contamination
e. Particulate matter

5. Remove cap from multi-dose vial and vigorously cleanse with alcohol. Allow to air dry.
6. Using aseptic technique, insert multi-dose vial adapter into septum of multi-dose vial.
7. Aspirate appropriate amount of air into syringe, if indicated.
8. Attach syringe to multi-dose vial adapter.
9. Inject air into vial.
10. Invert vial.
11. Aseptically withdraw correct dose.
12. Remove syringe from multi-dose vial adapter.
13. Place sterile cap on luer tip of syringe.
14. Dispose of used supplies per facility protocol.
15. Label syringe with:
    a. Patient's name
    b. Date and time
    c. Medication and dose
    d. Nurse's initials

Purpose

To provide guidance regarding administering medications by IV Push

General Guidance

1. Administration of IV push medications shall be performed by licensed nurses according to state law and facility policy.
2. Facility administration shall verify with State Nurse Practice Act the scope of practice for RNs and LPNs regarding this procedure. ** Note: Connecticut requires special waiver procedures approved by the Board of Nursing to administer IV Push Medications.
3. Nursing and Medical staff will be knowledgeable regarding the safe and aseptic administration of a medication bolus directly into the venous system through a vascular access device.
4. A physician's order/LIP is required to administer medication via this route.
5. The nurse must verify compatibility of IV solution to prescribed IV push medication. The nurse should contact the pharmacy if the nurse is unable to verify compatibility.
6. The nurse should obtain vital signs prior to the administration of IV push medications.
7. The nurse must closely monitor the resident during and after the administration of the IV push medication.
8. Follow manufacturer recommendations and pharmacy/facility guidelines for approved routes of medication administration for each medication.
9. The administration of IV push medication shall be terminated immediately if any adverse reactions occur and the nurse shall notify the physician.

Procedure

1. Verify the physician order
2. If solution is currently infusing, verify compatibility of IV solution with prescribed IV push medication. The nurse should contact the pharmacy if nurse unable to verify compatibility.
3. Identify the resident using appropriate identifiers
4. Explain the procedure to the resident.
5. Wash hands
6. Assemble equipment and supplies on a clean work surface
7. Apply gloves

8. If lower Y-site port is present:
    a. Vigorously cleanse injection port with alcohol. Allow to air dry.
    b. Maintaining asepsis, attach the flush syringe to Y-site injection port and verify venous access patency. Flush with prescribed flushing agent. Remove syringe. Refer to Appendix B - IV Line Maintenance Chart.
    c. Proceed to Step 12

9. If lower Y-site injection port is not present:
    a. Clamp the administration set
    b. Disconnect administration set and apply sterile end cap to administration set
    c. Vigorously cleanse needleless connector with alcohol. Allow to air dry.
    d. Maintaining asepsis, attach flush syringe to needleless connector. Verify venous access patency. Flush with prescribed flushing agent. Remove syringe. Review Appendix B-IV Line Maintenance Chart.
    e. Proceed to Step 11

10. If saline/heparin lock is present:
    a. Vigorously cleanse needleless connector with alcohol. Allow to air dry.
    b. Maintaining asepsis, attach flush syringe to needleless connector. Verify venous access patency. Flush with prescribed flushing agent. Remove syringe. Review to Appendix B - IV Line Maintenance Chart.

11. Vigorously cleanse needleless connector with alcohol. Allow to air dry.

12. Attach medication syringe. Administer medication at recommended rate. Remove syringe.

13. Attach syringe with saline flush agent and flush at the same rate as the IV push medication to clear medication from the catheter.

14. If using lower Y-site injection port, resume infusion.

15. If lower Y-site injection port is not present. Disconnect syringe and vigorously cleanse needleless connector with alcohol. Reconnect administration set and resume infusion.

16. If using saline/heparin lock, disconnect syringe.

17. If heparin is indicated (Appendix B - IV Line Maintenance Chart), vigorously cleanse needleless connector with alcohol. Allow to air dry. Flush with heparin and clamp catheter.

18. Monitor resident for signs/symptoms of any adverse reactions.

19. Dispose of used supplies per facility policy.

20. Remove gloves

21. Wash hands

22. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Prescribed flushing agent(s)
    c. Medication/solution
    d. Rate of administration
    e. Site assessment
    f. Complications and interventions
    g. Resident response to procedure and/or medication

Purpose

To provide guidance regarding medications approved for administration by IV Push

General Guidance

1. Administration of IV push medications shall only be performed by licensed nurses according to state law and facility policy. Refer to Section 2.8 for Administration of IV Push Medication.

2. Facility administration shall verify with State Nurse Practice Act the scope of practice for RNs and LPNs regarding IV Push administration.

3. A physician's order is required to administer medication via this route.

4. A facility approved list of IV push medications will be maintained by the facility or as required by state law or regulation. The RN administering the medication is responsible for ensuring that the medication has been approved for IV push use by the facility's policy.

5. The IV push method of administration should only be considered when other available routes are not feasible.

6. See Appendix D for commonly used medications approved by the manufacturer for IV Push administration.

Policy

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

Definitions

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 Parenteral Nutrition (PPN)** – may be referred to as peripheral parenteral nutrition. Final dextrose concentration less than 10%, protein less than 5%, pH greater than 5 or less than 9, and osmolality less than 500m Osm/liter.

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

3. **Total Parenteral Nutrition (TPN)** – Final dextrose concentration greater than 10% to 70%, and protein greater than 5%.

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

4. **Total Nutrient Admixture (TNA)** - "3-in-1" or TPN solution containing fat emulsion. Lipids refers to a fat emulsion.

5. **Nutritional Supplement -** Less than total requirements, either enterally or parenterally and consist of isotonic, PPN, or iso-osmolar nutrient solutions (i.e., solutions with less than 10% glucose). These solutions can be administered peripherally as well as centrally

Ordering Guidance and Prescription Requirements

1. Upon receiving the physician’s order, the nurse shall fax a completed Pharmscript TPN Order Form, which may be requested through PharmScript Medical Records Department.

2. If a TPN cannot be provided on the day it is ordered, alternatives can be suggested and provided.

I. Procedure for Ordering a New TPN:

1. The TPN Order Form must be completed by the prescriber or facility designee and faxed to the pharmacy.

2. All TPN orders must be received by the established cut-off times specific to your pharmacy location.

3. Any TPN order that is faxed after the cutoff time will be ordered for the next scheduled delivery and the facility will be notified. The facility will be notified of the alternative solutions, commonly used examples are listed below that may be used in interim.
    a. Dextrose 10%
    b. Clinimix 4.25/10
    c. Clinimix 5/20
    d. Clinimix 4.25/10 E
    e. Clinimix 5/20 E

4. Once the TPN is created or received by the pharmacy, it shall be refrigerated or packaged with an ice pack for transport to the facility.

5. Custom made TPN bags are stable for 9 days under refrigeration. Inclusion of any additives will decrease the beyond use date to 24 hours. Each TPN bag will be labeled with a beyond use-date.

6. TPN bags will be sent with an infusion pump and appropriate supplies.

II. Procedure for Reordering an Existing TPN:

1. When the TPN is due to be refilled, the IV department will contact the facility to verify the status of the therapy.

2. A new Total Parenteral Nutrition Order Form must be filled out and faxed to pharmacy if there are any changes recorded to the original TPN order.

3. If there are no changes being made to the TPN order, the pharmacy will document as such and refill the order.

4. If the TPN is discontinued upon the follow-up call, the pharmacy will proceed to discontinue the order and the supplies associated with the TPN. A pump pickup will be issued.

Parenteral Nutrition (PN) - General Guidance

I. 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. Verify with State Nurse Practice Act the role of the Nurse and requirements for RN coverage on the unit while PN is infusing.

3. The assessment and management of PN residents is a multidisciplinary function involving the Dietitian, Physician, Nursing and Pharmacist.

II. Handling and Storage:

1. All TPN bags must be stored in the refrigerator (36-46 °F).

2. PN bags are to stay refrigerated until approximately ONE HOUR before use.

3. PN must be allowed to come up to room temperature naturally. It cannot be placed in a microwave, under hot water, in a sunny window, on a heat register, or heating pad. Rapid warming will destroy the contents of PN.

III. Safety Precautions:

1. Parenteral nutrition orders should include an order for dextrose 10% or similar Clinimix IV to run at or near 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, the facility should contact the pharmacy.

3. TPN should not be stopped suddenly. The rate should be tapered slowly to avoid a drop in glucose levels that could cause hypoglycemia.

4. If a replacement PN bag has not been received from pharmacy, infuse dextrose 10% or similar Clinimix as ordered by the prescriber at or near the same rate that PN was running to avoid hypoglycemia.

5. Parenteral nutrition (PPN or TPN) must be administered via an electronic pump.

6. The size of the filter on the end of the Administration set is determined by the type of solution:
   a. 0.2 micron filter is used if solution does not contain intravenous fat emulsion (lipids).
   b. 1.2 micron filters are used if lipids are in solution.
   c. Fat emulsion running via a Y-site or secondary tubing may infuse unfiltered or via a 1.2 micron filtered administration set but will clog a 0.2 micron filter.

7. The type of catheter that is used is determined by final concentration of dextrose (peripheral or midline for dextrose less than or equal to 10%; central line catheter for greater than 10% dextrose).

8. Strict aseptic technique is used when handling PN.

9. For multi-lumen catheters, specify/label one lumen for PN use only. Do not use this lumen for other infusions or blood sampling.

10. Avoid using single-lumen catheters for blood sampling. If blood sampling is necessary, venipuncture is preferred for residents with a single-lumen catheter dedicated to PN. If this is not possible, flush with at least 10mL of normal saline before and after drawing blood.

11. All central venous, peripherally inserted central catheter (PICC) placement must be confirmed by x-rays before central administration of hypertonic solutions.

IV. Infusions:

1. Parenteral nutrition may be infused as a continuous or intermittent solution.

2. Parenteral nutrition bags must be changed at least every 24 hours.

3. Fat emulsions (lipids) infused as sole infusions should be changed at least every 12 hours.

4. Parenteral nutrition solutions should be infused or discarded within 24 hours of attaching the administration set.

5. Medications cannot be “piggybacked” or administered via IV push through the PN tubing/lumen. The tubing cannot be disconnected to administer another medication. The system must stay intact to maintain sterile system.

6. PN additives shall be mixed with PN immediately before use and administered per facility/pharmacy protocol.

7. Administration set, filter, and needleless connection device must be changed with every new bag that is administered, at least every 24 hours.

V. Monitoring:

1. Residents receiving TPN/PPN should be routinely monitored 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.
    g. Other potential complications associated with PN therapy.

2. Clinical monitoring at regular intervals (per physician or pharmacy order) should include:
    a. vital signs;
    b. intake/output;
    c. glucose levels;
    d. urinalysis;
    e. electrolytes; and
    f. laboratory values (CBC, chemistry) or other labs per orders.

VI. Procedure:

1. Remove PN bag from refrigerator – AT LEAST ONE HOUR - before infusing.
2. Verify orders. Compare orders to bag label. Verify with second Nurse if required by facility protocol.
3. Assess IV catheter to make sure it is without complications.
4. Check resident chart for any allergies or special considerations.
5. Check lab results for appropriate use of therapy.
6. Do physical assessment, especially heart, lungs, and extremities, to determine if resident can tolerate large amounts of continuous fluids.
7. Check vital signs for any signs of complications.
8. Verify if there are any additives to be put in bag. If so, add before starting PN.
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. Wash hands. Apply gloves.
12. Clean end of needleless connection device on catheter with alcohol wipe.
13. Flush catheter with normal saline.
14. Attach tubing with filter to PN bag. Prime tubing and filter by opening roller clamp. Prime, then clamp tubing. Place sterile end cap on tubing.
15. Set pump with prescribed rate and volume (continuous or intermittent).
16. Connect end of filter (or tubing if filter is attached to catheter) into needleless connection device.
17. Check connections. Secure tubing to resident with tape.
18. Start infusion and monitor for proper flow and any complications.
19. Educate resident that he or she should notify the Nurse if any problems develop such as shortness of breath, heart palpitations, catheter-related pain, or signs/symptoms of hypoglycemia/hyperglycemia.
20. Monitor resident, insertion site, and flow at regular intervals (at least every 2 hours).
21. Dispose of flush syringes and equipment packaging properly.

22. Document procedure in resident's medical record.

VII. Documentation:

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

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

Parenteral Nutrition (PN) – Placement of Additives

I. 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. **Note-Connecticut has specific requirements related to nurse admixture restrictions.

2. The Nurse placing the additives into the PN bag shall receive training and demonstrate competency related to the handling of PN prior to performing this procedure.

3. Maintain aseptic technique when working with PN. The room where the additives are placed in PN bag must be clean and away from general traffic.

4. Check expiration dates on additive bottles/vials and inspect the PN solution for deterioration or breakdown before placing additives.

5. Check additives for compatibility before adding to the PN solution.

II. 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 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.

III. 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. Wash hands. Apply 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.

IV. 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 Physician, Supervisor, or oncoming shift (document in the nurses' notes).

Common TPN Additives

Additive	Expiration
Infuvite (MVI)	24 hours after mixing (refrigerate)
Folic Acid	24 hours after mixing
Regular Insulin	24 hours after mixing (refrigerate)
Thiamine (Vitamin B1)	24 hours after mixing (refrigerate)
Vitamin C (Ascorbic Acid) – SDV	24 hours after mixing (refrigerate)
Pepcid (famotidine)	24 hours mixing (refrigerate)

Multitrace Element Additives

Multitrace Products	Ingredients and Strengths per mL
Multitrace-5 concentrate	Zinc (as Sulfate) 5 mg Copper (as Sulfate) 1 mg Manganese (as Sulfate) 0.5 mg Chromium (as Chloride) 10 mcg Selenium (as Selenious Acid) 60 mcg

Additional Trace Elements and Usual Dosing

Trace Element	Usual Dose
Chromium	10-15mcg
Copper	0.3-0.5mg
Iron	Not routinely added
Manganese	60-100mcg
Selenium	20-60mcg
Zinc	2.5-5mg

Parenteral Lipid Administration

I. General Guidelines:

1. Lipid administration requires a physician order. Lipid strength, volume, rate and frequency must be included in physician order.
2. Lipids are commonly ordered in conjunction with TPN/PPN or TNA solutions.
3. Lipids are used to provide calories and/or essential fatty acids to residents who are not able to get sufficient oral intake.
4. Lipids may be administered mixed with parenteral nutrition or separately.
5. An electronic infusion pump must be used with lipids and/or parenteral nutrition (PN).
6. When lipids are administered concurrently with TPN, the lipid solution may be connected to primary tubing via “piggyback” attached below the filter if possible. A 1.2 micron filter is attached to the primary administration set (tubing) when lipids are administered.
7. Lipids can be administered through peripheral or central catheters if separate from PN.
8. Lipids that are not mixed with PN solutions expire 12 hours after being started.
9. Lipids that are not mixed with PN solutions do not require refrigeration.
10. 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.
11. NEVER SHAKE LIPID CONTAINER or add anything to lipids; this could cause aggregation of fat globules.
12. No other medications or fluids are to be attached or added to the lipid solution.
13. 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.

II. 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. Wash hands. Apply gloves.
5. Place tubing in container and prime tubing.
6. Close clamp on tubing, replace needleless connection device, and flush catheter with normal saline (per protocol).
7. To run “piggyback” into primary PN tubing, place at most distal side port (Y site) after cleansing port with alcohol.
8. Place tubing into pump and set rate as ordered.
9. Start pump and observe flow.
10. Note resident response to procedure.

III. Documentation:

1. The following should be documented in the resident’s medical record:
2. Date, time, amount, and flow rate of lipids administered.
3. Solution and equipment change. Document in the treatment administration record.

4. Any observation facts related to catheter insertion site, problems with solution, resident reactions. Any interventions that were done.
5. Intake and output if ordered.

Additional Information: TPN Dosing Guidelines and Normal Values

TPN Component	Usual Dosage
Amino Acid (Protein)	1-2gm/kg/day (4kcal/gm)
Dextrose (Carbohydrates)	3-5gm/kg/day (3.4kcal/gm)
Lipids (Fats)	< 1gm/kg/day or 20-40% of TPN (9 kcal/gm)
Total Energy	20-30kcal/kg/day (may vary according to activity level)
Fluids	30-40ml/kg/day (may vary if resident has constant fluid depletion)

Nutrient	Standard Daily Requirement	Factors that Increase Needs	Dosage Form
Calcium	10-15mEq	High protein intake	Calcium gluconate
Magnesium	8-20mEq	GI losses, drugs, refeeding	Magnesium sulfate
Phosphorus	20-40mmol	High dextrose intake, refeeding	Sodium phosphate Potassium phosphate
Sodium	1-2mEq/kg	Refeeding (sodium only), diarrhea, vomiting, NG suction, drugs, GI losses	Sodium phosphate Sodium chloride Sodium acetate
Potassium			Potassium phosphate Potassium chloride Potassium acetate
Acetate	As needed to maintain acid-base balance	Renal insufficiency, metabolic acidosis, GI losses of bicarbonate	Sodium acetate Potassium acetate
Chloride		Metabolic alkalosis, volume depletion	Sodium chloride Potassium chloride

Additional Information: TPN Lab Monitoring

New Residents				Stable Residents
Parameter	**Baseline**	**Weeks 1-3**	**Week 4**	**Every 3 Months**
Glucose, BUN, Creatinine, Electrolytes, Ca, Mg, P	X	X	X	X
CBC with Differential and Reticulocyte Count	X	X	X	X
Total and Direct Bilirubin, AST, ALT, LDH, Alkaline phosphatase, Triglycerides	X		X	X
Serum Protein	X		X	X
Vitamin B12, RBC folate, Iron indices, Trace elements, Vitamin D 25-OH	X		X	X

TPN Troubleshooting and Y-Site Compatibility

1. Solution not infusing
    a. Examine catheter and pump tubing for issues
    b. Check to see if bag is spiked completely
    c. Check if infusion pump is turned on

2. Leaking fluid
    a. Check if the connection between tubing and injection cap is secure
    b. If catheter is cracked or damaged, stop the infusion and clamp the catheter above the leak

3. Fever and chills during infusion
    a. Stop the infusion and flush the catheter as per the facility-specific internal protocol
    b. Wait at least one hour or until the TPN has come to room temperature before infusion
    c. Examine the catheter site for possible infection

4. Extravasation
    a. Stop infusion immediately
    b. Do not remove IV catheter or needle
    c. Attach 10 ml syringe to catheter hub
    d. Attempt to aspirate any residual fluid
    e. Remove catheter if no residual obtained
    f. Notify physician of the event and follow approved protocol.
    g. If residual obtained and there is no blood return, inject through existing Administration set 1 ml Hyaluronidase (150 units in 1 ml normal saline) SQ for each ml extravasated.
    h. Apply warm packs for 15 to 20 minutes, 4 times a day, for 1 to 2 days.
    i. Elevate the extremity.

TPN Y-SITE COMPATIBILITY

IV Medications NOT Compatible with Y-site admin of TPN (not ALL inclusive)	
2 in 1 Mixture (Amino Acids/Dextrose)	**3 in 1 Mixture (Amino Acids/Dextrose/Lipids)**
Acetazolamide	Acyclovir
Acyclovir	Doxorubicin HCl
Amphotericin B	Doxycycline HCl
Ciprofloxacin	Droperidol
Cisplatin	Ganciclovir Sodium
Cytarabine	Lorazepam
Ganciclovir	Midazolam
Indomethacin	Nalbuphine HCl
Methotrexate	Ondansetron HCl
Mitoxantrone HCL	Pentobarbital sodium
Phenytoin	Phenobarbital sodium
Potassium Phosphate	Potassium phosphate
Sodium Phosphate	Sodium phosphate

Purpose

To provide guidance on the selection of infusion devices or pumps that best meets the need of a resident with regard to pharmaceutical considerations and effectiveness of medication administration.

General Guidance

1. Intravenous therapies shall be administered via the system that best meets the resident needs, based on factors including but not limited to:
    a. age;
    b. disease process;
    c. ambulatory status;
    d. cognitive and physical abilities;
    e. medication and diluent ordered;
    f. education and training required for staff

2. A wide range of pumps are available from several manufacturers. The products offer various programmable features. Factors that play an important role in the decision to use a particular type of pump as the delivery system of choice include, but are not limited to:
    a. Syringe pumps:
        (1) Volume of medication is less than 50 ml.
        (2) Dosing is one (1) to four (4) times a day.
        (3) Resident is mobile or active.
        (4) Refrigerator space is limited.
    b. Ambulatory pumps for small volume infusions:
        (1) Pain management (bolus, continuous or both).
        (2) Chemotherapy.
        (3) Anticoagulant therapy.
        (4) Inotropic therapy.
        (5) Antibiotic therapy, if stable, every four (4) hours or every six (6) hours.
        (6) Resident has impaired cognitive or learning abilities.
        (7) Ambulatory residents on parenteral nutrition during the day.
        (8) Parenteral nutrition.
        (9) Continuous hydration.
    c. Pole-mounted or stationary pumps:
        (1) Hydration, especially those with higher concentrations of potassium.
        (2) Parenteral nutrition.
        (3) Antibiotics in fluids over 250 mL volume.
        (4) Steroid therapy.
        (5) Intravenous Immunoglobulin therapy (IVIG).
        (6) Amphotericin.
        (7) All additives, solutions or medications that have narrow therapeutic index levels.

3. Each pump has specific instructions for use procedures per manufacturer's recommendations. Pump user guides will be provided by the pharmacy upon request by the facility.

General Pump Procedure

1. The Prescriber and the Nurse performing the resident assessment upon new orders for IV therapy determine the most appropriate infusion device. Recommended uses for pumps include, but are not limited to:
    a. cytotoxic infusions over two (2) hours;
    b. heparin;
    c. inotropic therapy;
    d. pain management therapy;
    e. potassium chloride (KCl) infusions over 20mEq/L; and
    f. Total Parenteral Nutrition (TPN).

2. Nurses shall be provided with verbal and/or written instructions regarding pump operation and care upon initial pump dispensing.

3. The pump requires twenty-four (24) hour charge time prior to use and will be delivered ready to use. Keep infusion pump plugged in at all times except during resident transfer. Battery life when unplugged is approximately two (2) hours but may be less. The pump will alarm when the battery has approximately thirty (30) minutes remaining.

4. Pumps are dispensed per resident. Once intravenous therapy is complete, pumps shall be returned to the pharmacy for cleaning and inspection between resident use. Each pump that is dispensed is only for the patient to which it was intended.

5. Equipment will be secured during transport to prevent damage.

6. Clean and dirty pumps will be stored separately during transport.

7. Administration sets/tubing, medication cassettes or other attachments should be removed and disposed of properly before returning the pump to the pharmacy.

8. Dirty pumps shall be handled with gloves on, placed in plastic bags, and labeled as dirty.

9. While in use in the facility, pumps will be periodically monitored for:
    a. visual structure (loose or broken parts, cracks, irregularities or other damage);
    b. alarm functioning;
    c. power cord and plug functioning;
    d. battery functioning; and
    e. volumetric accuracy or flow rate (calibration).

10. When a pump is determined to be faulty, the pharmacy is to be notified and the malfunctioning pump will be returned to the pharmacy for inspection and repair.

11. The malfunctioning pump will be replaced by the pharmacy upon notification.

12. All pumps will undergo servicing (arranged by the pharmacy) at least once annually, or at the manufacturer's recommendation.

13. Preventative maintenance stickers will be on all pumps.

CADD PCA Pump

I. Medical Criteria

1. The resident must be under the care of a licensed prescriber familiar with epidural/intrathecal therapy including: indications, contraindications, administration, monitoring, and potential adverse reactions.

2. Baseline blood work and assessment prior to initiation of epidural/intrathecal analgesia may include:
    a. Pain assessment and diagnosis
    b. Neurologic status
    c. Complete vital signs

3. The resident must have:
    a. Central venous access device
    b. Subcutaneous access
    c. Epidural or intrathecal permanent tunneled catheter, which may exit the body via a subcutaneous exit site or be attached to an implanted port, an implanted infusion pump (e.g. Infusaid), or an Omaya reservoir.)

4. Indications for epidural/intrathecal infusion therapy may include but are not limited to the management of:
    a. Chronic severe pain
    b. Disease states pain such as cancer
    c. Post-operative pain
    d. Traumatic injury pain

II. Prescription Guidelines for the epidural/intrathecal solution should include:

1. Medication, preferred diluent, volume and concentrations when appropriate
2. Length of therapy
3. Frequency
4. Parameters for notifying the prescriber
5. Order for a narcotic antagonist (i.e. Narcan) to include dose to be administered and parameters under which medication will be administered:
6. Lab work
7. Catheter care, including materials and frequency of care
8. Flushing orders, including frequency, solution and amount.
9. An order for Benadryl PRN for nausea, vomiting and pruritus.

III. Notify the prescriber if any of the following circumstances are present:

1. Catheter dislodgment
2. Resident reports no pain relief or minimal pain relief
3. Clear or bloody fluid is aspirated from the catheter before an injection
4. The resident has pain on injection
5. The site is red, swollen, wet, and bloody or has drainage present.
6. Deviation in vital signs per established prescriber parameters.
7. Complications of epidural infusion
    a. Paresthesia
    b. Pruritus

c. Nausea
d. Vomiting
e. Urinary retention
f. Hypotension
g. Respiratory arrest
h. Leaking

IV. The chart documentation should include:

1. Monitor respirations and vital signs at a minimum of q shift and pm.
2. Monitor pain assessment scale at a minimum of q shift and pm.
3. Battery change should be done at the time of the bag/cassette change
4. Bag or cassette change at appropriate time interval or at a minimum of q 7 days.
5. Monitoring of catheter site at a minimum of q shift.
6. Documentation to be done q shift and prn.

V. Procedure

1. Residents receiving pain management via this pump must be under the care of a licensed prescriber familiar with its use.

2. The prescriber's order must be written on an infusion order form and faxed to the pharmacy, along with an original valid order from the ordering presriber, at least 24 hours before the expected delivery time.

3. The medications may be administered via a bag or cassette depending on the need of the resident. The medication containers have a stability of up to 7 days when prepared and primed at the pharmacy prior to delivery.

4. Only nurses who have been in serviced on the use of this pump should be responsible for providing this type of infusion therapy. The pharmacy requires up to 24-hour notice for this type of in servicing request.

5. There shall be a nurse at the facility who it familiar with the particular pump is use at all times in order to adjust, troubleshoot or re-program the pump should such a need arise.

6. The nurse caring for the resident should complete an Inotrope Infusion Monitoring Form or CADD PCA Administration Record. Record at a minimum of once per shift. Forms may be requested through PharmScript Medical Records Department.

7. A qualified Registered Nurse at the facility will be responsible for any programming changes involving the basal rate or bolus dosing. Any changes in concentration of drug will require the delivery of a new bag/cassette and pump, with pick up of the old pump simultaneously.

8. Nurses responsible for this type of infusion must be completely familiar with the drug including recommended dosage, precautions, side effects and adverse effects. *Narcan may not be indicated for "end of life" situations.

9. Only preservative free narcotics and solutions for reconstitution may be administered via the epidural/intrathecal catheter.

10. A pharmacist under a laminar flow hood must compound all epidural/intrathecal solutions.

11. Alcohol will NOT be used for any procedure involving the care and maintenance of an epidural/intrathecal catheter due to its extensive toxicity to the spinal cord.

12. Additional parenteral narcotics should not be given when pain relief is not achieved via epidural administration. The respiratory depressant effects of narcotics are potentiated by the concomitant administration of parenteral and epidural/intrathecal narcotics.

13. An infusion pump will administer all epidural/intrathecal infusions.

14. The infusion set up and/or pump should be labeled "Epidural-NO IV Access", or
    a. "Intrathecal - NO IV Access" to avoid accidental infusion of IV solutions through the catheter.

15. Baseline measurement of external catheter length must be documented upon initiation of therapy and with every dressing change.

16. Dressing changes for transparent dressings will be rendered at minimum weekly, unless otherwise ordered by prescriber. Dressing changes for gauze dressings will be rendered every 48 hours unless otherwise ordered by prescriber.

17. The injection site cap will be changed at a minimum of weekly, unless otherwise ordered by physician.

18. A 0.2 micron filter may be used to prevent introduction of particulate matter or bacteria. The filter must be changed weekly at a minimum; however, it may be as frequent as 48 hours, depending on manufacturer's recommendations and/or prescriber orders.

19. Administration tubing will be changed at a minimum of every 96 hours. More frequent tubing changes may be required based on therapy regime and/or prescriber orders

Elastomeric Infusion Devices

I. General Guidelines

1. Nursing staff will be knowledgeable regarding the use of elastomeric infusion devices.

2. Elastomeric infusion units are disposable and should be discarded after a single use. The devices shall not be refilled or re-sterilized.

3. Pump must be at room temperature before using. If stored in the refrigerator, allow pump to reach room temperature. It may take several hours for pump to reach room temperature depending on fill volume refer to manufacturer guidelines.

4. An elastomeric infusion device is a non-electric disposable pump consisting of an elastomeric reservoir (balloon containing the medication) with a filling port that is housed within an outer protective shell, and a flow restrictor system within the administration set.

5. The device administers a set volume of fluid over a given time period. The flow rate is determined by the pressure in the filled reservoir, flow control (narrow bore) tubing and the flow restrictor.

6. A wide range of elastomeric infusion devices is available from a number of manufacturers. The products offer various flow rates and infusion times, with differing physical features. Devices can infuse at flow rates of 0.5 = 500 ml/hour, with running times from 30 minutes to 12 days.

7. Reservoir volume usually ranges from 60 to 500 ml.

8. Examples of elastomeric infusion devices include: Eclipse, Homepump, Infusor, Intermate 940, ReadyMED, and Sidekick.

9. Factors that play an important role in the decision to use elastomeric infusion devices as the delivery system of choice include:
   a. medication dosed once or twice a day;
   b. resident's physical or cognitive abilities allow understanding of device use;
   c. resident is ambulatory or mobile;
   d. central or midline venous access preferred, however reliable peripheral access is acceptable

II. Administration Procedure

Pump Position

1. Position the pump at approximately the same level as the catheter site.
   a) Positioning the pump above this level increases flow rate
   b) Positioning the pump below this level decreases flow rate

Temperature

1. Temperature will affect solution viscosity, resulting in shorter or longer delivery time.
2. Pump should be used at room temperature
3. Pump and tubing should be worn outside the clothing

Priming the Administration Set

1. Remove distal end cap
2. Open clamp to start priming
3. When all air has been removed from the entire tubing and fluid flow is observed at end of the distal luer, the administration set it primed.
4. Close the clamp and replace the distal end cap until ready for use

Starting Infusion

1. The pump must be at room temperature before using
2. Verify that the clamp on the tubing is closed
3. Cleanse the resident's catheter injection site/IV access device
4. Attach the pump tubing to the access device
5. Begin infusion by opening the clamp; fluid delivery will start immediately. Note: if tubing is kinked, roll kinked portion of the tubing between fingers to restore shape of tubing and promote fluid flow.

End of Infusion

1. Infusion is complete when the elastomeric membrane is no longer expanded
2. Close clamp, disconnect and dispose of the pump according to facility policy.

Purpose

To provide guidance for the administration of intravenous fluids and/or electrolytes for hydration.

General Guidance

1. A physician's order is necessary to give intravenous fluids and electrolytes.

2. Assess resident's lung and heart status and vital signs before and during therapy to assess for fluid overload.

3. The Nurse responsible for administering the fluids and electrolytes shall be knowledgeable of:
    a. indications for use;
    b. side effects;
    c. toxicities;
    d. incompatibilities;
    e. stability;
    f. storage requirements;
    g. potential complications; and
    h. appropriate rates, doses and routes of administration.

4. Administer the first dose of IV medication in a situation in which close observation of the resident and the ability to intervene in the case of complications is possible.

5. Obtain order for anaphylaxis protocol or note if there is a standing protocol for intervention.

6. Resident should be monitored frequently when continuous fluids are infusing. Monitor for signs and symptoms of fluid overload, catheter and insertion site complications, and the resident's tolerance of procedure. Fluids may be stopped by a Nurse if signs of a problem are present.

7. When infusing continuous fluids, the tubing should be changed every 96 hours, and as needed if sterility is compromised or per facility policy.

Assessment

1. Inspect intravenous catheter and insertion site for signs and symptoms of complications at scheduled intervals (per facility policy), during routine site care and when changing administration sets.
2. Prior to administration of intravenous fluids and electrolytes assess resident's:
    a. overall health status;
    b. cardiovascular and respiratory status;
    c. history of allergies;
    d. baseline vital signs, height and weight; and
    e. laboratory results and appropriateness of therapy.
3. Review physician's order. Confirm type, volume of solution, route, and rate of administration.
4. Verify the identity of the resident.
5. Inspect solution for leaks, cracks, precipitate, and expiration date.

Procedure

1. Wash hands. Apply gloves.
2. Prime tubing of administration set.
3. Disinfect needleless connection device with alcohol wipe.
4. Flush catheter using normal saline per facility protocol.
5. Connect primed administration set to needleless connection device.
6. Open roller clamp.
7. Establish prescribed rate of flow
8. When infusion is complete:

   For intermittent therapy:
   a. Clamp tubing and disconnect from catheter.
   b. If tubing will be reused, replace sterile cap.
   c. Flush catheter per protocol.

   For continuous therapy:
   a. Mark solution container with label that states when bag was started and approximate time of completion.
   b. Use a time tape on bag to mark time intervals.
   c. Never write directly on the bag with ink or marker; always use a label or tape.

9. Document procedure in the resident's medical record and on the intake/output record.

Purpose

To provide guidance on the administration of subcutaneous hydration.

General Guidance

1. Verify with State Nurse Practice Act the scope of practice for RNs and LPNs regarding this procedure.

2. Hypodermoclysis is a method of hydration that does not require an intravenous catheter for delivery.

3. Hypodermoclysis involves using small needles to deliver isotonic fluids (normal saline, lactated ringers) slowly into the subcutaneous tissue.

4. This system is designed for short-term, preventative hydration or for mild dehydration. Treatment usually lasts for no more than 7 days.

5. Hypodermoclysis is NOT for antibiotics, narcotics, or fluids with electrolytes (KCL, magnesium, etc.).

6. Sites for needle placement are the abdomen, stomach, and front or side of thighs.

7. The fluid is infused into the subcutaneous tissue where it is absorbed slowly. While the fluid is absorbed, a fluid wheal will form. This is normal and is not an infiltration of fluids.

8. Hypodermoclysis reduces the chance of the following complications associated with intravenous therapy:
    a. Fluid overload, CHF.
    b. Phlebitis.
    c. Infections.

9. Physician order should include:
    a. type and quantity of isotonic fluid;
    b. rate (determined by type of delivery set); and
    c. length of treatment.

Procedure

1. Review physician order.

2. Explain procedure to resident.

3. Assemble fluid and kit.

4. Wash hands. Apply gloves.

5. Prime tubing including attached needle set until all air is removed.

6. Do sterile site preparation and allow to air dry.

7. Pinch up skin or flatten skin. Insert needle strip flat into skin.

8. Secure needle strip to skin using transparent dressing. Tape tubing to skin.

9. Date dressing and tubing.

10. Start fluid and adjust flow rate. Make sure that resident is comfortable.

11. Monitor for fluid wheal formation. This is affected by metabolism rate of resident.

12. If necessary, the site may be lightly massaged to help fluid absorption.

13. Observe for any signs of peripheral edema (not the fluid wheal), leakage or fluid overload. Monitor for line disconnection from skin.

14. If the site needs to be changed, change the whole set, including needles. Contact pharmacy for new set. No new order is needed.

15. The tubing and needle are changed every 3 days; the IV bag every 24 hours.

Documentation

1. Document the following in the resident's medical record upon insertion:
    a. Procedure.
    b. Type of fluids.
    c. Dressing and tubing.

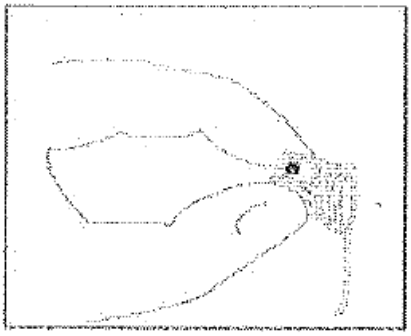
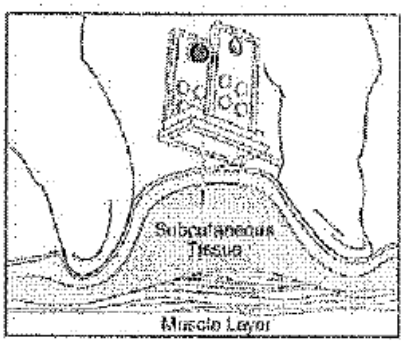
2. Document the change date on the medication administration record.

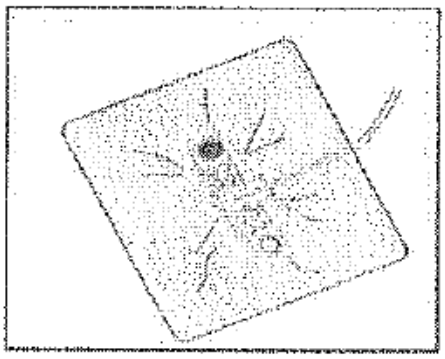
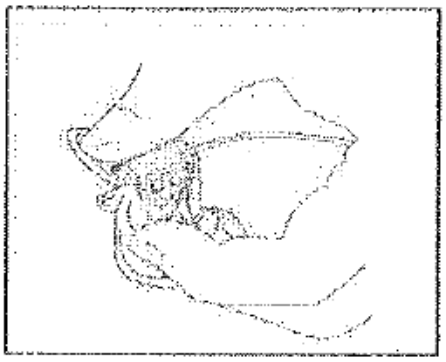
3. Document the following in the resident's medical record every shift:
    a. The type of fluid being infused, location of needle placement.
    b. Intake and output totals.
    c. Time fluid bag was started and discontinued.
    d. Condition of skin where needles are inserted, any leakage, peripheral edema (not fluid wheal), statement from resident regarding how they are tolerating the treatment.
    e. Date and time of tubing and needle strip site change and reason for changing site (leakage, skin irritation, 72-hour site change).
    f. Any communication with Physician about problems, laboratory values.

Hypodermoclysis Chart Guide

Contraindications	a) Emergency situations (e.g. Shock, severe dehydration, circulatory failure) b) Severe electrolyte imbalances c) Residents with clotting disorders d) Excessive fluid overload e) When intravenous meds are required. f) Renal dialysis
Selection of Fluids	****NOT ALL INCLUSIVE**** a) 0.9% Sodium Chloride (preferred solution) b) D5 ½ NS c) ½ NS **D5W AND D10W are not recommended due to risk of increased edema and discomfort**
Recommended Max Infusion Rate	a) 80ml/hr at a single site b) 62ml/hr at each of 2 sites (total of 124ml/hr) c) 1500-2000 ml per 24 hours for a single site d) 3000ml per 24 hours for two different sites
Site Selection	a) Anterior or lateral thigh b) Posterior upper arms c) Anterior chest wall d) Abdomen (two inch radius around the umbilicus)

	e) Lower back
Site Rotation	a) After 1500-2000 ml has infused at a single site b) Up to 3000 ml may be infused if using a Hypodermoclysis set that allows for administration at two different sites at the same time. c) Every 24-48 hours with new site at least 2 inches from the previous insertion site d) When signs and symptoms of complications are observed.
Monitoring	Infusion sites will be observed at least every 2 hours for inflammation, swelling, drainage or discomfort.
Complications	a) Mild edema b) Inflammation and swelling c) Pain/Discomfort d) Inadvertent venous access e) Pulmonary edema
Insertion Procedure	1. Prepare clean work space and aseptically open package 2. Prime set 3. Prep each area chosen for needle insertion 4. Remove tape. Fold wings back to observe needle and remove needle guard. 5. Insert the needle at a 90 degree angle in the SubQ tissue 6. Lay wings flat against skin and cover with transparent dressing

 	7. Start infusion via flow regulator (located within the kit) as per facility protocol.
Removal Procedure	1. Remove dressing by peeling back on all sides 2. Using the thumb and forefinger, apply slight pressure downwards to the wings to lift needle from skin 3. Pinch wings together and close by pressing the red button to safely cover the needle 4. Discard according to facility policy.

 	
Hypodermoclysis Kit Contents	1 – Bifurcated SubQ Set (6mm x 24 gauge) 1 – Rate flow-control device (EZ Regulator) 2 – Chloraprep skin prep applicators 2 – Alcohol prep pads 2 – Transparent dressings 1 – Pair of gloves
EZ Regulator (Instructions of Use)	1. Set the regulator dial to “OFF” position 2. Remove spike protector and insert spike into solution container 3. Squeeze drip chamber until it is half full 4. Turn EZ regulator to “OPEN” position 5. Aseptically attach SubQ needle device 6. Adjust flow rate by turning dial with all other clamps fully open.

Purpose

To provide guidance on the administration of intravenous pain medication.

General Guidance

1. Verify with State Nurse Practice Act the scope of practice for RNs and LPNs regarding this procedure.

2. A physician's order is necessary for this procedure.

3. The Nurse responsible for administering IV pain therapy shall be knowledgeable of:
    a. indications for use;
    b. appropriate doses and diluents;
    c. side effects;
    d. contraindications;
    e. toxicities;
    f. incompatibilities;
    g. stability;
    h. storage requirements;
    i. potential complications; and
    j. conventional and alternative methods of pain control.

4. Common indications for use of narcotics for pain management infusions include, but are not limited to:
    - ❖ 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:
        a. Emesis or difficulty swallowing negates oral analgesia.
        b. Suppositories are contraindicated or ineffective.
        c. Refuses other routes of administration.
        d. Chronic pain makes intramuscular dosing impractical.

    - ❖ Residents with other types of pain (such as chronic back pain) requiring individual assessment to determine appropriateness.

5. Review facility's anaphylaxis protocol and naloxone manufacturer dosing guidelines, if warranted.

6. 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.

7. Do not leave narcotic bags or cassettes in an unsecured area when not in use for resident infusion.

8. Administer the first dose of intravenous medication in a situation in which close observation of resident and the ability to intervene in the case of complications is possible.

9. Frequently observe and monitor the resident when IV pain medication is being administered. Monitor for pain control, change in vital signs, mental status, breathing status, nausea/vomiting, rash, or intolerance of medication.

10. Use a separate administration set for each medication.

11. 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.

Assessment

1. Inspect intravenous catheter site for signs of complications at scheduled intervals and upon routine site care and administration set changes.

2. Prior to administration of pain medications assess resident's:
   a. level of pain using appropriate pain scale;
   b. level of consciousness;
   c. history of allergies; and
   d. baseline vital signs, height and weight.

3. Prior to administration of intravenous pain medication, assess the resident for risk factors for respiratory depression and other adverse events, including:
   a. Age;
   b. Morbid obesity;
   c. Obstructive sleep apnea;
   d. COPD;
   e. Renal insufficiency.

4. Monitor resident during administration of pain medication for signs of:
   a. respiratory depression;
   b. level of consciousness/confusion;
   c. unsteady gait, risk of falling;
   d. nausea and vomiting;
   e. pruritus;
   f. constipation;
   g. urinary retention; and/or
   h. hypotension or hypertension.

5. Review physician's order. Confirm type and amount of medication, route, and rate of administration.

6. Verify the identity of the resident.

7. Check medication label and verify against the order.

8. Inspect medication for any leaks, cracks, precipitate and expiration date.

Procedure

1. Wash hands. Apply gloves.
2. Prime tubing of administration set.
3. Disinfect needleless connection device.
4. Flush catheter.
5. Connect primed administration set to needleless connection device.
6. Open clamp on tubing.
7. Establish prescribed rate of flow using an electronic infusion pump.
8. Begin infusion.
9. Instruct resident on expected outcomes and potential side effects.
10. Use pulse oximeter to monitor for respiratory depression. Monitor resident closely. Assess and re-assess the resident for:
    a. current level of pain;
    b. side effects of pain medications; and
    c. adverse reactions to pain medication.
11. When infusion is complete, clamp tubing and disconnect from catheter.
12. If tubing will be reused, replace sterile end cap on tubing.
13. Flush catheter per protocol.
14. Document procedure in the resident's medical record.

Documentation

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

2. Document narcotic administration in appropriate controlled medication record.

Reporting

The following should be reported to Physician, 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 statement regarding tolerance of treatment.

Purpose

To provide guidance on the safe administration of continuous heparin infusion.

Considerations

1. Heparin causes anticoagulation by inhibiting factors involved in the conversion of prothrombin to thrombin. Heparin interrupts the progression of the clotting cascade but it does not actively dissolve clots.
2. The therapeutic course of heparin may begin with an initial loading dose, based on the patient's age and kilogram weight, followed by a maintenance dose. Heparin does is ordered in units per hour.
3. Heparin is gradually decreased and usually not abruptly discontinued.
4. The major risk of heparin therapy is hemorrhage. The following patient risk factors must be considered prior to initiation of therapy.
   a. Age greater than 60 years.
   b. Recent surgery/trauma
   c. Severe hypertension
   d. History of peptic ulcer disease
   e. Drugs that interfere with platelet function (e.g. aspirin, NSAID's, Plavix)
   f. Potential bleeding site
   g. Congenital/acquired blood dyscrasias
   h. Severe renal or hepatic failure
   i. History of heparin-induced thrombocytopenia or white clot syndrome
   j. Hypersensitivity to heparin (derived from animal protein)
5. Protamine Sulfate is used to reverse heparin overdose. It rapidly neutralizes the anticoagulant activity. Protamine Sulfate can cause severe anaphylactic reactions and must only be used when severe bleeding occurs.
6. Licensed nurses caring for patients receiving infusion therapies are expected to follow infection control and safety compliance procedures.

Guidance

1. Stabilization of patient must be done in the acute care setting.
2. Physician/licensed independent practitioner (LIP) orders must include, but are not limited to:
   a. Medication
   b. Concentration, diluent
   c. Continuous rate
   d. Weight
   e. Intake and output
   f. Vital signs
   g. Laboratory monitoring with reportable parameters for:
      - Physician/LIP notification
      - Stopping heparin infusion
      - Dosage guidelines for Protamine Sulfate
   h. Verification or discontinuation of current medications
3. Protamine Sulfate must be immediately available in the facility.
4. Facility must have access to 24-hour laboratory services that obtain and report “STAT” laboratory results.
5. The nurse is responsible for reporting lab results to physician/LIP upon receipt.
6. If heparin is administered peripherally, licensed nurses proficient in the insertion of peripheral venous access devices must be present in the facility.
7. If routine peripheral site change is required, ensure patency of new site prior to discontinuation of previous infusion site.
8. Heparin solutions must be pre-mixed by the pharmacy.
9. Two licensed nurses must verify proper dosage and dose calculations prior to initiating a heparin infusion.
   a. Initiating a heparin infusion
   b. Prior to each new bag change
   c. Prior to each dose/rate change
10. Heparin infusions must be administered via an electronic infusion device.
11. Two licensed nurses must verify the electronic infusion device settings:
    a. Upon initiation of heparin infusion
    b. Every eight hours
    c. With each new bag change
    d. With each dose/rate change
12. Heparin infusions will not be piggybacked or admixed with other medications infusing into the same venous access line.

Monitoring

1. Assessment prior to initiating therapy must include, but is not limited to:
   a. Weight
   b. Intake and output
   c. Vital signs
   d. Recent lab values

2. Laboratory monitoring includes, but is not limited to:
   a. APTT
   b. WBC
   c. Platelet Count
   d. PT/INR
3. Due to the potential for inaccurate test results, laboratory tests are not to be obtained from the vascular access device or accessed extremity being used for heparin therapy.
4. Monitor patient before, during the following each infusion for signs and symptoms of adverse effects which may include, but are not limited to:
   a. Bleeding gums
   b. Bruises/petechiae
   c. Epistaxis
   d. Hematuria (test for occult)
   e. Tarry stools (test for occult)
   f. Hematemesis
   g. Headache or dizziness
5. Notify pharmacy if any of the monitoring parameters could impact dosing before next heparin solution is admixed.
6. Evaluate site and surrounding tissue frequently during and following completion of infusion for signs and symptoms of infusion related complications.

Equipment

- Electronic infusion device
- Administration set
- Needleless connector, if necessary
- Pre-mixed heparin solution
- Protamine Sulfate for antidote
- Prescribed flushing agent in 10 mL barrel diameter syringe
- Alcohol pad(s)
- Tape
- Clean gloves

Procedure

1. Verify physician/LIP order.
2. Identify the patient by using appropriate identifiers.
3. Explain procedure to patient/significant other.
4. Verify baseline height, weight, vital signs, and lab reports before initiation of infusion
5. Verify the proper dosage and dose calculations with a second licensed nurse.
6. Perform hand hygiene.
7. Assemble equipment and supplies on clean work surface.
8. Don gloves.
9. Vigorously cleanse needless connector with alcohol. Allow to air dry.
10. Maintaining asepsis, attach flush syringe to needleless connector. Aspirate the catheter to obtain positive blood return to verify vascular access patency. Flush with prescribed flushing agent. Remove syringe.
11. Two licensed nurses must verify the electronic infusion device settings.
12. Vigorously cleanse needleless connector with alcohol. Allow to air dry. Attach administration set to needleless connector and begin heparin infusion as ordered. Monitor patient as indicated in physician/LIP orders.
13. Verify that infusion is running at prescribed rate.
14. Follow all other procedures for continuous or intermittent infusions.
15. Documentation in the medical record includes, but is not limited to:
    a. Medication
    b. Concentration
    c. Rate, route and total dose administered
    d. Date and time
    e. Second licensed nurse verification
    f. Site assessment
    g. Prescribed flushing agent
    h. Patient assessment and response to therapy
    i. Complications and interventions
    j. Patient/significant other teaching

Emergency Treatment Protocol

1. For suspected adverse reaction:
   a. Stop the infusion immediately leaving vascular access device intact
   b. Stay with patient and call for assistance
   c. Instruct assistant to notify physician/LIP
   d. Prepare for possible transfer to acute care setting
   e. Obtain vital signs and support patient as necessary
2. Do not restart infusion without specific orders.
3. Administer Protamine Sulfate if ordered.
   a. Disconnect administration set, vigorously cleanse needleless connector with alcohol. Allow to air dry.
   b. Attach 10 mL syringe and aspirate 5 mL of fluid to remove any residual heparin infusion.
   c. Vigorously cleanse needless connector with alcohol. Allow to air dry.
   d. Administer Protamine Sulfate as ordered.
   e. Vigorously cleanse needless connector with alcohol. Allow to air dry.
   f. Flush with 10 mL normal saline.

Purpose

To provide guidance on intravenous inotrope administration.

Considerations

1. Inotropic agents produce a positive inotropic action with vasodilator activity, reducing afterload and preload of the heart by their direct relaxant effect on vascular smooth muscle. Because of the positive inotropic effect and vasodilator activity, cardiac output is improved without significant increases in heart rate or myocardial oxygen consumption.
2. The primary use of inotropic agents is the management of acute decompensated heart failure. The effects can be seen in 5-15 minutes after the initiation of therapy. The increase in cardiac stroke volume improves the overall energy of the individual and promotes diuresis.
3. Inotropic agents must be used with caution as they may aggravate outflow obstruction in patients with hypertrophic subaortic stenosis or sever obstructive aortic or pulmonary valvular disease.
4. Goals of therapy include increasing quality of life, controlling symptoms of hear failure, and decreasing hospital admissions and/or length of stay.
5. The recommended dose per kilogram of weight per minute is based on the severity of the disease.
6. **Inotropic agents will be delivered in a pre-mixed form from the pharmacy. Inotropic agents must not be mixed at the facility.**
7. Licensed nurses caring for patients receiving transfusion therapies are expected to follow infection control and safety compliance procedures.

Guidance

1. Patients receiving inotropic therapy in the acute care setting must be screened carefully for the appropriateness of admission to LTC facility. They must NOT exhibit any of the following:
   - 1.1 Clinically unstable diagnosis
   - 1.2 Uncontrolled arrhythmias
   - 1.3 Atrial fibrillation with rapid ventricular response
   - 1.4 Myocardial Infarction (MI) within past six weeks
   - 1.5 Hypertrophic subaortic stenosis, severe obstructive aortic disease or pulmonary valvular disease
2. Inotropic infusions will NOT be initiated in the LTC facility. Patient must be stabilized on the inotropic agent, in the acute care setting, prior to transfer.
   - 2.1 All candidates for inotropic therapy admissions must have an established central vascular access device with radiographic confirmation of the anatomical tip located in the superior vena cava (SVC)
     - 2.1.1 Plan should be established in advance for potential loss of central vascular access
   - 2.2 All candidates must be stabilized for at least 72 hours prior to transfer, with at least 48 hours of continuous EKG monitoring and documentation that indicates the patient has not experienced adverse reactions or evidence of life-threatening complications
   - 2.3 The patient must be under the care of a cardiologist

2.4 Verify:
- 2.4.1 Baseline height and weight
- 2.4.2 Vital signs
- 2.4.3 Cardiac assessment

3. If dose change is required, patient must be re-admitted to the acute care setting.
   - 3.1 As the patient weight changes the rate may be adjusted without re-hospitalization.

4. Physician/licensed independent practitioner (LIP) orders must include, but are not limited to:
   - 4.1 Inotropic agent and dosage based on patient's weight in kilogram (kg)
   - 4.2 Frequency and duration of infusion
   - 4.3 Laboratory monitoring with reportable parameters
   - 4.4 Vital sign frequency with reportable parameters
   - 4.5 Daily weight with reportable parameters
   - 4.6 Establish patient protocol, if applicable

5. Inotropic agents must be administered via an electronic infusion device.
   - 5.1 If an electronic infusion device is used, a backup device must be available

6. Inotropic agents will not be piggybacked or admixed with other medications infusing into the same lumen.

7. To prevent a rapid bolus, the central vascular access device will not be flushed without first withdrawing residual medication from the catheter.

8. The facility nurse is responsible for reporting lab results to physician/LIP and pharmacist within one (1) hour of receipt of report from laboratory service.

9. Two nurses must verify proper dose and dosage calculations and electronic infusion device settings:
   - 9.1 Prior to initiation of infusion
   - 9.2 Every eight hours
   - 9.3 With all dose changes

Monitoring

1. Assessment prior to initiating therapy must include, but is not limited to:
   - 1.1 Weight
   - 1.2 Intake and output
   - 1.3 Vital signs
   - 1.4 Recent lab values
2. Recommended laboratory monitoring includes, but is not limited to:
   - 2.1 Basic metabolic panel (BMP)
   - 2.2 CBC and platelets
   - 2.3 Hepatic Function Test
   - 2.4 Lipid Profile
   - 2.5 Brain Natriuretic Peptide (BNP)
   - 2.6 Urinalysis
   - 2.7 Thyroid Function Tests
3. Vital signs and lung sounds must be obtained
   - 3.1 For intermittent infusion:
     - 3.1.1 Prior to initiation
     - 3.1.2 Every 15 minutes for 1 hour
     - 3.1.3 Every hour to 2 hours
     - 3.1.4 Every 4 hours
   - 3.2 For continuous inotrope infusion
   - 3.3 Upon admission
   - 3.4 Every 4 hours
4. Monitoring of patient during inotropic infusion must include, but is not limited to:
   - 4.1 Blood pressure and apical heart rate
   - 4.2 Lung sounds and respirator pattern
   - 4.3 Intake and urinary output
   - 4.4 Daily weights obtained at the same time each day with same amount clothing or
     - 4.4.1 For continuous inotrope infusions, obtain weights per physician/LIP
   - 4.5 Complaints of chest pain, palpitations or change in cardiovascular status
   - 4.6 Symptoms of adverse reaction to inotropic agent
   - 4.7 Site assessment every two hours

5. Notify pharmacy if any of the monitoring parameters could impact dosing before next inotropic solution is admixed.
6. Evaluate site and surrounding tissue frequently during and following completion of infusion for signs and symptoms of infusion related complications.

Equipment

- 2 Electronic infusion devices
- Administration set/cassette specific to electronic infusion device
- Needleless connector, if necessary
- Premixed inotropic agent
- Prescribed flushing/locking agent(s) in 10 mL or larger barrel diameter syringe
- Empty 10 mL syringe
- Alcohol pad(s)
- Tape
- Clean gloves

Procedure

1. Verify physician/LIP order.
2. Identify patient by appropriate identifiers.
3. Explain procedure to patient/significant other.
4. Verify baseline height, weight, vital signs, and a cardiac assessment before initiation of infusion
5. Verify the proper dosage and dose calculations with a second nurse.
6. Perform hand hygiene.
7. Assemble equipment and supplies on clean work surface.
8. Don gloves.
9. **If initiation of inotropic infusion:**
   - 9.1 Vigorously cleanse needless connector with alcohol. Allow to air dry.
   - 9.2 Maintaining asepsis, attach flush syringe to needleless connector. Aspirate the catheter to obtain positive blood return to verify vascular access patency. Flush with prescribed flushing agent. Remove syringe.

10. If reinitiating inotropic infusion (e.g., when performing weekly needless connector change):

10.1 Vigorously cleanse needleless connector with alcohol. Allow to air dry.
10.2 Attach 10 mL syringe to needless connector.
10.3 Aspirate 5 mL from catheter and discard syringe.
10.4 Prime new needless connector using prescribed flushing agent.
10.5 Clamp catheter or extension tubing, if present.
10.6 Vigorously cleanse junction of extension set and needless connector with alcohol. Allow to air dry.
10.7 Remove needless connector.
10.8 Vigorously cleanse end of the catheter or extension set if present with alcohol. Allow to air dy.
10.9 Attach new needleless connector to catheter or extension set. Open clamp and flush using prescribed flushing agent.

11. Verify the electronic infusion device settings.

12. Vigorously cleanse needless connector with alcohol. Allow to air dry. Attach administration set to needless connector and begin inotropic infusion as ordered. Monitor patient as indicated in physician/LIP's orders.

13. Follow all other procedures for continuous or intermittent infusions.

14. Following completion of medication administration, attach an empty 10 mL syringe to needless connector and aspirate 5-10 mL of fluid to be sure no medication remains in the catheter.

15. Vigorously cleanse needless connector with alcohol. Allow to air dry.

16. Attach flush syringe to needleless connector and flush/lock (refer to Appendix B – IV Line Maintenance Chart).

17. Documentation in the medical record includes, but is not limited to:

17.1 Date and time
17.2 Second licensed nurse verification
17.3 Site assessment
17.4 Prescribed flushing/locking agent(s)
17.5 Rate, route and total dose administered
17.6 Patient assessment and response to therapy
17.7 Complications and interventions
17.8 Patient/significant other teaching

Emergency Treatment Protocol

1. For suspected adverse reaction:
   - 1.1 Stop the infusion immediately leaving vascular access device intact
   - 1.2 Stay with patient and call for assistance
   - 1.3 Instruct assistant to notify physician/LIP
   - 1.4 Disconnect and remove inotropic medication administration set from needless connector. Aspirate medication from catheter. Flush/lock vascular access device to maintain patency.
   - 1.5 Prepare for possible transfer to acute care setting
   - 1.6 Obtain vital signs and support patient as necessary
2. Do not restart infusion without specific orders.

Extravasation Protocol

1. For treatment of extravasation:
   - 1.1 Stop infusion
   - 1.2 Aspirate the residual drug from the catheter
   - 1.3 Elevate the affected extremity
   - 1.4 Notify physician/LIP for further orders

Purpose

To provide guidance to a licensed nurse on the administration of intravenous Bamlanivimab.

General Guidance

- Bamlanivimab is a monoclonal antibody for the treatment of mild to moderate COVID-19

- Bamlanivimab is an investigational therapies authorized by FDA for use under an Emergency Use Authorization (EUA) for the treatment of mild to moderate coronavirus disease 2019 (COVID-19) in adults and pediatric patients (12 years of age and older weighing at least 40 kg) with positive results of direct SARS-CoV-2 viral testing, and who are at **high risk** (defined below) for progressing to severe COVID-19 and/or hospitalization.

- High risk is defined as patients who meet **at least one** of the following criteria:
    a. Have a body mass index (BMI) ≥ 35
    b. Have chronic kidney disease
    c. Have diabetes
    d. Have immunosuppressive disease
    e. Are currently receiving immunosuppressive treatment
    f. Are ≥65 years of age
    g. Are ≥55 years of age AND have:
        - cardiovascular disease, OR
        - hypertension, OR
        - chronic obstructive pulmonary disease/other chronic respiratory disease\
    h. Are 12 – 17 years of age AND have:
        - a BMI ≥85th percentile for their age and gender based on CDC growth charts, OR
        - sickle cell disease, OR
        - congenital or acquired heart disease, OR
        - neurodevelopmental disorders (e.g. cerebral palsy) or a medical-related technological dependence (e.g. tracheostomy, gastrostomy, or positive pressure ventilation (not related to COVID-19)), OR
        - asthma, reactive airway or other chronic respiratory disease that requires daily medication for control.

- Bamlanivimab is **not** authorized for use in patients:
    a. who are hospitalized due to COVID-19, OR
    b. who require oxygen therapy due to COVID-19, OR
    c. who require an increase in baseline oxygen flow rate due to COVID-19 in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity.

- The prescribing health care provider and/or the provider's designee are/is responsible for mandatory reporting of all medication errors and adverse events (death, serious adverse events) potentially related to Bamlanivimab treatment within 7 calendar days from the onset of the event. The reports should include unique identifiers and the words "Bamlanivimab under Emergency Use Authorization (EUA)" in the description section of the report.
    a. Submit adverse event reports to FDA MedWatch using one of the following methods:
    b. Complete and submit the report online: www.fda.gov/medwatch/report.htm
        - By using a postage-paid Form FDA 3500 (available at http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Forms/UCM163919.pdf) and returning by mail (MedWatch, 5600 Fishers Lane, Rockville, MD 20852-9787), or by fax (1-277 800-FDA-0178)
        - Call 1-800-FDA-1088 to request a reporting form
        - In addition, please provide a copy of all FDA MedWatch forms to:
            - Eli Lilly and Company, Global Patient Safety
            - Fax: 1-317-277-0853 E-mail: mailindata_gsmtindy@lilly.com
            - Or call Eli Lilly and Company at 1-855-LillyC19 (1-855-545-5921) to report adverse events.
    c. Submitted reports should include in the field name, "Describe Event, Problem, or Product Use/Medication Error" a statement "Bamlanivimab treatment under Emergency Use Authorization (EUA)."
    d. Serious Adverse Events are defined as:
        - life-threatening adverse event
        - Inpatient hospitalization or prolongation of existing hospitalization
        - A persistent or significant incapacity or substantial disruption of the ability to conduct normal life
        - functions
        - A congenital anomaly/birth defect
        - A medical or surgical intervention to prevent death, a life-threatening event, hospitalization,
        - disability, or congenital anomaly

- Bamlanivimab is administered as a single intravenous infusion. Infuse at a rate suggested per manufacturer's guidelines. The dose must be administered as soon as possible after a positive COVID-19 test and within 10 days of symptom onset.
    a. Consider slower infusion rate for patients with CHF, chronic kidney disease, and Systemic Inflammatory Response Syndrome (SIRS)

- There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of Bamlanivimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive therapy.
    a. Anaphylaxis and infusion-related reaction orders must be obtained prior to infusion
    b. Anaphylaxis kit/medications must be readily available

- Bamlanivimab reconstituted bag or vial must be removed from the refrigerator approximately 20 minutes prior to administration to bring to room temperature. Do not expose to direct heat.

- Prior to removing from refrigerator, confirm the presence of a patent vascular access device
- Inspect for particulate matter and discoloration. Solution is slightly opalescent and colorless to slightly yellow to slightly brown. Do not use if particulate matter identified.
- Do not freeze, shake or expose to direct light.
- Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.
- Monitor vital signs:
    a. Prior to initiating infusion
    b. Every 15 minutes during infusion
    c. Every 15 minutes for 1-hour post infusion
- If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and supportive care per prescriber's orders. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.
- Administration set with 0.2 or 0.22 micron in-line filter provided by the pharmacy must be used. Use of electronic infusion device (pump) for medication administration is preferred.
- No dosage adjustment is recommended based on age, sex, race, body weight, renal or mild hepatic impairment, during pregnancy or while lactating, or for disease severity or inflammation.
- Patients treated with Bamlanivimab should continue to self-isolate and use infection control measures (e.g., wear mask, isolate, social distance, avoid sharing personal items, clean and disinfect "high touch" surfaces, and frequent handwashing) according to CDC guidelines.
- Precaution must be taken during administration of this medication as there are no preservatives or any bacteriostatic agents in the products.
- Patient with known hypersensitivity to any ingredient of Bamlanivimab must not receive Bamlanivimab.
- As the healthcare provider, communicate to your patient or parent/caregiver, as age appropriate, information consistent with the "Fact Sheet for Patients, Parents and Caregivers" prior to the patient receiving Bamlanivimab. Healthcare providers (to the extent practicable given the circumstances of the emergency) must document in the patient's medical record that the patient/caregiver has been:
    a. Provided the "Fact Sheet for Patients, Parents and Caregivers"
    b. Informed of alternatives to receiving authorized Bamlanivimab
    c. Informed that Bamlanivimab is an unapproved drug that is authorized for use under this Emergency Use Authorization.

- Upon receipt of a physician's order for IV therapy, the nurse will complete the 'PharmScript Bamlanivimab Prescriber Order' and fax to the pharmacy. Note: A bulk supply of this form can be requested from the pharmacy's medical records department.

Equipment

- Compounded medication bag
- 50-100 mL minibag of 0.9% sodium chloride for clearing medication from administration set
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device
- Administration set with 0.2 or 0.22-micron filter
- Gloves

Procedure

1. Verify physician/LIP order.
2. Assemble equipment and supplies on clean work surface.
3. Perform hand hygiene. Don clean gloves.
4. Establish vascular access, if needed.
5. Remove medication bag from refrigerator and allow to reach room temperature.
6. Administer using the administration set containing a 0.2 to 0.22-micron filter. Program infusion pump to the rate pursuant to prescriber's orders. Program in BASIC mode when using Sigma Spectrum infusion pump.
7. Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.
8. If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.
9. Upon completion of Bamlanivimab infusion, replace empty medication bag with a 50 – 100 mL 0.9% Sodium Chloride minibag. This will be used to clear administration set of medication ensuring the complete dose has been administered. Administer 0.9% Sodium Chloride at same rate as infusion for a volume of 25 mL (reset the volume to be infused on the infusion pump at 25 mL). Continue infusion.
10. Upon completion of infusion, perform hand hygiene.
11. Don gloves.

12. Close the clamp and disconnect the administration set from needleless connector.

13. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

14. Dispose of used supplies per facility policy.

15. Remove gloves.

16. Perform hand hygiene.

17. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous Bamlanivimab & Etesevimab.

General Guidance

- Bamlanivimab & Etesevimab are monoclonal antibodies for the treatment of mild to moderate COVID-19

- Bamlanivimab & Etesevimab are investigational therapies authorized by FDA for use under an Emergency Use Authorization (EUA) for the treatment of mild to moderate coronavirus disease 2019 (COVID-19) in adults and pediatric patients (12 years of age and older weighing at least 40 kg) with positive results of direct SARS-CoV-2 viral testing, and who are at **high risk** (defined below) for progressing to severe COVID-19, including hospitalization or death.

- High risk is defined as patients who meet **at least one** of the following criteria:
    a. Have a body mass index (BMI) ≥ 25
    b. Have chronic kidney disease
    c. Have diabetes
    d. Have immunosuppressive disease
    e. Are currently receiving immunosuppressive treatment
    f. Pregnancy
    g. Are ≥65 years of age
    h. Are ≥55 years of age AND have:
        - cardiovascular disease, OR
        - hypertension, OR
        - chronic obstructive pulmonary disease/other chronic respiratory disease.
    i. Are 12 – 17 years of age AND have:
        - a BMI ≥85th percentile for their age and gender based on CDC growth charts, OR
        - sickle cell disease, OR
        - congenital or acquired heart disease, OR
        - neurodevelopmental disorders (e.g. cerebral palsy) or a medical-related technological dependence (e.g. tracheostomy, gastrostomy, or positive pressure ventilation (not related to COVID-19)), OR
        - asthma, reactive airway or other chronic respiratory disease that requires daily medication for control.

- Bamlanivimab & Etesevimab are **not** authorized for use in patients:
    a. who are hospitalized due to COVID-19, OR
    b. who require oxygen therapy due to COVID-19, OR
    c. who require an increase in baseline oxygen flow rate due to COVID-19 in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity.

- **Post-Exposure Prophylaxis**

  a. This EUA is for the use of the unapproved product, Bamlanivimab & Etesevimab administered together, in adult and pediatric individuals (12 years of age and older weighing at least 40 kg) for post-exposure prophylaxis of COVID-19 in individuals who are at high risk for progression to severe COVID-19, including hospitalization or death, and are:
  - not fully vaccinated **OR** who are not expected to mount an adequate immune response to complete SARS-CoV-2 vaccination (for example, individuals with immunocompromising conditions including those taking immunosuppressive medications) **AND**
    - have been exposed to an individual infected with SARS-CoV-2 consistent with close contact criteria per Center for Disease Control and Prevention (CDC) i.e., someone within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period (for example, three individual 5-minute exposures for a total of 15 minutes). **OR**
    - who are at high risk of exposure to an individual infected with SARSCoV-2 because of occurrence of SARS-CoV-2 infection in other individuals in the same institutional setting (for example, nursing homes, prisons)

  b. Limitations of Authorized Use:
  - Post-exposure prophylaxis with Bamlanivimab & Etesevimab is not a substitute for vaccination against COVID-19
  - REGEN-COV (Casirivimab and Imdevimab) is not authorized for pre-exposure prophylaxis for prevention of COVID-19

- The prescribing health care provider and/or the provider's designee are/is responsible for mandatory reporting of all medication errors and adverse events (death, serious adverse events) potentially related to Bamlanivimab & Etesevimab treatment within 7 calendar days from the onset of the event. The reports should include unique identifiers and the words "Bamlanivimab & Etesevimab under Emergency Use Authorization (EUA)" in the description section of the report. Submit adverse event reports to FDA MedWatch using one of the following methods:
  a. Complete and submit the report online: www.fda.gov/medwatch/report.htm
  b. By using a postage-paid Form FDA 3500 (available at http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Forms/UCM163919.pdf) and returning by mail (MedWatch, 5600 Fishers Lane, Rockville, MD 20852-9787), or by fax (1-277 800-FDA-0178)
  c. Call 1-800-FDA-1088 to request a reporting form
     - In addition, please provide a copy of all FDA MedWatch forms to:
       - Eli Lilly and Company, Global Patient Safety
       - Fax: 1-317-277-0853 E-mail: mailindata_gsmtindy@lilly.com
       - Or call Eli Lilly and Company at 1-855-LillyC19 (1-855-545-5921) to report adverse events.

   d. Submitted reports should include in the field name, “Describe Event, Problem, or Product Use/Medication Error” a statement “Bamlanivimab & Etesevimab treatment under Emergency Use Authorization (EUA).”
   e. Serious Adverse Events are defined as:
      - life-threatening adverse event
      - Inpatient hospitalization or prolongation of existing hospitalization
      - A persistent or significant incapacity or substantial disruption of the ability to conduct normal life
      - functions
      - A congenital anomaly/birth defect
      - A medical or surgical intervention to prevent death, a life-threatening event, hospitalization,
      - disability, or congenital anomaly

- Bamlanivimab & Etesevimab are administered together as a single intravenous infusion. Infuse at a rate suggested per manufacturer’s guidelines. The dose must be administered as soon as possible after a positive COVID-19 test and within 10 days of symptom onset.
   a. Consider slower infusion rate for patients with CHF, chronic kidney disease, and Systemic Inflammatory Response Syndrome (SIRS)

- There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of Bamlanivimab & Etesevimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive therapy.
   a. Anaphylaxis and infusion-related reaction orders must be obtained prior to infusion
   b. Anaphylaxis kit/medications must be readily available

- Bamlanivimab & Etesevimab reconstituted bag or vials must be removed from the refrigerator approximately 20 minutes prior to administration to bring to room temperature. Do not expose to direct heat.

- Prior to removing from refrigerator, confirm the presence of a patent vascular access device

- Inspect for particulate matter and discoloration. Solution is slightly opalescent and colorless to slightly yellow to slightly brown. Do not use if particulate matter identified.

- Do not freeze, shake or expose to direct light.

- Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

- Monitor vital signs:
   a. Prior to initiating infusion
   b. Every 15 minutes during infusion
   c. Every 15 minutes for 1-hour post infusion

- If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and supportive care per prescriber's orders. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

- Administration set with 0.2 or 0.22 micron in-line filter provided by the pharmacy must be used. Use of electronic infusion device (pump) for medication administration is preferred.

- No dosage adjustment is recommended based on age, sex, race, body weight, renal or mild hepatic impairment, during pregnancy or while lactating, or for disease severity or inflammation.

- Patients treated with Bamlanivimab & Etesevimab should continue to self-isolate and use infection control measures (e.g., wear mask, isolate, social distance, avoid sharing personal items, clean and disinfect "high touch" surfaces, and frequent handwashing) according to CDC guidelines.

- Precaution must be taken during administration of this medication as there are no preservatives or any bacteriostatic agents in the products.

- Patient with known hypersensitivity to any ingredient of Bamlanivimab & Etesevimab must not receive Bamlanivimab & Etesevimab.

- As the healthcare provider, communicate to your patient or parent/caregiver, as age appropriate, information consistent with the "Fact Sheet for Patients, Parents and Caregivers" prior to the patient receiving Bamlanivimab & Etesevimab. Healthcare providers (to the extent practicable given the circumstances of the emergency) must document in the patient's medical record that the patient/caregiver has been:
    a. Provided the "Fact Sheet for Patients, Parents and Caregivers"
    b. Informed of alternatives to receiving authorized Bamlanivimab & Etesevimab
    c. Informed that Bamlanivimab & Etesevimab are unapproved drugs that is authorized for use under this Emergency Use Authorization.

- Upon receipt of a physician's order for IV therapy, the nurse will complete the 'PharmScript Bamlanivimab & Etesevimab Prescriber Order' and fax to the pharmacy. Note: A bulk supply of this form can be requested from the pharmacy's medical records department.

Equipment

- Compounded medication bag
- 50-100 mL minibag of 0.9% sodium chloride for clearing medication from administration set
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device
- Administration set with 0.2 or 0.22-micron filter
- Gloves

Procedure

1. Verify physician/LIP order.
2. Assemble equipment and supplies on clean work surface.
3. Perform hand hygiene. Don clean gloves.
4. Establish vascular access, if needed.
5. Remove medication bag from refrigerator and allow to reach room temperature.
6. Administer using the administration set containing a 0.2 to 0.22-micron filter. Program infusion pump to the rate pursuant to prescriber's orders. Program in BASIC mode when using Sigma Spectrum infusion pump.
7. Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.
8. If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.
9. Upon completion of Bamlanivimab & Etesevimab infusion, replace empty medication bag with a 50 – 100 mL 0.9% Sodium Chloride minibag. This will be used to clear administration set of medication ensuring the complete dose has been administered. Administer 0.9% Sodium Chloride at same rate as infusion for a volume of 25 mL (reset the volume to be infused on the infusion pump at 25 mL). Continue infusion.
10. Upon completion of infusion, perform hand hygiene.
11. Don gloves.
12. Close the clamp and disconnect the administration set from needleless connector.
13. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.
14. Dispose of used supplies per facility policy.
15. Remove gloves.
16. Perform hand hygiene.
17. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable

e. Site assessment
f. Complications and interventions
g. Patient response to procedure and/or medication
h. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous Casirivimab and Imdevimab.

General Guidance

- Casirivimab and Imdevimab are monoclonal antibodies for the treatment of mild to moderate COVID-19

- Casirivimab and Imdevimab are investigational therapies authorized by FDA for use under an Emergency Use Authorization (EUA) for the treatment of mild to moderate coronavirus disease 2019 (COVID-19) in adults and pediatric patients (12 years of age and older weighing at least 40 kg) with positive results of direct SARS-CoV-2 viral testing, and who are at **high risk** (defined below) for progressing to severe COVID-19, including hospitalization or death

- High risk is defined as patients who meet **at least one** of the following criteria:
    a. Have a body mass index (BMI) ≥ 25
    b. Have chronic kidney disease
    c. Have diabetes
    d. Have immunosuppressive disease
    e. Pregnancy
    f. Are currently receiving immunosuppressive treatment
    g. Are ≥65 years of age
    h. Are ≥55 years of age AND have:
        - cardiovascular disease, OR
        - hypertension, OR
        - chronic obstructive pulmonary disease/other chronic respiratory disease.
    i. Are 12 – 17 years of age AND have:
        - a BMI ≥85th percentile for their age and gender based on CDC growth charts, OR
        - sickle cell disease, OR
        - congenital or acquired heart disease, OR
        - neurodevelopmental disorders (e.g. cerebral palsy) or a medical-related technological dependence (e.g. tracheostomy, gastrostomy, or positive pressure ventilation (not related to COVID-19)), OR
        - asthma, reactive airway or other chronic respiratory disease that requires daily medication for control.

- Casirivimab & Imdevimab are **not** authorized for use in patients:
    a. who are hospitalized due to COVID-19, OR
    b. who require oxygen therapy due to COVID-19, OR
    c. who require an increase in baseline oxygen flow rate due to COVID-19 in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity.

- **Post-Exposure Prophylaxis**

  a. This EUA is for the use of the unapproved product, REGEN-COV (Casirivimab and Imdevimab) co-formulated product and REGEN-COV (Casirivimab and Imdevimab) supplied as individual vials to be administered together, in adult and pediatric individuals (12 years of age and older weighing at least 40 kg) for post-exposure prophylaxis of COVID-19 in individuals who are at high risk for progression to severe COVID-19, including hospitalization or death, and are:
  - not fully vaccinated **OR** who are not expected to mount an adequate immune response to complete SARS-CoV-2 vaccination (for example, individuals with immunocompromising conditions including those taking immunosuppressive medications) **AND**
    - have been exposed to an individual infected with SARS-CoV-2 consistent with close contact criteria per Center for Disease Control and Prevention (CDC) i.e., someone within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period (for example, three individual 5-minute exposures for a total of 15 minutes). **OR**
    - who are at high risk of exposure to an individual infected with SARSCoV-2 because of occurrence of SARS-CoV-2 infection in other individuals in the same institutional setting (for example, nursing homes, prisons)

  b. Limitations of Authorized Use:
  - Post-exposure prophylaxis with REGEN-COV (Casirivimab and Imdevimab) is not a substitute for vaccination against COVID-19

REGEN-COV (Casirivimab and Imdevimab) is not authorized for pre-exposure prophylaxis for prevention of COVID-19

- The prescribing health care provider and/or the provider's designee are/is responsible for mandatory reporting of all medication errors and adverse events (death, serious adverse events) potentially related to Casirivimab & Imdevimab treatment within 7 calendar days from the onset of the event. The reports should include unique identifiers and the words "REGEN-COV use for COVID-19 under Emergency Use Authorization (EUA)" in the description section of the report. Submit adverse event reports to FDA MedWatch using one of the following methods:
  a. Complete and submit the report online: www.fda.gov/medwatch/report.htm
  b. By using a postage-paid Form FDA 3500 (available at http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Forms/UCM163919.pdf) and returning by mail (MedWatch, 5600 Fishers Lane, Rockville, MD 20852-9787), or by fax (1-800-FDA-0178)
  c. Call 1-800-FDA-1088 to request a reporting form
     - In addition, please provide a copy of all FDA MedWatch forms to:
       - Regeneron Pharmaceuticals, Inc
         - Fax: 1-888-876-2736
         - E-mail: medical.information@regeneron.com
         - Or call Regeneron Pharmaceuticals at 1-844-734-6643 to report adverse events.

d. Submitted reports should include in the field name, “Describe Event, Problem, or Product Use/Medication Error” a statement “REGEN-COV use for COVID-19 under Emergency Use Authorization (EUA).”
e. Serious Adverse Events are defined as:
    - death
    - life-threatening adverse event
    - Inpatient hospitalization or prolongation of existing hospitalization
    - A persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions
    - A congenital anomaly/birth defect
    - A medical or surgical intervention to prevent death, a life-threatening event, hospitalization,
    - disability, or congenital anomaly

- Casirivimab & Imdevimab are administered together as a single intravenous infusion or subcutaneous injection. Infuse at a rate suggested per manufacturer’s guidelines. The dose must be administered as soon as possible after a positive COVID-19 test and within 10 days of symptom onset.
    a. Consider slower infusion rate for patients with CHF, chronic kidney disease, and Systemic Inflammatory Response Syndrome (SIRS)

- There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of Casirivimab & Imdevimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration, and initiate appropriate medications and/or supportive therapy.
    a. Anaphylaxis and infusion-related reaction orders must be obtained prior to administration
    b. Anaphylaxis kit/medications must be readily available

- Casirivimab & Imdevimab reconstituted bag or vials must be removed from the refrigerator approximately 20 minutes prior to administration to bring to room temperature. Do not expose to direct heat.

- Prior to removing from refrigerator, confirm the presence of a patent vascular access device

- Inspect for particulate matter and discoloration. Solution is slightly opalescent and colorless to slightly yellow. Do not use if particulate matter identified.

- Do not freeze, shake or expose to direct light.

- Monitor patient during administration and for at least one-hour post administration. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

- Monitor vital signs:
    a. Prior to initiating infusion
    b. Every 15 minutes during infusion

c. Every 15 minutes for 1-hour post infusion

- If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and supportive care per prescriber's orders. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

- Administration set with 0.2 or 0.22 micron in-line filter provided by the pharmacy must be used. Use of electronic infusion device (pump) for medication administration is preferred.

- No dosage adjustment is recommended based on age, sex, race, body weight, renal or mild hepatic impairment, during pregnancy or while lactating, or for disease severity or inflammation.

- Patients treated with Casirivimab & Imdevimab should continue to self-isolate and use infection control measures (e.g., wear mask, isolate, social distance, avoid sharing personal items, clean and disinfect "high touch" surfaces, and frequent handwashing) according to CDC guidelines.

- Precaution must be taken during administration of this medication as there are no preservatives or any bacteriostatic agents in the products.

- Patient with known hypersensitivity to any ingredient of Casirivimab & Imdevimab must not receive Casirivimab & Imdevimab.

- As the healthcare provider, communicate to your patient or parent/caregiver, as age appropriate, information consistent with the "Fact Sheet for Patients, Parents and Caregivers" prior to the patient receiving Casirivimab & Imdevimab. Healthcare providers (to the extent practicable given the circumstances of the emergency) must document in the patient's medical record that the patient/caregiver has been:
    a. Provided the "Fact Sheet for Patients, Parents and Caregivers"
    b. Informed of alternatives to receiving authorized Casirivimab & Imdevimab
    c. Informed that Casirivimab & Imdevimab are unapproved drugs that is authorized for use under this Emergency Use Authorization.

- Upon receipt of a physician's order for IV therapy, the nurse will complete the 'PharmScript Casirivimab & Imdevimab Prescriber Order' and fax to the pharmacy. Note: A bulk supply of this form can be requested from the pharmacy's medical records department.

- **Intravenous infusion is strongly recommended. Subcutaneous injection is an alternative route of administration when intravenous infusion is not feasible and would lead to delay in treatment.**

- **For Intravenous Infusion:**

    a. Co-formulated Casirivimab and Imdevimab solution in a vial and Casirivimab and Imdevimab solutions in individual vials which must be diluted prior to intravenous administration.
    b. Administer Casirivimab and Imdevimab together as a single intravenous infusion via pump or gravity

c. Clinically monitor patients during infusion and observe patients for at least 1 hour after infusion is complete.

- **For subcutaneous injection:**
  a. Administer Casirivimab and Imdevimab using the co-formulated solution in a vial or using the individual vials.
  b. Clinically monitor patients after injections and observe patients for at least 1 hour after injections. Subcutaneous injection is an alternative route of administration when intravenous administration is not feasible and would lead to delay in treatment.

Equipment for Intravenous Infusion

- Compounded medication bag
- 50-100 mL minibag of 0.9% sodium chloride for clearing medication from administration set
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device
- Administration set with 0.2 or 0.22-micron filter
- Gloves

Procedure for Intravenous Infusion

1. Verify physician/LIP order.

2. Assemble equipment and supplies on clean work surface.

3. Perform hand hygiene. Don clean gloves.

4. Establish vascular access, if needed.

5. Remove medication bag from refrigerator and allow to reach room temperature.

6. Administer using the administration set containing a 0.2 to 0.22-micron filter. Program infusion pump to the rate pursuant to prescriber's orders. Program in BASIC mode when using Sigma Spectrum infusion pump.

7. Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

8. If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

9. Upon completion of Casirivimab & Imdevimab infusion, replace empty medication bag with a 50 – 100 mL 0.9% Sodium Chloride minibag. This will be used to clear administration set of medication ensuring the complete dose has been administered. Administer 0.9% Sodium Chloride at same

rate as infusion for a volume of 25 mL (reset the volume to be infused on the infusion pump at 25 mL). Continue infusion.

10. Upon completion of infusion, perform hand hygiene.

11. Don gloves.

12. Close the clamp and disconnect the administration set from needleless connector.

13. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

14. Dispose of used supplies per facility policy.

15. Remove gloves.

16. Perform hand hygiene.

17. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Equipment for Subcutaneous Injection

- Either of the two formulations of REGEN-COV:
    - Casirivimab and Imdevimab co-formulated solution containing two antibodies in a 1:1 ratio in a vial.
    - Casirivimab and Imdevimab available as individual antibody solutions in separate vials.
- Alcohol pads
- Four or Two (Depending on the dosage) 3 ml or 5 ml polypropylene Luer lock syringes with Luer connection and four 21-gauge 1½ inch transfer needles.
- 25-gauge or 27-gauge needle for subcutaneous injection.
- Gloves

Procedure for Subcutaneous Infusion

1. Verify physician/LIP order.

2. Assemble equipment and supplies on clean work surface.

3. Perform hand hygiene. Don clean gloves.

4. Remove the Casirivimab and Imdevimab vial(s) from refrigerated storage and allow to equilibrate to room temperature for approximately 20 minutes before preparation. Do not expose to direct heat. Do not shake the vials.

5. Inspect Casirivimab and Imdevimab vial(s) visually for particulate matter and discoloration prior to administration. Should either be observed, the vial must be discarded and replaced with a new vial. The solution for each vial should be clear to slightly opalescent, colorless to pale yellow.

6. Casirivimab and Imdevimab should be prepared using the appropriate number of syringes (see Tables below). Obtain 3 mL or 5 mL polypropylene Luer Lock syringes with Luer connection and 21-gauge 1½ inch transfer needles.

7. Withdraw the appropriate amount of solution into each syringe (see Tables below). Prepare all syringes at the same time.

8. Replace the 21-gauge transfer needle with a 25-gauge or 27-gauge needle for subcutaneous injection.

9. This product is preservative-free and therefore, the prepared syringes should be administered immediately. If immediate administration is not possible, store the prepared Casirivimab and Imdevimab syringes in the refrigerator between 2ºC to 8ºC (36ºF to 46ºF) for no more than 4 hours or at room temperature up to 25ºC (77ºF) for no more than 4 total hours. If refrigerated, allow the syringes to equilibrate to room temperature for approximately 20 minutes prior to administration.

Preparation of 600 mg of Casirivimab and 600 mg of Imdevimab for Subcutaneous Injections	
Prepare 600 mg of Casirivimab and 600 mg of Imdevimab	**Preparation of 4 Syringes**
Using Casirivimab and Imdevimab Co-formulated Vial	Withdraw 2.5 mL solution per syringe into FOUR separate syringes.
Using Casirivimab and Imdevimab Individual Vials	**Casirivimab:** Withdraw 2.5 mL solution per syringe into TWO separate syringes. • **Imdevimab:** Withdraw 2.5 mL solution per syringe into TWO separate syringes. For total of 4 syringes.

Preparation of 300 mg of Casirivimab and 300 mg of Imdevimab for Subcutaneous Injections for Repeat Dosing	
Prepare 300 mg of Casirivimab and 300 mg of Imdevimab	**Preparation of 2 Syringes**
Using Casirivimab and Imdevimab Co-formulated Vial	Withdraw 2.5 mL solution per syringe into TWO separate syringes.
Using Casirivimab and Imdevimab Individual Vials	**Casirivimab:** Withdraw 2.5 mL solution per syringe into ONE separate syringes. • **Imdevimab:** Withdraw 2.5 mL solution per syringe into ONE separate syringes. For total of 2 syringes.

10. Administer the subcutaneous injections consecutively, each at a different injection site, into the thigh, back of the upper arm, or abdomen, except for 2 inches (5 cm) around the navel. The waistline should be avoided.

11. When administering the subcutaneous injections, it is recommended that providers use different quadrants of the abdomen or upper thighs or back of the upper arms to space apart each 2.5 mL subcutaneous injection of Casirivimab and Imdevimab. DO NOT inject into skin that is tender, damaged, bruised, or scarred.

12. Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

13. Dispose of used supplies per facility policy.

14. Remove gloves.

15. Perform hand hygiene.

16. Documentation in the medical record includes, but is not limited to:
    i. Date and time
    j. Medication/solution
    k. Rate and method of administration
    l. Site assessment
    m. Complications and interventions
    n. Patient response to procedure and/or medication
    o. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous Sotrovimab.

General Guidance

- Sotrovimab is a monoclonal antibody for the treatment of mild to moderate COVID-19

- Sotrovimab is an investigational therapy authorized by FDA for use under an Emergency Use Authorization (EUA) for the treatment of mild to moderate coronavirus disease 2019 (COVID-19) in adults and pediatric patients (12 years of age and older weighing at least 40 kg) with positive results of direct SARS-CoV-2 viral testing, and who are at **high risk** (defined below) for progressing to severe COVID-19, including hospitalization or death

- High risk is defined as patients who meet **at least one** of the following criteria:

    a. Have a body mass index (BMI) ≥25
    b. Pregnancy
    c. Have chronic kidney disease
    d. Have diabetes
    e. Have immunosuppressive disease
    f. Are currently receiving immunosuppressive treatment
    g. Are ≥65 years of age
    h. Cardiovascular disease (including congenital heart disease) or hypertension
    i. Chronic lung diseases (for example, chronic obstructive pulmonary disease, asthma [moderate-to-severe], interstitial lung disease, cystic fibrosis and pulmonary hypertension)
    j. Sickle cell disease
    k. Neurodevelopmental disorders (for example, cerebral palsy) or other conditions that confer medical complexity (for example, genetic or metabolic syndromes and severe congenital anomalies)
    l. Having a medical-related technological dependence (for example, tracheostomy, gastrostomy, or positive pressure ventilation [not related to COVID 19])

- Sotrovimab is **not** authorized for use in patients:
    a. who are hospitalized due to COVID-19, OR
    b. who require oxygen therapy due to COVID-19, OR
    c. who require an increase in baseline oxygen flow rate due to COVID-19 (in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity).

- The prescribing health care provider and/or the provider's designee are/is responsible for mandatory reporting of all medication errors and adverse events (death, serious adverse events) potentially related to Sotrovimab treatment within 7 calendar days from the onset of the event. The reports should include unique identifiers and the words "Sotrovimab use for COVID-19 under Emergency Use Authorization (EUA)" in the description section of the report. Submit adverse event reports to FDA MedWatch using one of the following methods:

a. Complete and submit the report online: www.fda.gov/medwatch/report.htm
b. By using a postage-paid Form FDA 3500 (available at https://www.fda.gov/media/76299/download) and returning by mail (MedWatch, 5600 Fishers Lane, Rockville, MD 20852-9787), or by fax (1-800-FDA-0178)
c. Call 1-800-FDA-1088 to request a reporting form
    - In addition, please provide a copy of all FDA MedWatch forms to:
        - GlaxoSmithKline, Global Safety
            - Fax: 919-287-2902
            - E-mail: WW.GSKAEReportingUS@gsk.com
            - Or call the GSK COVID Contact Center at 1-866-GSK-COVID (866-475-2684) to report adverse events.
d. Submitted reports should include in the field name, “Describe Event, Problem, or Product Use/Medication Error” a statement “Sotrovimab use for COVID-19 under Emergency Use Authorization (EUA).”
e. Serious Adverse Events are defined as:
    - death
    - life-threatening adverse event
    - Inpatient hospitalization or prolongation of existing hospitalization
    - A persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions
    - A congenital anomaly/birth defect
    - A medical or surgical intervention to prevent death, a life-threatening event, hospitalization, disability, or congenital anomaly

- Sotrovimab is administered as an intravenous infusion. Infuse at a rate suggested per manufacturer’s guidelines. The dose must be administered as soon as possible after a positive COVID-19 test and within 10 days of symptom onset.
    a. Consider slower infusion rate for patients with CHF, chronic kidney disease, and Systemic Inflammatory Response Syndrome (SIRS)

- There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of Sotrovimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration, and initiate appropriate medications and/or supportive therapy.
    a. Anaphylaxis and infusion-related reaction orders must be obtained prior to administration
    b. Anaphylaxis kit/medications must be readily available

- Sotrovimab reconstituted bag or vials must be removed from the refrigerator approximately 15 minutes prior to administration to bring to room temperature. Do not expose to direct heat.

- Prior to removing from refrigerator, confirm the presence of a patent vascular access device

- Inspect the vial of Sotrovimab visually for particulate matter and discoloration prior to administration. Should either be observed, the solution must be discarded, and a fresh solution prepared. Sotrovimab is a clear, colorless, or yellow to brown solution.

- Do not freeze, shake or expose to direct light.

- Monitor patient during administration and for at least one-hour post administration. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

- Monitor vital signs:
    a. Prior to initiating infusion
    b. Every 15 minutes during infusion
    c. Every 15 minutes for 1-hour post infusion

- If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and supportive care per prescriber's orders. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

- Administration set with 0.2 or 0.22 micron in-line filter provided by the pharmacy must be used. Use of electronic infusion device (pump) for medication administration is preferred.

- No dosage adjustment is recommended based on age, sex, race, body weight, renal or mild hepatic impairment, during pregnancy or while lactating, or for disease severity or inflammation.

- Patients treated with Sotrovimab should continue to self-isolate and use infection control measures (e.g., wear mask, isolate, social distance, avoid sharing personal items, clean and disinfect "high touch" surfaces, and frequent handwashing) according to CDC guidelines.

- Precaution must be taken during administration of this medication as there are no preservatives or any bacteriostatic agents in the products.

- Patient with known hypersensitivity to any ingredient of Sotrovimab must not receive Sotrovimab.

- As the healthcare provider, communicate to your patient or parent/caregiver, as age appropriate, information consistent with the "Fact Sheet for Patients, Parents and Caregivers" prior to the patient receiving Sotrovimab. Healthcare providers (to the extent practicable given the circumstances of the emergency) must document in the patient's medical record that the patient/caregiver has been:
    a. Provided the "Fact Sheet for Patients, Parents and Caregivers"
    b. Informed of alternatives to receiving authorized Sotrovimab
    c. Informed that Sotrovimab is an unapproved drug that is authorized for use under this Emergency Use Authorization.

- Upon receipt of a physician's order for IV therapy, the nurse will complete the 'PharmScript Sotrovimab Prescriber Order' and fax to the pharmacy. Note: A bulk supply of this form can be requested from the pharmacy's medical records department.

- **For Intravenous Infusion:**

    a. Sotrovimab must be diluted and administered as a single intravenous infusion via pump or gravity.
    b. Clinically monitor patients during infusion and observe patients for at least 1 hour after infusion is complete.

Equipment for Intravenous Infusion

- Compounded medication bag
- 50-100 mL minibag of 0.9% sodium chloride for clearing medication from administration set
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device
- Administration set with 0.2 or 0.22-micron filter
- Gloves

Procedure for Intravenous Infusion

1. Verify physician/LIP order.

2. Assemble equipment and supplies on clean work surface.

3. Perform hand hygiene. Don clean gloves.

4. Establish vascular access, if needed.

5. Remove medication bag from refrigerator and allow to reach room temperature.

6. Administer using the administration set containing a 0.2 to 0.22-micron filter. Program infusion pump to the rate pursuant to prescriber's orders. Program in BASIC mode when using Sigma Spectrum infusion pump.

7. Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

8. If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

9. Upon completion of Sotrovimab infusion, replace empty medication bag with a 50 – 100 mL 0.9% Sodium Chloride minibag. This will be used to clear administration set of medication ensuring the complete dose has been administered. Administer 0.9% Sodium Chloride at same rate as infusion for a volume of 25 mL (reset the volume to be infused on the infusion pump at 25 mL). Continue infusion.

10. Upon completion of infusion, perform hand hygiene.

11. Don gloves.

12. Close the clamp and disconnect the administration set from needleless connector.

13. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

14. Dispose of used supplies per facility policy.

15. Remove gloves.

16. Perform hand hygiene.

17. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous Remdesivir COVID-19 therapy for outpatient use.

General Guidance

- Remdesivir is a SARS-CoV-2 nucleotide analog RNA polymerase inhibitor indicated for adults and pediatric patients (12 years of age and older and weighing at least 40 kg) for the treatment of coronavirus disease 2019 (COVID-19) requiring hospitalization. Remdesivir should only be administered in a hospital or in a healthcare setting capable of providing acute care comparable to inpatient hospital care.

- The recommended dosage for adults and pediatric patients 12 years of age and older and weighing at least 40 kg is a single loading dose of Remdesivir 200 mg on Day 1 via intravenous infusion followed by Remdesivir 100 mg IV daily on Days 2 and 3, initiated as soon as possible and within 7 days of symptom onset.

- Remdesivir is not recommended in patients with eGFR less than 30 mL per minute. Determine eGFR in all patients before starting Remdesivir and monitor while receiving Remdesivir.

- There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of Remdesivir. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration, and initiate appropriate medications and/or supportive therapy.
    a. Anaphylaxis and infusion-related reaction orders must be obtained prior to administration
    b. Anaphylaxis kit/medications must be readily available

- Remdesivir reconstituted bag or vials must be removed from the refrigerator approximately 20 minutes prior to administration to bring to room temperature. Do not expose to direct heat.

- Prior to removing from refrigerator, confirm the presence of a patent vascular access device

- Inspect for particulate matter and discoloration. Solution is slightly opalescent and colorless to slightly yellow. Do not use if particulate matter identified.

- Do not freeze, shake or expose to direct light.

- Remdesivir should be administered in a setting where management of severe hypersensitivity reactions, such as anaphylaxis, is possible. Patients should be monitored during the infusion and observed for at least 1 hour after the infusion. Signs and symptoms may include hypotension, hypertension, tachycardia, bradycardia, hypoxia, fever, dyspnea, wheezing, angioedema, rash, nausea, diaphoresis, and shivering. Slower infusion rates, with a maximum infusion time of up to 120 minutes, can be considered to potentially prevent these signs and symptoms.

- Monitor vital signs:
    a. Prior to initiating infusion

b. Every 15 minutes during infusion
c. Every 15 minutes for 1-hour post infusion

- If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and supportive care per prescriber's orders. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

- Patient with known hypersensitivity to any ingredient of Remdesivir must not receive Remdesivir.

- Upon receipt of a physician's order for IV therapy, the nurse will complete the 'PharmScript Remdesivir Prescriber Order' and fax to the pharmacy. Note: A bulk supply of this form can be requested from the pharmacy's medical records department.

- Transaminase elevations have also been reported in patients with COVID-19 who received Remdesivir. Perform hepatic laboratory testing in all patients before starting Remdesivir and while receiving Remdesivir. Consider discontinuing Remdesivir if ALT levels increase to greater than 10 times the upper limit of normal. Discontinue Remdesivir if ALT elevation is accompanied by signs or symptoms of liver inflammation.

- Prothrombin time increased in patients receiving Remdesivir. Determine prothrombin time in all patients before starting Remdesivir and monitor while receiving Remdesivir.

Equipment for Intravenous Infusion

- Compounded medication bag
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device/Administration set or flow rate regulated administration set
- Gloves

Procedure for Intravenous Infusion

1. Verify physician/LIP order.

2. Assemble equipment and supplies on clean work surface.

3. Perform hand hygiene. Don clean gloves.

4. Establish vascular access, if needed.

5. Remove medication bag from refrigerator and allow to reach room temperature.

6. Administer using the pump administration set or a flow rate regulated administration set. Program infusion pump to the rate pursuant to prescriber's orders. Program in BASIC mode when using Sigma Spectrum infusion pump.

7. Do not administer the prepared diluted solution simultaneously with any other medication. The compatibility of Remdesivir injection with intravenous solutions and medications other than 0.9%

sodium chloride injection, USP is not known. Administer Remdesivir via intravenous infusion over **30 to 120 minutes.**

Recommended Rate of Infusion—Diluted Remdesivir for Injection Lyophilized Powder in Adults and Pediatric Patients 12 Years of Age and Older and Weighing at Least 40 kg		
Infusion bag volume	**Infusion time**	**Rate of infusion**
250 ml	30 min	8.33 mL/min (500ml/hr)
	60 min	4.17 mL/min (250ml/hr)
	120 min	2.08 mL/min (125ml/hr)
100 ml	30 min	3.33 mL/min (200ml/hr)
	60 min	1.67 mL/min (100ml/hr)
	120 min	0.83 mL/min (50ml.hr)

8. Monitor patient during administration and for at least one-hour post infusion. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

9. If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care. Stop infusion for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

10. Upon completion of infusion, perform hand hygiene.

11. Don gloves.

12. Close the clamp and disconnect the administration set from needleless connector.

13. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

14. Dispose of used supplies per facility policy.

15. Remove gloves.

16. Perform hand hygiene.

17. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous Bebtelovimab.

General Guidance

- Bebtelovimab is a monoclonal antibody for the treatment of mild to moderate COVID-19

- The U.S. Food and Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) for the emergency use of Bebtelovimab for the treatment of mild-to-moderate coronavirus disease 2019 (COVID-19) in adults and pediatric patients (12 years of age and older weighing at least 40 kg):
    a. with positive results of direct SARS-CoV-2 viral testing, **and**
    b. who are at high risk (defined below) for progression to severe COVID-19, including hospitalization or death, **and**
    c. for whom alternative COVID-19 treatment options approved or authorized by FDA are not accessible or clinically appropriate

- High risk is defined as patients who meet **at least one** of the following criteria:

    a. Have a body mass index (BMI) ≥25
    b. Pregnancy
    c. Have chronic kidney disease
    d. Have diabetes
    e. Have immunosuppressive disease
    f. Are currently receiving immunosuppressive treatment
    g. Are ≥65 years of age
    h. Cardiovascular disease (including congenital heart disease) or hypertension
    i. Chronic lung diseases (for example, chronic obstructive pulmonary disease, asthma [moderate-to-severe], interstitial lung disease, cystic fibrosis and pulmonary hypertension)
    j. Sickle cell disease
    k. Neurodevelopmental disorders (for example, cerebral palsy) or other conditions that confer medical complexity (for example, genetic or metabolic syndromes and severe congenital anomalies)
    l. Having a medical-related technological dependence (for example, tracheostomy, gastrostomy, or positive pressure ventilation [not related to COVID 19])

- Bebtelovimab is **not** authorized for use in patients:
    a. who are hospitalized due to COVID-19, OR
    b. who require oxygen therapy due to COVID-19, OR
    c. who require an increase in baseline oxygen flow rate and/or respiratory support due to COVID-19 and are on chronic oxygen therapy and/or respiratory support due to underlying non-COVID-19 related comorbidity

- The prescribing healthcare provider and/or the provider's designee is/are responsible for mandatory reporting of all serious adverse events (defined below) and medication errors potentially related to Bebtelovimab within 7 calendar days from the healthcare provider's awareness of the event, using FDA Form 3500 (for information on how to access this form, see below). The FDA requires that such reports, using FDA Form 3500, include the following:
    - Patient demographics and baseline characteristics (e.g., patient identifier, age or date of birth, gender, weight, ethnicity, and race)
    - A statement "Bebtelovimab use for COVID-19 under Emergency Use Authorization (EUA)" under the "Describe Event, Problem, or Product Use/Medication Error" heading
    - Information about the serious adverse event or medication error (e.g., signs and symptoms, test/laboratory data, complications, timing of drug initiation in relation to the occurrence of the event, duration of the event, treatments required to mitigate the event, evidence of event improvement/disappearance after stopping or reducing the dosage, evidence of event reappearance after reintroduction, clinical outcomes).
    - Patient's preexisting medical conditions and use of concomitant products
    - Information about the product (e.g., dosage, route of administration, NDC #).
- Submit adverse event and medication error reports, using Form 3500, to FDA MedWatch using one of the following methods:
    - Complete and submit the report online: www.fda.gov/medwatch/report.htm
    - Complete and submit a postage-paid FDA Form 3500 (https://www.fda.gov/media/76299/download) and return by:
        - Mail to MedWatch, 5600 Fishers Lane, Rockville, MD 20852-9787, or
        - Fax to 1-800-FDA-0178, or
    - Call 1-800-FDA-1088 to request a reporting form
- In addition, please provide a copy of all FDA MedWatch forms to:
    - Eli Lilly and Company, Global Patient Safety
    - Fax: 1-317-277-0853
    - E-mail: mailindata_gsmtindy@lilly.com
    - Or call Eli Lilly and Company at 1-855-LillyC19 (1-855-545-5921) to report adverse events.
- The prescribing health care provider and/or the provider's designee is/are responsible for mandatory responses to requests from FDA for information about adverse events and medication errors following receipt of Bebtelovimab.
- Serious adverse events are defined as:
    - Death;
    - A life-threatening adverse event;
    - Inpatient hospitalization or prolongation of existing hospitalization;
    - A persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions;
    - A congenital anomaly/birth defect;
    - Other important medical event, which may require a medical or surgical intervention to prevent death, a life-threatening event, hospitalization, disability, or congenital anomaly.

- The dosage in adults (18 years and older) and pediatric patients (≥12 years of age and weighing at least 40 kg) is Bebtelovimab 175 mg. Administer Bebtelovimab as soon as possible after positive results of direct SARS-CoV-2 viral testing and within 7 days of symptom onset.

Bebtelovimab must be administered as a single intravenous push injection over at least 30 seconds.

- There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of Bebtelovimab. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration, and initiate appropriate medications and/or supportive therapy.
    a. Anaphylaxis and infusion-related reaction orders must be obtained prior to administration
    b. Anaphylaxis kit/medications must be readily available

- Prior to removing from refrigerator, confirm the presence of a patent vascular access device

- Monitor patient during administration and for at least **one-hour** post administration. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

- Monitor vital signs:
    a. Prior to initiating infusion
    b. Every 15 minutes during infusion
    c. Every 15 minutes for 1-hour post infusion

- No dosage adjustment is recommended based on age, sex, race, body weight, renal or mild hepatic impairment, during pregnancy or while lactating, or for disease severity or inflammation.

- Patients treated with Bebtelovimab should continue to self-isolate and use infection control measures (e.g., wear mask, isolate, social distance, avoid sharing personal items, clean and disinfect “high touch” surfaces, and frequent handwashing) according to CDC guidelines.

- Precaution must be taken during administration of this medication as there are no preservatives or any bacteriostatic agents in the products.

- Patient with known hypersensitivity to any ingredient of Bebtelovimab must not receive Bebtelovimab.

- As the healthcare provider, communicate to your patient or parent/caregiver, as age appropriate, information consistent with the “Fact Sheet for Patients, Parents and Caregivers” prior to the patient receiving Bebtelovimab. Healthcare providers (to the extent practicable given the circumstances of the emergency) must document in the patient’s medical record that the patient/caregiver has been:
    a. Provided the “Fact Sheet for Patients, Parents and Caregivers”
    b. Informed of alternatives to receiving authorized Bebtelovimab
    c. Informed that Bebtelovimab is an unapproved drug that is authorized for use under this Emergency Use Authorization.

- Upon receipt of a physician's order for IV therapy, the nurse will complete the 'PharmScript Bebtelovimab Prescriber Order' and fax to the pharmacy. Note: A bulk supply of this form can be requested from the pharmacy's medical records department.

Equipment for Intravenous Injection

- 1 Bebtelovimab vial (175 mg/2 mL)
- Alcohol pads
- 1 Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe (0.9% Sodium Chloride flush syringe),
- 1 disposable polypropylene dosing syringe capable of holding 2 mL
- 1 polycarbonate and polyvinylchloride without di-ethylhexylphthalate (DEHP) syringe extension set
- Gloves

Procedure for Intravenous Infusion

1. Verify physician/LIP order.
2. Assemble equipment and supplies on clean work surface.
3. Perform hand hygiene. Don clean gloves.
4. Establish vascular access, if needed.
5. Remove Bebtelovimab vial from refrigerated storage and allow to equilibrate to room temperature for approximately 20 minutes before preparation. Do not expose to direct heat. Do not shake vial. Inspect the vial.
6. Withdraw 2 mL from the vial into the disposable syringe.
7. Discard any product remaining in the vial.
8. This product is preservative-free and therefore, should be administered immediately.
    a. If immediate administration is not possible, store the syringe for up to 24 hours at refrigerated temperature (2°C to 8°C [36°F to 46°F]) and up to 7 hours at room temperature (20°C to 25°C [68°F to 77°F]). If refrigerated, allow the prepared syringe to equilibrate to room temperature for approximately 20 minutes prior to administration.
9. Attach the syringe extension set.
10. Prime the extension set.
11. Administer the entire contents of the syringe via IV injection over at least 30 seconds.
12. After the entire contents of the syringe have been administered, **flush the extension set** with 0.9% Sodium Chloride to ensure delivery of the required dose.

13. Monitor patient during administration and for at least one-hour post administration. Signs and symptoms of infusion related reactions may include fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticarial, pruritus, myalgia, and dizziness.

14. If an administration-related reaction occurs, consider stopping the administration and provide appropriate medications and/or supportive care. Stop administration for signs and symptoms of clinically significant hypersensitivity reaction or if anaphylaxis occurs.

15. Upon completion of infusion, perform hand hygiene.

16. Don gloves.

17. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

18. Dispose of used supplies per facility policy.

19. Remove gloves.

20. Perform hand hygiene.

21. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous Vancomycin.

General Guidance

- Vancomycin therapy is used to treat suspected susceptible organisms based on lab cultures and sensitivities. Vancomycin is used to treat many gram-positive bacteria but is generally saved for bacteria that is resistant to other treatments such as MRSA (methicillin-sensitive Staphylococcus aureus and various susceptible strains of methicillin-resistant Staphylococcus aureus).

- Vancomycin has shown to be safe when infused by slow intermittent infusion and when the drug levels and renal function of the patient are well monitored. Intramuscular injection and tissue extravasation should be avoided as vancomycin can cause irritation and tissue necrosis. The Intravenous Nurses Society Standards of Practice recommends the medication to be infused by central intravenous access over peripheral access unless the clinical status of the patient warrants peripheral administration due to the low pH (acidity) of the medication. Slow administration of vancomycin is required to prevent a flush reaction in the patient, also known as “Red Man’s Syndrome.”

- Sterile Vancomycin will be provided upon receipt of a valid order signed by the prescriber or authorized by the prescriber or the agent of the physician. Pharmacists will assist in selecting proper doses of vancomycin but may not dispense without a new valid order for each dose change.

- PharmScript will monitor the appropriateness of the vancomycin dose as it relates to patient’s clinical status, vancomycin levels, BUN and creatinine at each IV vancomycin dispensing. This will ensure all doses are tailored specifically for the patient prior to dispensing.

- The facility will be responsible to provide clinical information related to the patient’s therapy if the information is not readily available to PharmScript. Patient diagnosis (reason for vancomycin order), height, weight, age and serum creatinine allow the pharmacist to estimate the proper IV vancomycin dose. On-going monitoring of serum creatinine levels, BUN and vancomycin trough levels minimize adverse reactions associated with this therapy. Facility personnel shall assist the pharmacist by providing serum creatinine levels, BUN, and any reported vancomycin trough levels when ordering this medication.

- After receipt of clinical information, a new order may be suggested by the pharmacist or medication will be filled as requested. PharmScript will occasionally ship fewer days than expected, possibly one day or one dose at a time, if lab results are not obtained out of concern for patient safety and medication efficacy. If requests for clinical information have gone unanswered, facility leadership will be contacted, and dispensing may be put on hold based on the pharmacists’ clinical judgement.

- Vancomycin shall NOT be administered IV push. This medication must be administered via

patent IV access and should be administered via a rate-regulated IV administration set, an electronic pump or an elastomeric device.

- Proper dilution and rates of administration of vancomycin shall be at the discretion of the prescriber and may be suggested by the pharmacist. Standard dilutions and administration rates should be based on the vancomycin dose should the patient clinical status permits.

- Vancomycin trough levels and serum creatinine levels should be obtained 30 minutes before the 4th or 5th dose upon the initiation of vancomycin therapy. Once the vancomycin levels reach steady state, less frequent lab values may be obtained (usually once a week). The pharmacists should work in conjunction with the prescriber to determine the frequency of lab draws depending on the patient's clinical status.

Equipment for Intravenous Infusion

- Compounded medication bag
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device
- Administration set
- Gloves

Procedure for Intravenous Infusion

1. Verify physician/LIP order.
2. Assemble equipment and supplies on clean work surface.
3. Perform hand hygiene. Don clean gloves.
4. Establish vascular access, if needed.
5. Remove medication bag from refrigerator and allow to reach room temperature.
6. Follow IV flush protocol pursuant to Appendix B: IV Line Access Chart.
7. Administer vancomycin using a flow rate regulated set, administration set or an elastomeric device. If using an electronic infusion device, program the infusion pump to the rate pursuant to prescriber's orders.
8. To reduce the likelihood of untoward effects of intravenous vancomycin therapy, patients should be monitored during the administration of the medication. Signs and symptoms include warm, flush, moist or cold skin, patients feeling hot or cold, rigors and headache to name a few. Studies have shown that by reducing the rate of the administration, adverse effects may be reduced or eliminated.
9. Upon completion of infusion, perform hand hygiene.
10. Don gloves.

11. Close the clamp and disconnect the administration set from needleless connector.

12. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

13. Dispose of used supplies per facility policy.

14. Remove gloves.

15. Perform hand hygiene.

16. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous aminoglycoside therapy (i.e., Gentamicin, Amikacin & Tobramycin).

General Guidance

- Aminoglycoside therapy is used to treat suspected susceptible organisms based on lab cultures and sensitivities. Aminoglycosides are used to treat many gram-positive bacteria but is generally saved for bacteria that is resistant to other treatments such as MRSA (methicillin-sensitive Staphylococcus aureus and various susceptible strains of methicillin-resistant Staphylococcus aureus).

- Sterile aminoglycoside therapies will be provided upon receipt of a valid order signed by the prescriber or authorized by the prescriber or the agent of the physician. Pharmacists will assist in selecting proper doses of aminoglycoside therapies but may not dispense without a new valid order for each dose change.

- PharmScript will monitor the appropriateness of the aminoglycoside therapy dose as it relates to patient's clinical status, Aminoglycoside levels, BUN and creatinine at each IV aminoglycoside therapy dispensing. This will ensure all doses are tailored specifically for the patient prior to dispensing.

- The facility will be responsible to provide clinical information related to the patient's therapy if the information is not readily available to PharmScript. Patient diagnosis (reason for aminoglycoside therapy order), height, weight, age and serum creatinine allow the pharmacist to estimate the proper IV aminoglycoside therapy dose. On-going monitoring of serum creatinine levels, BUN and aminoglycoside therapy trough and peak levels minimize adverse reactions associated with this therapy. Facility personnel shall assist the pharmacist by providing serum creatinine levels, BUN, and any reported aminoglycoside therapy trough/peak levels when ordering this medication.

- After receipt of clinical information, a new order may be suggested by the pharmacist or medication will be filled as requested. PharmScript will occasionally ship fewer days than expected, possibly one day or one dose at a time, if lab results are not obtained out of concern for patient safety and medication efficacy. If requests for clinical information have gone unanswered, facility leadership will be contacted, and dispensing may be put on hold based on the pharmacists' clinical judgement.

- Aminoglycoside therapies shall NOT be administered IV push. This medication must be administered via patent IV access and should be administered via a rate-regulated IV administration set, an electronic pump or an elastomeric device.

- Proper dilution and rates of administration of Aminoglycoside therapies shall be at the discretion of the prescriber and may be suggested by the pharmacist. Standard dilutions and administration

rates should be based on the Aminoglycoside therapy dose should the patient clinical status permits

- Facility nurse should not administer more than 4 or 5 doses upon the initiation of aminoglycoside therapy without obtaining lab draws. Once the aminoglycoside levels reach steady state, less frequent lab values may be obtained (usually once a week). The pharmacists should work in conjunction with the prescriber to determine the frequency of lab draws depending on the patient's clinical status.

Equipment for Intravenous Infusion

- Compounded medication bag
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device
- Administration set
- Gloves

Procedure for Intravenous Infusion

1. Verify physician/LIP order.
2. Assemble equipment and supplies on clean work surface.
3. Perform hand hygiene. Don clean gloves.
4. Establish vascular access, if needed.
5. Remove medication bag from refrigerator and allow to reach room temperature.
6. Follow IV flush protocol pursuant to Appendix B: IV Line Access Chart.
7. Administer aminoglycoside therapy using a flow rate regulated set, administration set or an elastomeric device. If using an electronic infusion device, program the infusion pump to the rate pursuant to prescriber's orders.
8. To reduce the likelihood of untoward effects of intravenous Aminoglycoside therapy, patients should be monitored during the administration of the medication. Signs and symptoms include warm, flush, moist or cold skin, patients feeling hot or cold, rigors and headache to name a few. Studies have shown that by reducing the rate of the administration, adverse effects may be reduced or eliminated.
9. Upon completion of infusion, perform hand hygiene.
10. Don gloves.
11. Close the clamp and disconnect the administration set from needleless connector.
12. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

13. Dispose of used supplies per facility policy.

14. Remove gloves.

15. Perform hand hygiene.

16. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Purpose

To provide guidance to a licensed nurse on the administration of intravenous acetaminophen therapy.

General Guidance

- Acetaminophen intravenous therapy is indicated for various labeled use such as fever, mild to severe pain, headache, myalgia, musculoskeletal pain, dental pain, dysmenorrhea, arthralgia.

- Intravenous Acetaminophen therapy will be provided upon receipt of a valid order signed by the prescriber or authorized by the prescriber or the agent of the physician.

- Acetaminophen shall NOT be administered IV push. This medication must only be administered via patent IV access and should be administered via a vented rate-regulated IV administration set, an electronic pump or an elastomeric device.

- No further dilution of acetaminophen injectable solution is required. Do not add other medications to the vial or infusion device.

Equipment for Intravenous Infusion

- Medical vials
- Alcohol pads
- Prescribed flushing/locking agent(s) in 10 mL barrel diameter or larger syringe, if appropriate
- Electronic infusion device if applicable
- Administration set or flow rate regulated set
- Gloves

Procedure for Intravenous Infusion

1. Verify physician/LIP order.

2. Assemble equipment and supplies on clean work surface.

3. Perform hand hygiene. Don clean gloves.

4. Establish vascular access, if needed.

5. Follow IV flush protocol pursuant to Appendix B: IV Line Access Chart.

6. Administer via a **vented** flow rate regulated set or a **vented** pump administration set if infusing directly from the glass vial (Note: No further dilution of the content of glass vial is needed and the medication shall be directly infused from the vial). Administer via a **non-vented** flow rate regulated set or a **non-vented** pump administration set if infusing from an IV bag (Note: if the flow rate regulated set has an integral vent valve, please close the vent valve, as venting the

medication from a bag is not recommended). If using an electronic infusion pump, program the infusion pump to the rate pursuant to prescriber's orders.

7. To reduce the likelihood of untoward effects of intravenous acetaminophen therapy, patients should have their serum creatinine and LFT levels monitored as per prescriber's discretion or at a minimum of once a week, whichever comes sooner.

8. Upon completion of infusion, perform hand hygiene.

9. Don gloves.

10. Close the clamp and disconnect the administration set from needleless connector.

11. Perform a vigorous mechanical scrub to manually disinfect the needleless connector. Allow to air dry. Follow with prescribed flushing/locking solution, if vascular access device is to remain intact.

12. Dispose of used supplies per facility policy.

13. Remove gloves.

14. Perform hand hygiene.

15. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing/locking agent(s), if applicable
    e. Site assessment
    f. Complications and interventions
    g. Patient response to procedure and/or medication
    h. Patient/significant other teaching

Purpose

To provide guidance regarding specific intervals administration sets and tubing will be changed in order to prevent infections associated with IV therapy equipment.

General Guidance

1. Manage all IV equipment, including administration sets, using aseptic technique and observing standard precautions.
2. Always perform hand hygiene and apply non-sterile gloves while working with IV equipment.
3. The schedule for changing the administration set is determined by the type of solution that is being administered (see below).
4. Assess all equipment for sterility and product integrity when opening packaging.
5. Change devices that are added to tubing such as extension sets, filters, stopcocks, end caps, or any other devices when tubing is changed. Use only needleless equipment.
6. Label all tubing with start and change date and time. Change and then label accordingly any tubing that is observed not to have a label.
7. Apply a sterile end cap to the end of primary tubing when it is disconnected from the catheter. Discard the sterile end cap when tubing is reconnected to catheter.
8. IV fluid bags shall be changed every 24 hours.
9. Label IV tubing indicating the date and time started and nurse's initials.

I. Primary and secondary <u>continuous</u> administration sets:

1. Change every 96 hours (at a minimum), whenever suspected contamination has occurred or per facility policy.

2. Change administration sets used for infusing lipids every 24 hours.

3. Change administration sets used for infusing blood or blood products every 4 hours and with every new bag.

4. Change primary set if a new catheter is placed.

5. 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).

II. Primary or secondary <u>intermittent</u> administration sets:

1. Change every 24 hours, whenever suspected contamination of tubing or catheter has occurred or per facility policy.

2. If a blunt cannula is used to access a needleless connection device, the cannula should be removed immediately after each use, and a new blunt cannula should be aseptically attached.

3. A sterile end cap must be placed on the end of the intermittent tubing in between administrations. The sterile end cap must be discarded when the tubing is reattached to the catheter.

Purpose

To provide guidance regarding mixing additives into an IV solution.

General Guidance

1. Verify with State Nurse Practice Act regarding RN/LPN scope of practice for this procedure.
2. Most admixtures can be done using needleless system bags with attached medications. These are mixed just before administering the medication.
3. Use appropriate diluent when preparing medication.
4. Consult Pharmacist or pharmacy information books when unfamiliar with the medication or mixing the medication. This includes diluent and dosage of medication to be given to resident.
5. See Appendix C for IV Admixture and Administration Guidelines Chart
6. All sterile admixtures mixed at the nursing facility must have the administration to the patient initiated within 1 hour of mixing.

Procedure: Conventional Admixture Method

1. Examine labels on medication and solution for accuracy and expiration dates. Also read the manufacturers accompanying instructions.
2. Calculate dosage as ordered, if necessary.
3. Wash hands. Open and prepare supplies on clean work surfaces.
4. Observe integrity of contents of vial / ampule. Do not use if container is cracked or appears damaged.
5. Cleanse rubber stopper of vial or neck of ampule with an alcohol swab.
6. When breaking an ampule, protect gloved hand by wrapping the neck of ampule with a 2x2 gauze and break ampule away from you.
7. Reconstitute medication in powdered form with diluent as per manufacturer's instructions and mix well to ensure that medication is well reconstituted.
8. Withdraw desired volume of medication as prescribed by physician and use a filter needle/straw attached to syringe to withdraw the medication from an ampule.
9. Remove the filter needle/straw and apply a standard needle to the syringe before injecting medication into IV bag.
10. Using an alcohol swab, wipe the injection port on the IV solution bag, inject needle in center of port, and inject medication.

11. Gently roll the solution container to ensure the thorough mixture of additives.

12. The admixture must be labeled with:
    a. name, dose, route of medication;
    b. resident's name, room number;
    c. name of person who prepared medication; and
    d. date and time when medication was mixed.

13. Any remaining medication, syringes, and needles must be disposed of in appropriate disposal container.

14. As per the physician's order, the medication will be administered within a specified time and properly documented on the resident's medication administration record.

Procedure: Baxter Vial-Mate Adaptor System (May also refer to Appendix E)

1. Inspect the medication label for accuracy and verify the expiration date.

2. Wash hands, remove vial cover, and cleanse rubber stopper with alcohol swab.

3. Remove foil cover, and firmly hold vial in upright position.

4. Push adapter down until vial snaps in place. DO NOT TWIST.

5. Pull vial to ensure that it is fully engaged.

6. Disinfect the medication port on the mini bag with an alcohol swab and connect bag.

7. Align the grooves on the white and blue ends of the vial mate adaptor and firmly push together.

8. Holding the bag with the vial down, squeeze the solution into the vial until half full.

9. Gently shake to dissolve the medication into the solution.

10. Hold the bag with the vial upside down and squeeze the bag to force air into the vial.

11. Release to drain the dissolved drug from vial.

12. Repeat steps 8-11 until vial is empty of drug and solution is thoroughly mixed. Ensure drug is completely dissolved. Do not remove drug vial. Remove port protector and attach administration tubing.

13. The admixture must be labeled with:
    a. name, dose, route of medication;
    b. resident's name, room number;
    c. name of person who prepared medication; and
    d. date and time when medication was mixed.

14. Prime the IV tubing after hanging the container on an IV pole ensuring that the vial is completely empty of medication and solution.

15. As per physician's order, the medication will be administered within specified time and properly documented on the resident's medication administration record.

Procedure: Baxter Mini-Bag Plus Container System (May also refer to Appendix E)

1. Inspect the medication label for accuracy and verify the expiration date.

2. Wash hands, remove vial cover, and cleanse rubber stopper with alcohol swab.

3. Remove vial cover. Disinfect stopper.

4. Peel off foil cover on Mini-Bag. Inspect adaptor for moisture. Discard if moisture noted.

5. Place vial upright. Hold firmly. Push adapter down until vial snaps into place. DO NOT TWIST. Pull vial to ensure fully seated.

6. Squeeze bag and check vial. Use only if fully seated and dry. Bend up then down to break seal.

7. Hold bag down with vial down. Squeeze solution into vial until half full. Shake to suspend drug in solution.

8. Hold bag with vial upside down. Squeeze bag to force air into vial. Release to drain suspended drug from vial

9. Repeat steps 7 and 8 until vial is empty of drug and solution is thoroughly mixed. Ensure drug is completely dissolved. DO NOT REMOVE DRUG VIAL FROM ADAPTOR.

10. The admixture must be labeled with:
    a. name, dose, route of medication;
    b. resident's name, room number;
    c. name of person who prepared medication; and
    d. date and time when medication was mixed.

11. Prime the IV tubing after hanging the container on an IV pole ensuring that the vial is completely empty of medication and solution.

12. As per physician's order, the medication will be administered within specified time and properly documented on the resident's medication administration record.

Procedure: Hospira ADD-Vantage System (May also refer to Appendix E)

1. Remove protective covers from the top of the vial and the vial port on the diluent container as follows.
    a. To remove breakaway vial cap, swing the pull ring over the top of the vial and pull down far enough to start the opening, then pull straight up to remove the cap
    b. To remove vial port cover, grasp the tab on the pull ring, pull up to break the three tie strings, then pull back to remove the cover.

2. Screw the vial into the vial port until it will go no further. THE VIAL MUST BE SCREWED IN TIGHTLY TO ASSURE A SEAL. This occurs approximately ½ turn (180 degrees) after the first audible click. The clicking sound does not assure a seal; the vial must be turned as far as it will go.

3. Recheck the vial to assure that it is tight by trying to turn it further in the direction of assembly.

4. Squeeze the bottom of the diluent bag container gently to inflate the portion of the container surrounding the end of the drug vial.

5. With the other hand, push the drug vial down into the container telescoping the walls of the container. Grasp the inner cap of the vial through the walls of the container

6. Pull the inner cap from the drug vial. Verify that the rubber stopper has been pulled out, allowing the drug and diluent to mix

7. Mix container contents and use within specified time

8. Look through the bottom of the vial to verify that the stopper has been removed and a complete mixing has occurred.
    a. If rubber stopper is not removed from the vial and medication is not released on the first attempt, the inner cap may be manipulated back into the rubber stopper without removing the drug vial from the diluent container.

9. Repeat steps 6 through 8

10. The admixture must be labeled with:
    a. name, dose, route of medication;
    b. resident's name, room number;
    c. name of person who prepared medication; and
    d. date and time when medication was mixed.

11. Prime the IV tubing after hanging the container on an IV pole ensuring that the vial is completely empty of medication and solution

12. As per physician's order, the medication will be administered within specified time and properly documented on the resident's medication administration record.

Purpose

To provide the administering nurse, medication examination guidance prior to infusing the intravenous medication.

General Guidance

1. All IV medications and supplies must be examined for any obvious defects (i.e. cracks). Any defective products are to be returned to PharmScript for quality control.

2. Products that require refrigeration should be removed 30 minutes (at a minimum) prior to administration. Fluid should be administered at room temperature.

3. The labeled solution should match the infusion order from the physician and be examined prior to administration. If clarification of physician's order is necessary, contact the physician and/or PharmScript. The following should be checked:

a. Medication name
b. Dose
c. Frequency
d. Volume
e. Type of solution
f. Expiration date of diluent as well as expiration date on prepared medication label
g. Resident's name, room number, date on label
h. Administration time and infusion rate

5. Closely examine the solution.

a. If the solution is abnormally discolored or cloudy or contains floating particles, immediately contact the pharmacist to review characteristics of solution to determine if it is safe to administer.
b. Also examine the container for any cracks, leaks, or chips. If present, do not administer and return to PharmScript for quality control.

Purpose

To provide guidance and procedures for intermittent infusion administration.

General Guidance

1. A physician order is required for an intermittent infusion.
2. Venous access devices are to be flushed as ordered. Refer to Appendix B for additional information.
3. Administration sets used for intermittent therapy will be changed every 24 hours or per facility policy.
4. Administration sets used for more than one dose in a 24-hour period will have a new sterile end cap placed on the end of the administration set upon completion of each dose.
5. The practice of attaching the exposed end of the administration set to an injection port on the same set ("looping") should be avoided.

Procedure

1. Bring medication to room temperature by removing it from the refrigerator 30 minutes before administering

2. Verify physician order.

3. Identify the resident using appropriate identifiers.

4. Explain procedure to the resident.

5. Wash hands.

6. Assemble equipment and supplies on a clean work surface.

7. Apply gloves. Assess venous access site.

8. Inspect the new medication solution container for:
   a. Leaks
   b. Clarity and color
   c. Precipitants
   d. Beyond Use Date

Do not use if the container is leaking, the solution is discolored, cloudy, particles are noted in solution, or the container is expired. Notify the pharmacy immediately.

9. Using aseptic technique, remove the administration set from the packaging and assess integrity, ensuring protective coverings are on both ends.

10. Close the clamp on administration set.

11. Using aseptic technique, remove the protective cover from administration set spike and insert spike into solution container access port.

12. Squeeze the drip chamber 1/3 full. Open the roller clamp.

13. Hang medication/solution container on the IV pole.

14. Prime medication/solution through entire administration set purging air. Close clamp.

15. Program electronic infusion device (if used). Insert administration set per manufacturer's instructions. If manual flow-control device is used, set to desired administration rate.

16. Vigorously cleanse the needleless connector with alcohol. Allow to air dry.

17. Maintaining asepsis, attached flush syringe to needleless connector. Verify venous access patency. Flush with prescribed flushing agent (Refer to Appendix B for additional information). Remove syringe.

18. Vigorously cleanse the needleless connector with alcohol. Allow to air dry. Attach administration set to needless connector.

19. Open clamp and begin infusion.

20. Verify that the solution is infusing at the prescribed rate.

21. Secure administration set to the resident.

22. Assess venous access site per facility policy.

23. Dispose of used supplies per facility policy.

24. Remove gloves.

25. Wash hands.

26. Label medication/solution container and administration set with:
    a. Date and time
    b. Nurse's initials

When infusion is completed:
1. Wash hands

2. Apply gloves.

3. Close the clamp and disconnect the administration set from needleless connector.

4. Place the sterile end cap on end of administration set (if set is to be used again within the next 24 hours).

5. Vigorously cleanse needless connector with alcohol. Allow to air dry. Flush venous access device with prescribed flushing agent (Refer to Appendix B for additional information), to maintain patency between intermittent infusions.

6. Dispose of supplies per facility policy.

7. Remove gloves.

8. Wash hands.

9. Documentation in the medical record includes, but is not limited to:
   a. Date and time
   b. Medication/solution
   c. Rate and method of infusion
   d. Prescribed flushing agent(s)
   e. Site assessment
   f. Complications and interventions
   g. Resident response to procedure and/or medication

Purpose

To provide guidance and procedures for continuous infusion administration.

General Guidance

1. A physician order is required for a continuous infusion.
2. Venous access devices are to be flushed as ordered. Refer to Appendix B for additional information.
3. Administration set should be changed every 96 hours or per facility policy.
4. Administration sets used for more than one dose in a 24-hour period will have a new sterile end cap placed on the end of the administration set upon completion of each dose.
5. The practice of attaching the exposed end of the administration set to an injection port on the same set ("looping") should be avoided.

Procedure

1. Bring medication to room temperature by removing it from the refrigerator 30 minutes before administering

2. Verify physician order.

3. Identify the resident using appropriate identifiers.

4. Explain procedure to the resident.

5. Wash hands.

6. Assemble equipment and supplies on a clean work surface.

7. Apply gloves. Assess venous access site.

8. Inspect the new medication solution container for:
   a. Leaks
   b. Clarity and color
   c. Precipitants
   d. Beyond Use Date

Do not use if the container is leaking, the solution is discolored, cloudy, particles are noted in solution, or the container is expired. Notify the pharmacy immediately.

9. Using aseptic technique, remove the administration set from the packaging and assess integrity, ensuring protective coverings are on both ends.

10. Close the clamp on administration set.

11. Using aseptic technique, remove the protective cover from administration set spike and insert spike into solution container access port.

12. Squeeze the drip chamber 1/3 full. Open the roller clamp.

13. Hang medication/solution container on the IV pole.

14. Prime medication/solution through entire administration set purging air. Close clamp.

15. Program electronic infusion device (if used). Insert administration set per manufacturer's instructions. If manual flow-control device is used, set to desired administration rate.

16. Vigorously cleanse the needleless connector with alcohol. Allow to air dry.

17. Maintaining asepsis, attached flush syringe to needleless connector. Verify venous access patency. Flush with prescribed flushing agent (Refer to Appendix B for additional information). Remove syringe.

18. Vigorously cleanse the needleless connector with alcohol. Allow to air dry. Attach administration set to needless connector.

19. Open clamp and begin infusion.

20. Verify that the solution is infusing at the prescribed rate.

21. Secure administration set to the resident.

22. Assess venous access site per facility policy.

23. Dispose of used supplies per facility policy.

24. Remove gloves.

25. Wash hands.

26. Label medication/solution container and administration set with:
    a. Date and time
    b. Nurse's initials

When infusion is completed:
1. Wash hands

2. Apply gloves.

3. Close the clamp and disconnect the administration set from needleless connector.

4. Place the sterile end cap on end of administration set (if set is to be used again within the next 24 hours).

5. Vigorously cleanse needless connector with alcohol. Allow to air dry. Flush venous access device with prescribed flushing agent (Refer to Appendix B for additional information), to maintain patency between intermittent infusions.

6. Dispose of supplies per facility policy.

7. Remove gloves.

8. Wash hands.

9. Documentation in the medical record includes, but is not limited to:
   a. Date and time
   b. Medication/solution
   c. Rate and method of infusion
   d. Prescribed flushing agent(s)
   e. Site assessment
   f. Complications and interventions
   g. Resident response to procedure and/or medication

Purpose

To provide guidance and procedures for administration of an intermittent infusion via a secondary line (piggyback)

General Guidance

1. A secondary medication is attached to the primary administration set via a secondary administration set and is administered during, or as an interruption to, the primary infusion according to physician order.

2. When compatibility of infusates is verified, the use of secondary administration set that uses back-priming infusion methods is preferred due to reduced need for disconnecting secondary intermittent administration sets.

3. A secondary administration set used for an intermittent infusion is changed every 96 hours (or per facility policy) when it remains connected to the primary administration set.

4. A secondary administration set used for an intermittent infusion is changed every 24 hours (or per facility policy) if it is disconnected from the primary administration set.

5. A disconnected secondary administration set used for more than one dose in a 24-hour period will have a new sterile cap placed on the end of the secondary administration set upon completion of each dose.

6. The nurse is responsible for ensuring that the prescribed intermittent medication is compatible with the primary solution. Contact the pharmacy with questions regarding compatibility of concurrent medications being infused.

Procedure

1. Bring medication to room temperature by removing it from the refrigerator 30 minutes before administering

2. Verify physician order.

3. Identify the resident using appropriate identifiers.

3. Explain procedure to the resident.

4. Wash hands.

5. Assemble equipment and supplies on a clean work surface.

6. Apply gloves. Assess venous access site.

7. Inspect the new medication solution container for:
   a. Leaks
   b. Clarity and color
   c. Precipitants

d. Beyond Use Date

Do not use if the container is leaking, the solution is discolored, cloudy, particles are noted in solution, or the container is expired. Notify the pharmacy immediately.

8. Using aseptic technique, remove the administration set from the packaging and assess integrity, ensuring protective coverings are on both ends.

9. Close the clamp on secondary administration set.

10. Using aseptic technique, remove the protective cover from secondary administration set spike and insert spike into solution container access port.

11. Squeeze the drip chamber 1/3 full. Open the roller clamp.

12. Hang medication/solution container on the IV pole.

13. Prime medication/solution through entire secondary administration set purging air. Close clamp.

14. Program electronic infusion device (if used).

15. Vigorously cleanse upper primary administration set needleless Y-site with alcohol. Allow to air dry.

16. Attach secondary administration set to primary administration set Y-site.

17. Lower primary infusion on pole using hanger.

18. Open secondary administration set roller clamp.

19. Adjust the intermittent medication to the prescribed rate using one of the following methods:
    a. Primary administration set roller clamp
    b. Manual flow-control device attached to the end of the primary set
    c. Electronic infusion device

20. Ensure the medication is dripping at prescribed rate.

21. Upon completion of the intermittent medication infusion, close the roller clamp on the secondary administration set and adjust the primary solution rate according to one of the following methods:
    a. Primary administration set roller clamp
    b. Manual flow-control device attached to the end of the primary set
    c. Electronic infusion device

22. Dispose of used supplies per facility policy.

23. Remove gloves.

24. Wash hands.

25. Label medication/solution container and secondary administration set with:
    a. Date and time
    b. Nurse’s initials

26. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Medication/solution
    c. Rate and method of infusion
    d. Prescribed flushing agent(s)
    e. Site assessment
    f. Complications and interventions
    g. Resident response to procedure and/or medication

Purpose

To provide guidance and procedures when continuous access is not longer required but the resident will continue to require intermittent access for medication administration.

General Guidance

1. Functioning catheters previously connected to continuous infusions may be converted to a saline or heparin lock after continuous infusion therapy is completed.

2. A physician order must be obtained for flush solutions when converting a continuous infusion to a saline or heparin lock.

Procedure

1. Verify physician order.

2. Identify the resident appropriate identifiers.

3. Explain procedure to the patient.

4. Wash hands.

5. Assemble equipment and supplies on a clean work surface.

6. Apply gloves. Assess venous access site.

7. Close clamp and disconnect administration set from the needleless connector. If no needleless connector present, close clamp, disconnect administration set from the catheter hub and aseptically attach primed needleless connector.

8. Maintaining asepsis, attached flush syringe to needleless connector. Verify venous access patency. Flush with prescribed flushing agent (Refer to Appendix B for additional information). Remove syringe.

9. Dispose of used supplies per facility policy.

10. Remove gloves.

11. Wash hands.

12. Documentation in the medical record includes, but is not limited to:
    a. Date and time
    b. Vascular access device
    c. Amount and type of prescribed flushing agent
    d. Amount of solution remaining in container
    e. Site assessment
    f. Resident response to procedure

Purpose

To provide guidance and procedures for subcutaneous administration of medications.

General Guidance

1. Preferred site placement of a subcutaneous needle is in the fatty tissue of the abdomen or thigh.

2. The site it to be changed every 72 hours or more frequently in the event of pain or redness. The needle should be injected at least 1 inch from the previous site. Avoid areas directly beneath the waist, naval and bony prominences.

3. Nursing competency for subcutaneous needle insertion shall be established by the facility training and competency evaluation programs.

Procedure

I. Subcutaneous Needle Insertion

1. Identify resident, explain procedure, medication, and rationale of procedure to resident.
2. Wash hands. Apply gloves.
3. Select a site on the abdomen, thigh, or other appropriate site which is free from irritation. Disinfect the site with alcohol swab and using a circular motion, start from the center working outward until clear.
4. Repeat with betadine swabs and remove excess betadine.
5. Gently grasp a fold of the skin between your thumb and forefinger.
6. If you are using a butterfly infusion set, insert the needle horizontally and enter the skin at a 45-degree angle. Insert the needle to 75-100% of its length. This assures placement in the adipose tissue.
7. If using a Sub-Q set with needle, peel off adhesive backing and remove needle cover. Insert the needle to its full length until adhesive disc is flush against the skin.
8. Release fold of the skin and tape in place or apply transparent dressing.
Loop the tubing and tape to skin securing it to help avoid direct pulling on the needle.
9. Label dressing with date and time of needle insertion and nurse's initials.
10. Document activity in resident's medical record.

II. Monitoring

1. When ordered by a physician, a resident may ambulate and participate in nonstrenuous activities while the needle is in place.
2. When infusion is completed, the needle may be removed. Dressing is not required.
3. Maintain a chart or diagram of needle insertion sites and rotation schedule.
4. Documentation of resident tolerance to procedure, and any sign/symptoms of localized reaction are entered in resident's medical record.

Purpose

To provide a procedure for establishing and discontinuing a peripheral intravenous line

General Guidance

Nursing competency for peripheral IV catheter removal shall be established by the facility training and competency evaluation programs.

Procedure

I. Establishing a Peripheral Intravenous Line

1. Assemble your equipment.

2. Apply a pair of appropriately sized non-latex gloves.

3. Apply tourniquet to the IV arm above the proposed IV site.

4. Visualize and palpate the vein.

5. Cleanse the site with a chlorhexidine swab using an expanding circular motion.

6. Prepare and inspect the catheter for any damage or contaminants
   a. Remove the catheter from the package.
   b. Push down on the flashback chamber to ensure it is tight.
   c. Remove the protective cover.
   d. Again, inspect the catheter and needle for any damage or contaminants.
   e. Spin the hub of the catheter to ensure that it moves freely on the needle.
   f. Do not move the catheter tip over the bevel of the stylet.

7. Stabilize the vein and apply counter tension to the skin.

8. Insert the stylet through the skin and then reduce the angle as you advance through the vein.

9. Observe for “flash back” as blood slowly fills the flash back chamber.

10. Advance the needle approximately 1cm further into the vein.

11. Holding the end of the catheter with your thumb and index finger, pull the needle (only) back 1 cm with your middle finger.

12. Slowly advance the catheter into the vein while keeping tension on the vein and skin.

13. Remove the tourniquet.

14. Secure the catheter by placing the Tegaderm™ over the lower half of the catheter hub taking care not to cover the Administration set connection.

15. From the end of the administration set and insert the administration set into the hub of the catheter. Ensure that Administration set has been purged of air, using ordered solution.

16. Secure the tubing to the catheter by screwing the Luer Lock tight and tape the connection using the chevron method.

17. Open up the IV roller clamp and observe for drips forming in the drip chamber.

II. Discontinuation of a Peripheral Intravenous Line

1. Stop infusion

2. Remove dressing.

3. Remove catheter and apply pressure with sterile gauze pad until bleeding has stopped. Apply band-aid.

4. Document in nurse's notes that IV discontinued, catheter is intact, and appearance of site.

Purpose

To provide a general procedure for the care of the resident with a peripheral venous catheter

Procedure

1. Nurse will obtain physician's order for infusion therapy.
2. Peripheral catheter indwelling time shall be based on physician preference in conjunction with the nurse's judgment regarding condition of veins, medication being delivered, age/activity of patient, availability of viable venous access, and type of cannula used.
3. Cannulas 1-1/2" or less shall be used for short or intermittent infusion therapies such as antibiotics, hydration, and miscellaneous medications approved for peripheral venous infusion
4. The physician must approve peripheral IV indwelling times of greater than 7 days.
5. Cannula to be flushed with normal saline before and after all infusions, unless otherwise ordered by physician.
6. Transparent dressings may be left in place as long as cannula is indwelling and no signs of infiltration, infection, or phlebitis are present as per facility policy.
7. Gauze dressings are to be changed as indicated in Appendix B IV Line Maintenance Chart.
8. Extension set, valve to be changed at time of cannula change and as needed. Refer to Appendix B IV Line Maintenance Chart.
9. Removal of peripheral cannula to be performed according to policy guidelines, as needed.
10. Documentation:
    a. Nurse will chart peripheral intravenous site condition, use and care at a minimum, every 8 hours or as per facility policy.
    b. Nurse's notes must support catheter dwelling times greater than 7 days.

Purpose

To provide general guidance on routine standardized cannula insertion site inspection, site care and application of a sterile dressing to reduce or prevent the complications of cannula related sepsis.

General Guidance

1. A sterile, transparent dressing will be used to cover IV peripheral sites.
2. Refer to Appendix B IV Line Maintenance Chart for dressing change guidance.
3. IV sites shall be labeled as to dressing change date with nurse's initials, and the insertion date from the previous dressing is also included.
4. IV sites shall be rotated every 7 days and as needed per facility policy. Physician's order and documentation is required.
5. Documentation in the patient's chart must include assessment of cannula site.
6. The cannula shall be removed if there are any signs and/or symptoms of IV related complications at the insertion site and documented in the patient's chart.
7. To minimize cannula movement, an extension set shall be used.
8. The resident will be advised to report any catheter concerns to the nurse.

Procedure

1. Verify physician's order.
2. Wash hands, observing universal precautions, prepare supplies on a clean work surface.
3. Explain the procedure to the resident. Apply gloves. Gently remove previous dressing and discard appropriately.
4. Without touching the site, observe for any sign or symptom of swelling, redness, or pain.
5. After cleansing site as per facility policy, apply transparent dressing over the cannula. Change the extension set with a valve that has been flushed with the
6. NSS and secure cannula by taping the connection between the cannula and extension set
7. Apply label that documents the dressing change date and initials, and insertion date from previous dressing.
8. Remove gloves and dispose of properly.
9. Loop extension tubing and secure with tape
10. Document procedure, characteristics of site, and patient tolerance of procedure in patient's medical record.

Purpose

To establish a flushing protocol of a peripheral venous access device to maintain patency.

General Guidance

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

2. Refer to Appendix B IV Line Maintenance Chart which outlines appropriate flush agent(s) and frequency.

3. The volume used for catheter flushing should be determined by the size of the catheter and type of infusion.

4. 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.

5. If there is resistance or difficulty during flushing procedure, evaluate need for site rotation.

6. Monitor for infiltration of the vein during flushing procedure.

7. Verify with State Nurse Practice Act the scope of practice for RNs and LPNs regarding this procedure.

Procedure

1. Assemble supplies. Prime syringe.
2. Wash hands
3. Apply gloves
4. Clean end of needleless connection device with alcohol. Allow to air dry
5. Attach primed flush agent syringe (See Appendix B) to needless connection device
6. Use push-pause technique to instill flush agent amount (per facility protocol)/ Leave 0.5ml of flush agent in the syringe.
7. Remove syringe. Clamp catheter.
8. Remove gloves
9. Dispose of used supplies per facility policy

Flushing before and after medication or fluid administration:

1. Repeat steps 1-6 from above section
2. Attach medication/fluid and infuse as prescribed
3. When medication/fluid is completed, flush with flush agent (See Appendix B) using push-pause technique. Leave 0.5ml in syringe
4. Remove syringe. Clamp catheter.
5. Remove gloves
6. Dispose of used supplies per facility policy

Purpose

To provide a general procedure regarding central venous catheters

Procedure

I. Site Care

1. Obtain physicians order for dressing change. Refer to Appendix B IV Line Maintenance Chart.

2. Instruct resident on procedure.

3. Check resident medical record/chart for allergy to iodine.

4. Prepare a clean work surface.

5. Gather supplies.

6. Wash hands and apply gloves.

7. Through the present dressing, palpate the insertion site gently. If the resident complains of excessive pain or tenderness notify the physician immediately.

8. Observe the insertion site for:
    a. Erythema
    b. Purulent drainage
    c. Edema

9. Apply face mask at this time as per facility policy.

10. Remove the old dressing with gloves, careful not to touch the insertion site. Discard according to facility policy. Inspect site for signs and symptoms of infection or irritation.

11. Open sterile dressing change kit.

12. Apply sterile gloves.

13. Cleanse catheter insertion site with gentle friction. Start at insertion site, and cleanse outward in a circular motion cleansing the area of 3-4” around the insertion site.

14. Using sterile 4x4, remove any excess PVP after 1 minute.

15. Apply transparent occlusive dressing.

16. Secure the dressing edges with tape as needed.

17. Coil the external extension and tape it to the chest wall. Be careful not to twist or kink the catheter.

18. Label dressing with nurse date and your initials.

19. Remove gloves. Wash hands.

II. Valve Change

1. Wash hands.

2. Gather all supplies. Inspect packaging containing valve for damage.

3. Put on mask or as facility policy.

4. Open package with the valve. Do not touch the sterile end to be attached to the hub of the catheter.

5. Clamp catheter (should already be clamped, if not in use)

6. Disconnect the valve from the catheter, being careful not to touch the hub of the catheter. Hold the catheter in your hand so that the exposed hub does not come in contact with the skin of the chest or any other surface.

7. Pick up new catheter valve. Remove protective covering over male end, being sure not to touch the exposed tip.

8. Place the valve onto the catheter. Twist to secure the connection.

9. Unclamp catheter as needed.

III. Flushing

1. Wash hands.

2. Cleanse valve with alcohol, allow to dry.

3. Flush catheter, refer to Appendix B.

4. Remove syringe.

5. At this time, administer medication or aspirate blood as needed.

6. At completion of infusion or completion of lab draw, continue with flushing protocol.

7. Cleanse valve with alcohol swab, allow to dry.

8. Insert flush agent (see Appendix B), flush catheter, remove syringe.

III. Drawing Blood

1. Obtain physician’s order for lab work.

2. Identify resident and explain procedure.

3. Clean work surface area.

4. Gather supplies.

5. Wash hands. Apply gloves

6. Prepare supplies.

7. Cleanse valve with alcohol, allow to dry.

8. Insert flush agent, unclamp catheter and flush. Remove syringe.

9. Vacutainer Method:
   a. Insert direct draw adapter with luer adapter (Vacutainer) into valve.
   b. Unclamp catheter and place discard tube, marked with an "X"; into tube holder. Withdraw 5- 10cc's of blood to be discarded.
   c. Repeat: placing appropriate blood tubes into tube holder for all appropriate tests. Tubes should be labeled with patient's name, date, and nurse's initials.

10. Syringe Method:
    a. Insert 10cc syringe with luer adapter into valve.
    b. Unclamp catheter, pull back on plunger until desired amount of discard blood is in syringe. Discard entire blood-filled syringe.
    c. With clean syringe, withdraw desired amount of blood, remove syringe.
    Attach fluid dispensing connector to end of syringe. Attach Vacutainer to other end of fluid dispensing connector. Insert blood collection tubes into Vacutainer thus transferring blood into tube. Repeat procedure as needed for blood collection.

11. Clamp line, remove attached blood tube holder.

12. Cleanse valve with alcohol, allow to dry.

13. Insert flush agent, unclamp catheter and flush. Repeat with second syringe of flush agent.
    NOTE: If patient is receiving infusion therapy at this time, proceed with appropriate administration procedure. If no therapy is needed at this time, proceed as follows:
    a. Insert syringe with 5ml 10u/ml heparin, flush catheter. While still exerting positive pressure on syringe, clamp catheter. Remove syringe.
    b. Secure blood tubes as needed for testing.

14. Dispose of supplies and waste appropriately.

15. Document the procedure, site appearance, and patient's tolerance of procedure in nurse's notes.

16. Document the date and time of valve change in nurse's notes.

17. Document waste amount, blood tubes drawn, flush solution, patient response and any unusual occurrences in nurse's notes.

Purpose

To provide guidance for the care of the venous port, to access the venous septum to administer medication, and proper procedure to de-access the non-coring port needle from the port.

Definition

1. An implanted venous port is a surgically placed and surgically removed catheter that is placed in the subcutaneous layer of the skin in the mid chest area or upper arm. 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 Guidance

1. Staff who access or de-access an implanted venous port must have additional training and proven clinical competency before performing this procedure. Verify with State Nurse Practice Act the scope of practice for RNs and LPNs.

2. Refer to Appendix B IV Line Maintenance Chart for flush protocols, site maintenance and administration set changes.

3. Solutions that are incompatible will not be infused simultaneously through the implantable port as they will mix in the port reservoir. Infusions will be delivered via an infusion pump.

4. The system will never be left open when the non-coring port needle is in the port chamber.

Procedure: Accessing

1. USE ONLY A NON-CORING NEEDLE (e.g., Huber™) to access the port. The needle can be different gauges and lengths according to the amount of subcutaneous tissue over port. The wings of the needle, when inserted, should be even (flush) with the septum of the port.

2. Explain procedure to resident or legal representative.

3. Apply topical anesthetic if prescribed. Wait about 15 to 20 minutes for the anesthetic to take effect. Remove residual with normal saline before sterile cleaning.

4. Position resident for comfort and expose port site. (Note: Most ports are accessed more easily by placing the resident in a semi-fowler's or supine position.)

5. Wash hands and assemble equipment on clean surface near resident. Open central line dressing kit or glove packaging to use as a sterile field. Empty all items except sterile normal saline for injection and heparin onto this field. Remove air bubbles from syringes.

6. Palpate port under skin by locating between thumb, index and middle fingers of dominant hand. Wear non-sterile gloves for this part of procedure. Remove gloves when port is located.

7. Apply sterile gloves.

8. Clean port area with antiseptic cleaning solution, cleaning outward from the center in concentric circles for at least 3 inches.

9. Hold normal saline syringe with sterile gauze (to preserve sterile gloves), attach syringe to needleless connection device and prime tubing and non-coring needle with normal saline. Remove protective plastic cover from needle.

10. With non-dominant hand, palpate port (as in step #5). Hold port steady in place. Insert non-coring needle perpendicular (straight, not at an angle) into the center of the septum until it goes no further. There will be a slight resistance and "drag" until needle hits the bottom of the reservoir.

11. While holding needle steady, check for blood return by pulling back on the syringe plunger. If no blood return, attempt the following:
    a. Pull needle up just slightly (needle may be "jammed" into the reservoir floor) and attempt aspiration again.
    b. If there is still no blood return and the needle is in the center of the port, have the resident perform a Valsalva maneuver, lift arms above head, cough, or reposition.
    c. If there is still no blood return, attempt access again using a new needle. Maintain sterile procedure.

12. After blood return is established, finish flushing with normal saline, remove normal saline syringe, attach heparin syringe and flush. Always leave the last 0.5 mL of normal saline/heparin in syringe to avoid pushing air into catheter.

13. Remove syringe and clamp catheter.

14. A folded 2 x 2 sterile gauze may be placed under the wings of the non-coring needle if it does not obscure the insertion site. This would be done if needle is not at same level as port to stabilize it, or for protection of the skin. This is not considered to be a gauze dressing and can stay in place for up to 7 days.

15. Cover needle with transparent sterile dressing, making sure that edges of the dressing are firm against the skin. Use skin protecting agent (e.g., Skin Prep™) on skin first, if necessary, and let dry before placing dressing on skin.

16. Label dressing with date, time, and initials of person who is performing procedure.

17. Secure extension set to skin with sterile tape from dressing kit.

18. Document the following in the resident's medical record:
    a. Date and time of procedure.
    b. Resident education.
    c. Needle size (length and gauge).
    d. Blood return.
    e. Whether implanted venous access port flushed with ease.
    f. Resident response to procedure.

19. Document the flushing agent(s) and amount(s), as well as any topical anesthetic.

20. If this is a monthly access for flush only, document procedure and indicate next date procedure is to be done.

Procedure: De-Accessing

1. De-accessing (taking the needle out of the port) is an aseptic procedure. Accessing the port is a sterile procedure.

2. Explain the procedure to the resident or legal representative.

3. Position resident as flat as tolerated. Expose port.

4. Perform hand antisepsis. Place equipment on clean surface near resident.

5. Apply non-sterile gloves.

6. Discontinue any running IV fluids.

7. Clamp needle extension tubing.

8. Clean end of needleless connection device with alcohol wipe.

9. Flush as follows using push-pause technique:
    a. If treatment is being discontinued, flush with flushing agent listed in Appendix B
    b. If non-coring needle is being replaced for continuing treatment, flush with flushing agent listing in Appendix B

10. Remove syringe and clamp tubing.

Purpose

To provide guidance and procedure for removal of central line

General Guidance

1. To be performed by licensed nurses according to state law and facility policy. An MD, PA, APRN, or RN with specialized training in removing Central Venous Accesses can remove a Central Venous Line.

2. Nurse must be aware of the catheter length prior to removal. Every effort must be made to obtain length catheter prior to removal. If unable to obtain length of catheter, specific orders must be obtained to remove catheter in facility without knowledge of catheter length

3. To prevent vasoconstriction and vasospasm during removal:
    a. Educate resident prior to procedure
    b. Keep resident warm and comfortable
    c. Remove catheter slowly

4. An order from the prescriber is required to remove catheter.

5. The catheter is removed upon completion of therapy or whenever signs of vascular complications related to infusion therapy are suspected

6. Catheters with suspected or documented thrombus formation will not be removed in the long-term care setting

Procedure

1. Verify physician order

2. Identify resident using appropriate identifiers

3. Explain procedure to resident/significant other

4. Wash hands

5. Assemble equipment and supplies on clean work surface

6. Position the resident for comfort with the extremity at a 45-degree angle to body

7. Stop existing infusion and disconnect administration set

8. Don mask and clean gloves

9. Carefully remove old dressing and tape. Never use scissors or any sharp objects around a catheter

10. Remove gloves

11. Wash hands

12. Don sterile gloves

14. Vigorously cleanse each suture site (if necessary) with antimicrobial solution

15. Remove sutures using suture removal kit (if necessary)

16. Cleanse around catheter insertion site with antimicrobial solution according to the manufacturer's guidelines. Allow to dry

17. Apply antimicrobial ointment to sterile gauze

18. Slowly remove catheter by grasping the catheter near insertion site and pulling slowly in short strokes 1 inch at a time until the catheter is fully removed

19. If catheter resists removal:
    a. Reposition arm at 90-degree angle
    b. Instruct resident to relax arm
    c. Attempt removal

20. If resistance persists:
    a. Tape catheter in place and cover with sterile gauze dressing. Call implanting center for removal.
    b. NEVER PULL AGAINST RESISTANCE, DOING SO MAY CAUSE CATHETER FRACTURE.

22. After catheter is removed, immediately place dressing with antimicrobial ointment centered over insertion site
    a. Apply pressure until bleeding stops

23. Measure catheter length and assess catheter tip to ensure that entire catheter was removed

Purpose

To provide guidance and procedure for Peripherally Inserted Central Catheter (PICC) insertion using Modified Seldinger Technique

General Guidance

1. Nursing competency for PICC insertion shall be established by the facility training and competency evaluation programs.

2. Facility administration shall verify with State Nurse Practice Act the scope of practice for RNs and LPNs regarding this procedure.

3. Superior venacava tip placement must be confirmed by x-ray prior to any fluid administration (other than heparin flush, sodium chloride flush or infusion of an isotonic solution). Midclavicular and axillary tip placement requires no x-ray to confirm location of the tip.

Procedure

I. Set-Up

1. Assemble the following supplies
   a. PICC Insertion Kit
   b. PICC/Midline Insertion Tray
   c. Sterile disposable gown
   d. Sterile gloves
   e. 27 Ga needle
   f. Face mask
   g. Luer plug
   h. 6-7" extension set

II. Insertion

1. Explain the procedure to the resident and obtain informed written consent.

2. Wash hands.

3. Assess the resident's veins and condition to establish that the resident is a good candidate for a PICC catheter. Observe the anatomical structure and size of each vein. Determine the condition of the veins by observation and palpation, checking for sclerosing, bruising and tenderness.

4. The first choice for an insertion site should be the median cubital vein which ascends the ulnar side of the forearm; may divide into two vessels, one joining the basilic vein the other the cephalic vein; may be absent as a definite vessel, or may be a distinct Y.

5. The second choice for an insertion site should be the basilic vein which is located on the anterior surface of the arm distal to the elbow.

6. The third choice for an insertion site should be the cephalic vein, which runs proximally along the lateral side of the fosse in the groove between the brachioradialis and the biceps brachii. This vein should only be used in large/obese persons with poor upper arm skin turgor or small children.

7. The resident should be placed in a supine position with the arm extended at a 90-degree angle from the trunk of the body. Placement of the arm at this angle forms the straightest, most direct route into the venous system. When possible, place PICC line in non-dominant arm.

8. After choosing the insertion site, use a paper tape measure to determine the length of the catheter. Starting at the insertion site and following the vein track, measure up the axilla area. Stop here, holding down the paper ruler, folding over and angle the ruler toward the clavicle and down approximately 2&1/2 to 3 inches, or between the second and third intercostals space. Note the measurement on the tape, as this will be the designated length of the catheter.

9. Use the paper ruler to measure the circumference of the upper arm at a point about halfway between the antecubital and axilla areas. Chart this measurement in procedures notes in the resident's medical record.

10. Place face masks on nurse, assistant and resident

11. Gather the supplies and establish a working area and sterile field

12. Don sterile gloves. Do not touch the catheter with gloves as any powder on the gloves may be transferred to the catheters and may cause a phlebitis postinsertion

13. If working alone, don one sterile glove and use the gloved hand to draw up 0.2ml of 1% lidocaine solution into a tuberculin syringe. All syringes remain on the sterile field.

14. Always pre -flush the catheter system prior to use to ensure integrity of catheter.
Leave syringe attached to the side port. If necessary, trim the catheter to the resident's measurement. Do not cut through the guidewire. 2 French, 3 French and 4 French catheters will have a beveled tip. Double lumen catheters have a blunt tip.

15. Put sterile pad under the resident's arm.

16. Using sterile technique, prep resident with three alcohol swabs followed by three povidone iodine swabs or chloraprep provided in kit. Allow povidone iodine to air dry. Prep resident from insertion site to the mid upper arm and mid lower arm, using circular motion. If resident is allergic to iodine, prep with six alcohol swabs.

17. If working alone, remove gloves and apply the tourniquet. Don sterile gloves.
Carefully place a fenestrated drape over the prepared site, leaving the insertion site exposed. If working with an assistant, have assistant apply tourniquet.

18. If using a local anesthetic, inject 0.2ml of 1% lidocaine intradermally, if necessary.

19. Cannulate vein with 24g or 22g IV catheter.

20. Introduce the wire guide through the catheter, advance the wire guide 15 to 20cm into the vessel

21. Release the tourniquet through the sterile drape.

22. Leaving the wire guide, withdraw the catheter.

23. Inject 0.2ml of 1% lidocaine intradermally at guidewire exit site.
24. Make a small (approx. 0-2 cm wide) incision to permit introduction of sheath/dilator.

25. Introduce the SpinLock™ sheath/dilator over the wire guide. With a rotational motion, advance the assembly into the vessel. The special locking feature on this device is designed to provide a smooth transition into the vessel.

26. Leaving the sheath in place, remove the dilator and wire guide. To prevent inadvertent air aspiration, place thumb or finger over the end of the sheath after removing the dilator and wire guide.

27. Introduce the PICC line catheter using sterile technique and advance the catheter into position.

28. Gentle irrigation while attempting to thread may enable the catheter to flow past valves. Reapplying the tourniquet may distend the vein enough to allow further threading of the catheter. If the catheter will not thread, rotate the resident's extremity. Ask the resident to relax and take a deep breath. If after 10 to 15 minutes of trying to advance the catheter without success, remove the introducer and apply pressure to the site.

29. Should the catheter advance without difficulty, check for blood return after every 2 to 3 inches and flush with saline. If the catheter is to have SVC placement, have the resident put his chin to his chest, looking towards the arm in which the catheter is being inserted.

30. Once the catheter is advanced to within 10 cm of the desired tip position, pull the sheath outward and upward then break the wings and peel sheath away from the catheter.

31. Although the catheter is radiopaque, the stylet may be left in place to improve the visualization of the catheter and removed upon confirmation of tip by x-ray.

32. Using the attached 5 cc syringe with saline, aspirate blood and flush the catheter to check for patency. A blood return should be observed. Flush with 2ml of heparin (10 units/ml), if indicated in Appendix C.

33. Remove syringe and attach an injection cap.

34. Cleanse the insertion site with three alcohol swabs, if necessary, secure the catheter with the V-lock security pad. Apply folded sterile 2x2 gauze sponge to the site.
Apply transparent occlusive dressing.

35. A dressing change must be done every 7 days or sooner if compromised.

36. For central tip placement, obtain an x-ray to determine the position of the catheter tip. Although the catheter is radiopaque, the guidewire may be left in place to improve visualization of the catheter.

37. After the x-ray confirmation of tip placement, the catheter may be pulled back for better positioning.

III. Removing the Guidewire

1. Place one or two fingers approximately 1 to 1½ inches above the insertion site, along the track of the indwelling catheter, and apply gentle pressure.

2. Grasp the guidewire and gently pull back with slow but constant motion until the guidewire is removed. Note: Do not use the hub of the catheter for stabilization during guidewire removal.

3. Flush a 6-7-inch extension with heparin (10 unit/ml), if indicated in Appendix B and connect to the PICC line. Aspirate blood and flush catheter with 2ml-5ml of heparin (10 units/ml), if indicated in Appendix B.

IV. Exchanging the PICC Line

Should a PICC line break, develop a leak or become clotted and cannot be cleared with urokinase, or streptokinase a catheter exchange can be attempted.

1. Explain the procedure to the resident. Obtain written consent for urokinase,

2. Wash hands.

3. The resident should be placed in a supine position with the arm extended at a 45-90-degree angle from the trunk of the body. Placement of the arm at this angle forms the straightest, most direct route into the venous system. The elbow may need support with a rolled towel or sheet.

4. Put on a facemask and assist the resident in applying a mask.

5. Gather supplies and establish a working area and a sterile field. Replace the present catheter with the same gauge catheter.

6. Put on a sterile pad under resident's arm.

7. Using sterile technique, prep resident with three alcohol swabs followed by three povidone iodine swabs. Allow povidone iodine to air dry. Prep resident from insertion site to 4 inches above the below and side to side using a circular motion. If the resident is allergic to iodine, prep with six alcohol swabs.

8. Don sterile gloves. Carefully place a fenestrated drape over the prepared site, leaving the insertion site exposed. Leave the catheter to be replaced lying on the resident's arm, under the fenestrated drape.

9. Pull the catheter out from the arm approximately three inches. Using sterile scissors, cut the catheter two inches away from the insertion site.

10. Inject 0.2ml of lidocaine 1% solution intradermally next to the insertion site.

11. Remove introducer needle from introducer.

12. Slide introducer over catheter extending from insertion site and into vein one inch. If this is unsuccessful, using a 19-gauge needle, gently nick the skin at the insertion site to make the insertion hole slightly larger. Re-attempt with a new introducer. If again unsuccessful, remove catheter and apply povidone iodine or polysporin ointment to the site, followed by a sterile occlusive dressing.

13. With introducer in the vein, remove the damaged catheter.

14. Using the non-toothed forceps, grip the new catheter one-half inch from the tip and thread through the needle, continuing to hold on to one wing to maintain needle stability. Advance the catheter slowly into the vein until the desired length is indwelling. Check for blood return and flush intermittently while threading to maintain catheter potency.

15. Gentle irrigation while attempting to thread may enable the catheter to flow past valves. Reapplying the tourniquet may distend the vein enough to allow further threading of the catheter. If the catheter will not thread, rotate the resident's extremity. Ask the resident to relax and take a deep breath. If, after 10 to 15 minutes of trying to advance the catheter without success, remove the introducer and apply pressure to the site.

16. Should the catheter advance without difficulty, check for blood return after every 2 to 3 inches and flush with saline. If the catheter is to have SVC placement, have the resident put his chin to his chest, looking towards the arm in which the catheter is being inserted.

17. Before withdrawing the introducer sheath, place pressure on the skin just beyond the introducer sheath tip to hold the silicone catheter stationary in the vein. Withdraw the introducer sheath until it is free from the insertion site. Cover the insertion site with 4x4 gauze to avoid blood splattering when the introducer is broken. Grip the wings of the introducer, one wing between each thumb and index finger, and carefully pull outward. This action will cause the sheath to begin splitting. Peel the sheath apart.

18. Using the attached 10cc syringe with saline, aspirate blood and flush the catheter to check for patency. A blood return should be observed. Flush with
2ml of heparin (10 units/ml), if indicated in Appendix B.

19. Remove syringe and attach an injection cap.

20. Cleanse the insertion site with three alcohol swabs, if necessary. Secure the catheter. Apply povidone iodine and several sterile 2x2 gauze sponges to the site. Apply transparent occlusive dressing.

21. A dressing change must be done every 7 days or sooner if compromised.

22. For central tip placement, obtain an x-ray to determine the position of the catheter tip. Although the catheter is radiopaque, the guidewire may be left in place to improve visualization of the catheter.

23. After x-ray confirmation of tip placement, the catheter may be pulled back for better positioning. This will be done by an RN on the IV Therapy Team.

24. Follow steps for removing the guidewire.

V. Catheter Removal

1. Remove dressing from insertion site.

2. Inspect insertion site for redness and drainage.

3. Apply gloves.

4. Grasp the catheter close to the insertion site. Gently and slowly, pull the catheter out one inch without applying tension. Release your grip, then grasp the catheter close to the insertion site as before and pull out another inch. Repeat until the entire catheter is removed, over 1-2 minutes. To prevent venospasm, pull the catheter gently and slowly.

5. If resistance is met, stop removing the catheter. Apply warm packs to the resident's arm above the insertion site for 20 minutes. Attempt to remove catheter again, if resistance is met, notify physician. Physician may attempt removal or may notify
Vascular Radiology.

6. After catheter is removed, apply pressure to site with sterile gauze to stop any bleeding.

7. Apply povidone iodine ointment to site or polysporin if the resident is allergic to iodine.
This will prevent air from entering the venous system.

8. Apply sterile occlusive pressure dressing to the site. Leave dressing on for 24 hours.
Apply new sterile dressing and ointment, daily for 2 days.

9. Measure catheter from hub to tip. Measurement should match insertion length.

10. Emergency Measure: If catheter breaks at insertion site during removal, immediately apply tourniquet or penrose drain 2 to 3 inches above insertion site. The tourniquet should be tight enough to reduce venous flow but not arterial flow. Notify physician immediately. Let physician know how much of catheter was removed prior to the breakage, and how much catheter remains in the resident.

Purpose

To provide guidance and procedures for catheter occlusions.

General Guidance

1. To be performed by licensed nurses according to state law and facility policy. Nurse must have documented clinical competency in this area.

2. A physician's order is required for this procedure and for the specific fibrinolytic agent.

3. Keeping the catheter flushed per facility protocol is the best technique for preventing catheter occlusion.

4. Catheter occlusion presents as a loss of catheter patency. It can range from partial to complete occlusion.

5. Types of occlusions:
    a. Thrombotic (blood clots, fibrin).
    b. Fibrin sheath/tail occurs when fibrin adheres to the tip of the catheter. This can allow infusion, but not withdrawal of blood.
    c. Mechanical (kinks or closed clamps).
    d. Precipitates (medication).
    e. Lipid deposits (parenteral nutrition).

6. Partial occlusion is likely if fluids can be infused, but aspiration of blood does not occur. Total occlusion is likely if fluids cannot be infused and blood cannot be aspirated.

7. Occlusions can lead to:
    a. delayed treatment;
    b. increased risk of infection;
    c. increased cost of care;
    d. increased risk of losing site; and/or
    e. increased risk of thrombus related complications.

8. Objective signs of occlusion:
    a. Inability to flush, infuse fluids, or withdraw blood.
    b. Sluggish flow.
    c. Pumps frequently alarming.
    d. Visually able to see clots or precipitates in lumen of catheter.

9. For multi-lumen central venous catheters, it is not acceptable to leave a lumen occluded and untreated just because other lumens are functioning.

10. Central venous catheters should have blood return aspirate before being used. This is especially important for implanted venous port catheters.

11. When running multiple medications in sequence or using parenteral nutrition (PN), the catheter should be flushed with at least 5 mL of normal saline between medications or when new PN bag is started. This will avoid buildup of precipitates in the lumen.

12. When treating thrombotic occlusions, catheter treatment is preferred over catheter replacement.

13. Fibrinolytic agents such as alteplase (Cathflo®, Activase®) can be administered by a clinically competent Registered Nurse per physician order, facility protocol and State Nurse Practice Act.

14. Instillation of 0.1 N hydrochloric acid can be used to dissolve low pH precipitates, and sodium bicarbonate for high pH precipitates.

Procedure

Troubleshooting IV system for occlusion:

1. Start at tubing insertion site in fluid chamber of bag, follow tubing down to catheter insertion site checking for kinks and/or closed clamps.
2. Check pump to make sure that tubing is loaded and working properly.
3. When sutures are present, check to see if they are too tight or causing pressure on catheter.
4. Reposition resident (arm for PICC line).
5. Verify medication compatibility to check for possible interaction precipitates.
6. Use push-pause technique for flushing, using a 10 mL barrel size syringe.
7. Use pull-stop technique for withdrawing blood, using a 10 mL barrel size syringe.
8. Obtain chest X-ray for catheter tip position on central venous access catheters (per order).
9. Visually check for clots/precipitates in catheter.

Administering fibrinolytic agent to dissolve a central venous catheter thrombus. **(This treatment is not to be used on peripheral or midline catheters.**):

1. Take vital signs before and after procedure for baseline in case of any complications during procedure.
2. Explain procedure to resident. Ask resident to inform staff if any chest pain, shortness of breath, or any unusual symptoms occur. STOP procedure immediately if any complications occur.
3. Position resident for comfort.
4. Prepare the medication according to the manufacturer's instructions.
5. Instill fibrinolytic agent into the catheter using a 10mL or larger barrel size syringe. (Note: Different techniques are used to do this. It may be done by direct injection into needleless connection device, or by using a 3 way stop cock and attaching a separate empty sterile 10mL or larger syringe for aspiration of blood.)
6. Instillation may have to be done in small increments if occlusion is higher in lumen away from the tip of catheter.

7. Clamp catheter, keep syringe attached, and wait for 30 minutes.

8. Check for blood return. If there is no blood return, try to instill remainder of agent (if any remaining) and wait another 20 to 30 minutes.

9. Continue to check for blood return every 20 to 30 minutes up to 120 minutes.

10. If there is no blood return after 120 minutes, remove the instilled agent.

11. A second dose of fibrinolytic agent may be instilled using the same technique.

12. Resident or arm (with PICC line) can be repositioned during the procedure to accommodate blood return.

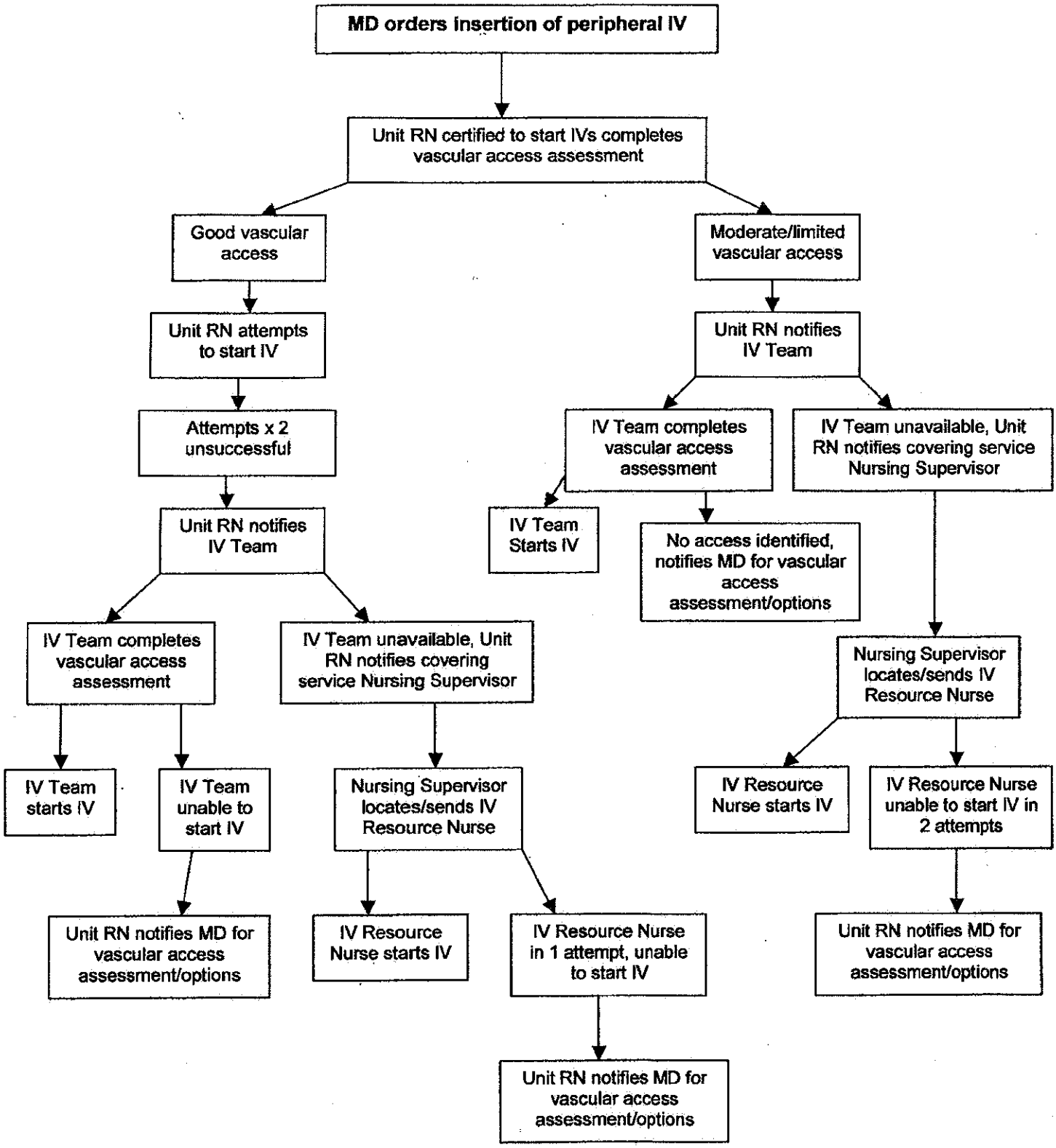
13. When positive blood return occurs, withdraw at least 5mL of blood and discard. Then flush with at least 5mL of normal saline and 5mL of heparin (if open ended catheter).

14. Notify the physician or practitioner if catheter patency is not restored.

15. The following information should be recorded in the resident's medical record:
    a. Start and stop time of procedure.
    b. Pre and post procedure vital signs.
    c. Name of medication and volume infused.
    d. Specific times of 20 to 30 minute aspiration intervals, and results of aspiration attempts (positive or negative blood return).
    e. Instillation of second dose if given.
    f. Resident response to procedure and any complications (if occurred).
    g. Amounts of normal saline and heparin flush.
    h. Any orders received to remove/replace catheter.

Appendix A

IV Access Placement Algorithm


MD orders insertion of peripheral IV
Unit RN certified to start IVs completes vascular access assessment
Good vascular access
Moderate/limited vascular access
Unit RN attempts to start IV
Unit RN notifies IV Team
Attempts x 2 unsuccessful
IV Team completes vascular access assessment
IV Team unavailable, Unit RN notifies covering service Nursing Supervisor
IV Team Starts IV
No access identified, notifies MD for vascular access assessment/options
Unit RN notifies IV Team
IV Team completes vascular access assessment
IV Team unavailable, Unit RN notifies covering service Nursing Supervisor
Nursing Supervisor locates/sends IV Resource Nurse
IV Team starts IV
IV Team unable to start IV
Nursing Supervisor locates/sends IV Resource Nurse
IV Resource Nurse starts IV
IV Resource Nurse unable to start IV in 2 attempts
Unit RN notifies MD for vascular access assessment/options
IV Resource Nurse starts IV
IV Resource Nurse in 1 attempt, unable to start IV
Unit RN notifies MD for vascular access assessment/options
Unit RN notifies MD for vascular access assessment/options

Appendix B

IV Line Access Chart

PharmScript Infusion Intravenous (IV) Access Line Maintenance Protocol

Effective Date: February 7, 2020

Nurses must:

1. Follow individual therapy procedures for admininstration of infusion medications and line maintenance.
2. Assess the patient for conditions that may require concentration or volume changes.
3. Assess IV acess patency (aspirate a blood return from the catheter. The blood return should be the color/consistency of whole blood.)

Note: Once a secondary set is detached from a primary set, the secondary set shall be considered a primary set for the instructions below.

	FLUSH PROTOCOLS				SITE MAINTENANCE		ADMINISTRATION SET CHANGES		
Device May be Valved or Non-Valved	**Maintenance Flush Each Lumen**	**Intermittent Non-Valved**	**Intermittent Valved**	**Blood Draws**	**Transparent Dressing Changes**	**Needless Connnector Changes**	**Primary and Secondary Continuous (Piggyback)**	**Primary Intermittent**	**Parenteral Nutrition (PN)**
Short Peripheral	Q12' 10ml NS	10ml NS Medication 10ml NS	N/A	N/A	When compromised, with every site rotation or at least every 7 days whichever is sooner.	Every new insertion, at least every 7 days	96' and with each IV start	24'	24' PPN Only No TPN
Midline	**Non-Valved** Q12' 10ml NS 3ml 10 units/ml Heparin **Valved** 10ml NS Q week	10ml NS Medication 10ml NS 3ml 10 units/ml Heparin	10ml NS Medication 10ml NS	Not Recommended	On admission or 24' post insertion, then weekly & PRN. Measure upper arm circumference and exterior catheter length with each dressing change and PRN.	On admission Q week & prn Post Blood Transfusion	96' and with every new VAD placement	24'	24' PPN Only No TPN
PICC	**Non-Valved** Q12' 10ml NS 5ml 10 units/ml Heparin **Valved** 10ml NS Q week	10ml NS Medication 10ml NS 5ml 10 units/ml Heparin	10ml NS Medication 10ml NS	10ml NS 5ml blood discard draw labs 20ml NS If non-valved follow with 5ml 10 units/ml Heparin	On admission or 24' post insertion, then weekly & PRN. Measure upper arm circumference and exterior catheter length with each dressing change and PRN.	On admission Q week & prn Q24' with TPN Post Blood Draw Post Blood Transfusion	96' and with every new VAD placement	24'	24'
Non-tunneled Subclavian Jugular Femoral	**Non-Valved** Q24' 10ml NS 5ml 10 units/ml Heparin **Valved** 10ml NS Q week	10ml NS Medication 10ml NS 5ml 10 units/ml Heparin	10ml NS Medication 10ml NS	10ml NS 5ml blood discard draw labs 20ml NS If non-valved follow with 5ml 10 units/ml Heparin	On admission. Q week and PRN. Measure exterior catheter length at admission, each dressing change and prn.	On admission Q week & prn Q24' with TPN Post Blood Draw Post Blood Transfusion	96' and with every new VAD placement	24'	24'
Tunneled	**Non-Valved** Q24' 10ml NS 5ml 10 units/ml Heparin **Valved** 10ml NS Q week	10ml NS Medication 10ml NS 5ml 10 units/ml Heparin	10ml NS Medication 10ml NS	10ml NS 5ml blood discard, draw labs 20ml NS If non-valved follow with 5ml 10 units/ml Heparin	On admission. Q week and PRN. Measure exterior catheter length at admission, each dressing change and prn.	On admission Q week & prn Q24' with TPN Post Blood Draw Post Blood Transfusion	96' and with every new VAD placement	24'	24'
Implanted Venous Port	**Non-Valved:** If Accessed Q24' If not accessed Q month 10ml NS 5ml 10 units/ml Heparin **Valved Port:** Accessed 10ml NS Q week Not accessed 10ml NS Q month	10ml NS Medication 10ml NS 5ml 10 units/ml Heparin	10ml NS Medication 10ml NS	10ml NS 5ml blood discard draw labs 20ml NS If non-valved follow with 5ml 10 units/ml Heparin	On admission. Q week and PRN. Measure exterior catheter length at admission, each dressing change and prn. Change non-coring needle weekly	On admission Q week & prn Q24' with TPN Post Blood Draw Post Blood Transfusion	96' and with every new VAD placement	24'	24'

Valved:	Catheters that contain an intergral valve that require NS only, no heparin (Examples-Groshong, PASV, SOLO)
Non-valved:	Catheters without a valve that require NS and Heparin. Exception - Short peripheral catheters require NS only.
Dressing Changes:	Gauze should only be used if patients are sensitive to clear transparent dressings and must be changed Q 2 days.
Measurements:	Measure the upper arm circumference above the antecubital fossa when listed above.
Syringe Size:	Use 10ml syringes or larger to protect IV catheters from pressure damage.

Appendix C

IV Admixture and Administration Guidelines

IV Admixture and Administration Guidelines

A Nurse Must Initiate Administration of an IV Within 1 Hour Upon Mixing

Drug Name	Vial Size	Reconstiutited With	Total Volume	Reconstituted Concentration	Solution (NS/D5W)	Dose	Volume	Infusion Time	Diluted Beyond use Date		Comments
									Room	Refrigerated	
Hydration Bags	ALL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	15 days	N/A	No additives.
Mini-bags			N/A								
Acyclovir (Zovirax)	500mg	10ml sterile water	10ml	50mg/ml	NS/D5W	0-350mg	50 ml	60 min	48 hrs	N/A	Do not refrigerate. Protect from light.
	1gm	20ml sterile water	10ml			351-700mg	100ml				
Amikacin	250mg/ml	N/A	1ml	N/A	NS/D5W	0-1000mg	100ml	30-60 min	24 hrs	9 days	Precipitate may form with heparin. Use with caution.
			1ml								
Ampicillin	1gm	7.4ml sterile water	8ml	125mg/ml	NS	0-1gm	50ml	30 min	24 hrs	3 days	Stability decreased in D5W to one hour. Do not freeze.
	2gm	14.8ml sterile water	16ml			> 1gm	100ml				
Ampicillin/ Sulbactam (Unasyn)	1.5gm	4ml sterile water	5ml	300mg/ml	NS	1.5gm	50-100ml	15-30 min	8 hrs	3 days	Stability decreased in D5W to one hour. Do not freeze
	3gm	9ml sterile water	10ml			3gm					
Anidulafungin (Eraxis)	50mg 100mg	15ml sterile water 30ml sterile water	15ml	3.33 mg/mL	NS/D5W	50mg	65ml	45 min	1 hr	24 hrs	Refrigerate vials.
						100mg	130ml	90 min			
			30ml			200mg	260ml	180 min			
Azithromycin (Zithromax)	500mg	4.8ml sterile water	5ml	100mg/ml	NS/D5W	500mg max	250ml	60 min	24 hrs	7 days	Do not give via IV bolus or IM.
Aztreonam (Azactam)	1gm	4.5ml sterile water	5ml	200mg/ml	NS/D5W	1gm	50ml	30ml	48 hrs	7 days	
	2gm	8ml sterile water	10ml			2gm	100ml	60ml			
Cefazolin (Ancef)	1gm	4.5ml sterile water	5ml	200mg/ml	NS/D5W	1gm	50 ml	30 min	48 hrs	9 days	Protect vials from light. Solution - pale yellow-yellow.
	2gm	9ml sterile water	10ml			2gm	100 ml				
Cefepime (Maxipime)	1gm	4.5ml sterile water	5ml	200mg/ml	NS/D5W	1gm	50ml	30 min	24 hrs	7 days	Protect vials from light.
	2gm	8ml sterile water	10ml			2gm					
Cefotetan	1gm	10ml sterile water	10.5ml	95mg/ml	NS/D5W	2gm max	100ml	20-60 min	48 hrs	9 days	Manufacturer - temporarily D/C other solutions at same site.
Cefoxitin	1gm	10ml of sterile water	10.5ml	95mg/ml	NS/D5W	1gm	50ml	30 min	24 hrs	9 days	Manufacturer - temporarily D/C other solutions at same site.
	2gm	20ml of sterile water	21ml			2gm	100ml				
Ceftaroline (Teflaro)	600mg	20ml sterile water, NS, or D5W	20ml	30mg/ml	NS/D5W	600mg max	50-250ml	60 min	6 hrs	24 hrs	Saline flush only recommended. Do not mix with other drugs. Store vials at room temperature.
Ceftazidime (Fortaz)	1gm	10ml sterile water	10ml	100mg/ml	NS/D5W	2gm max	100ml	30 min	12 hrs	3 days	Vials - protect from light. Manufacturer - temporarily D/C other solutions at same site.
	2gm		11.7ml	170mg/ml							
Ceftazidime/ Avibactam (Avycaz)	2.5gm	10ml sterile water, NS, or D5W	12ml	2.5gm/12ml	NS/D5W	2.5gm	50-250ml	2 hrs	12 hrs	24 hrs	Protect vials from light.
Ceftolozane/ Tazobactam (Zerbaxa)	1.5gm	10ml sterile water or NS	11.4ml	1.5gm/11.4ml	NS/D5W	1.5gm	100ml	1 hr	24 hrs	7 days	Refrigerate and protect vials from light. Reconstituted - clear/colorless to clear/slightly yellow color range
Ceftriaxone (Rocephin)	1gm	9.6ml sterile water	10ml	100mg/ml	NS/D5W	1-2gm	100ml	30 min	24 hrs	9 days	Precipitation risk with calcium. Protect vials from light.
	2gm	19.2ml sterile water	20ml								
Ciprofloxacin (Cipro)	200mg	N/A	N/A	Premix	D5W	200mg	100ml	60 min	14 days	N/A	Saline flush only recommended. Protect from light. Do not freeze.
	400mg		N/A			400mg	200ml				
Clindamycin (Cleocin)	300mg	N/A	N/A	Premix	D5W	300mg	50ml	30 min	7 days	N/A	Refrigerated/frozen - resolubilize crystals before administration
	600mg		N/A			600mg					
	900mg		N/A			900mg					

A Nurse Must Initiate Administration of an IV Within 1 Hour Upon Mixing

Drug Name	Vial Size	Reconstiutited With	Total Volume	Reconstituted Concentration	Solution (NS/D5W)	Dose	Volume	Infusion Time	Diluted Beyond use Date		Comments
									Room	Refrigerated	
Daptomycin (Cubicin)	500mg	10ml of NS	10ml	50mg/ml	NS	1gm max	50ml	30 min	12 hrs	9 days	Refrigerate vials. Avoid vigorous agitation/shaking of vial to minimize foaming
Doxycycline (Vibramycin)	100mg	10ml sterile water, NS, or D5W	10ml	10mg/ml	NS/D5W	0-100mg	100ml	1-4 hrs	48 hrs	7 days	Protect from light
						101 -200mg	250ml				
Ertapenem (Invanz)	1gm	10ml sterile water or NS	10ml	100mg/ml	NS	1gm max	50ml	30 min	6 hrs	24 hrs	Do not freeze. Refrigerate.
Famotidine (Pepcid)	10mg/ml	N/A	N/A	N/A	NS/D5W	20mg	100ml	15-30 min	48 hrs	9 days	Refrigerate vials.
			N/A			40mg	250ml				
Fluconazole (Diflucan)	200mg	N/A	N/A	Premix	NS/D5W	200mg	100ml	60 min	30 days	N/A	Protect from freezing.
	400mg		N/A			400mg	200ml	120 min			
Gentamicin	40mg/ml (2ml vial)	N/A	N/A	N/A	NS/D5W	3mg/kg/day	100-200ml	1-2 hrs	24 hrs	4 days	Protect vials from light.
			N/A								
Imipenem/ Cilastatin (Primaxin)	250mg	10ml sterile water	10ml	25mg/ml	NS/D5W	500mg max	100ml	30 min	4 hrs	24 hrs	Saline flush only recommended. Solution - colorless-yellow range. If admixed dose refrigerated, shake vigorously and equilibrate to room temperature; shake immediately prior to administration.
	500mg		10ml	50mg/ml		> 500mg		60 min			
Levofloxacin (Levaquin)	250mg	N/A	N/A	Premix	D5W	250mg	50ml	60 min	14 days	N/A	Avoid excessive heat. Protect from light. Do not freeze.
	500mg		N/A			500mg	100ml	60 min			
	750mg		N/A			750mg	150ml	90 min			
Linezolid (Zyvox)	200mg	N/A	N/A	Premix	NS/D5W	200mg	100ml	30-120 min	15 days	N/A	Protect from light. Do not freeze. Yellow color may intensify over time without affecting stability.
	400mg		N/A			400mg	200ml				
	600mg		N/A			600mg	300ml				
Meropenem (Merrem)	500mg	10ml of sterile water	10ml	50mg/ml	NS	2gm max	100ml	15-30 min	4 hrs	5 days	Stability decreased in D5W
	1gm	20ml of sterile water	20ml								
Metronidazole (Flagyl)	500mg	N/A	N/A	Premix	D5W	500mg	100ml	60 min	7 days	N/A	Do not refrigerate Protect from light (short-term exposure to normal room light is fine).
Nafcillin	1gm	3.4ml sterile water or NS	4ml	250mg/ml	NS/D5W	1-2gm	100ml	30-60 min	24 hrs	9 days	
	2gm	6.6ml sterile water or NS	8ml								
Ondansetron (Zofran)	2mg/ml (20ml vial)	N/A	N/A	N/A	NS/D5W	16mg max	50ml	15 min	48 hrs	9 days	
Oxacillin	1gm	10ml of sterile water	10ml	100mg/ml	NS	1gm	100ml	30 min	24 hrs	7 days	High concentrations irritate veins. Stability decreased in D5W.
	2gm	20ml of sterile water	20ml			1-2 gm					
Pantoprazole (Protonix)	40mg	10ml NS	10ml	4mg/ml	NS/D5W	0.4mg/ml	100ml	15 min	24 hrs	N/A	Saline flush only recommended. Do not freeze.
Penicillin G Potassium	5MU	8ml sterile water	10ml	1MU/2ml	NS/D5W	4MU max	50ml	30 min	24 hrs	7 days	Refrigerate reconstituted solution.
Piperacillin/ Tazobactam (Zosyn)	2.25gm	10ml sterile water	10ml	2.25gm/10ml	NS/D5W	2.25gm	100ml	30 min	24 hours	7 days	
	3.375gm	15ml sterile water	15ml	3.375gm/15ml		3.375gm					
	4.5gm	20ml sterile water	20ml	4.5gm/20ml		4.5gm					

A Nurse Must Initiate Administration of an IV Within 1 Hour Upon Mixing

Drug Name	Vial Size	Reconstiutited With	Total Volume	Reconstituted Concentration	Solution (NS/D5W)	Dose	Volume	Infusion Time	Diluted Beyond use Date		Comments
									Room	Refrigerated	
Quinaprisitin/ Dalfopristin (Synercid)	500mg	5ml sterile water or D5W	5ml	100mg/ml	D5W	7.5mg/kg	250ml	60 min	5 hrs	54 hrs	Incompatible with saline and heparin. Flush only with D5W (before/after dose). Let foam dissipate to clear solution before further dilution. Do not freeze.
Rifampin	600mg (30ml vial)	10ml sterile water	10ml	60mg/ml	NS	600mg max	100ml	30 min	24 hrs	N/A	Avoid excessive heat. Protect from light. Stability decreased in D5W.
Solu-Medrol Act-o-vial	40mg	Bacteriostatic water	1ml	40mg/ml	NS/D5W	[60-100 mg]	[50ml]	30-90 min	24 hrs	24 hrs	Protect from light
						[101-500mg]	[100ml]				
						[501-1250mg]	[250ml]				Protect from light
Tigecycline (Tygacil)	50mg	5.3ml NS or D5W	5ml	10mg/ml	NS/D5W	100mg max	100ml	30-60 min	18 hrs	48 hrs	Discard if solution is not yellow/orange.
Tobramycin	40mg/ml (2ml vial)	N/A	N/A	N/A	NS/D5W	200mg max	100ml	20-60 min	24 hrs	48 hrs	
Vancomycin	1gm vial	20ml sterile water		50mg/ml	NS/D5W	500mg max	100ml	60 min	48 hrs	9 days	To avoid irritation, use a central line for higher concentrations.
			20ml			501-1250mg	250ml	90 min			
						1250-1750mg	500ml	120 min			
						> 1750mg	500ml	120 min			
Venofer	100mg (5ml vial)	N/A	N/A	N/A	NS	100mg	100ml	15 min	7 days	N/A	Protect from light

Appendix D

Commonly Used Medications Approved by the Manufacturer for IV Push Administration

Commonly Used Medications Approved by the Manufacturer for IV Push Administration

Generic Name	Brand Name	Mechanism of Action	Indications	Administration Rate	Compatible IV Solutions if Dilution Required	Nursing Considerations
Bumetanide	Bumex	Inhibits reabsorption of Na and Cl in the ascending loop of Henle of the renal tubules. Increases K excretion in the distal tubule. Causes renal vasolidation.	Edema, pulmonary edema, hypertensive crisis with edema or renal failure.	0.5-1mg over 1-2 min using a 21 or 23 gauge needle	D5W 0.9% NaCl	- BBW: electrolyte imbalances - K, Na, Ca; severe imbalances should be corrected before starting treatment - Hypokalemia - postural hypotension, malaise, fatigue, tachycardia, leg cramps, weakness - Met. alkalosis - drowsiness, restlessness - Confusion (esp. geriatric patients) - Allergy - sulfonamide
Furosemide	Lasix	Inhibits reabsorption of Na and Cl in the ascending loop of Henle of the renal tubules. Increases K excretion in the distal tubule. Causes renal vasolidation.	Edema, pulmonary edema, hypertensive crisis with edema or renal failure.	40mg over 1-2 min	D5W 0.9% NaCl	- Hearing loss, rining in the ears - Electrolyte imbalances - K, Na, Cl - Hypokalemia - postural hypotension, malaise, fatigue, tachycardia, leg cramps, weakness - Met. alkalosis - drowsiness, restlessness - Confusion (esp. geriatric patients) - Allergy - sulfonamide, thiazide
Glucagon	GlucaGen	Promotes hepatic glycogenolysis and gluconeogenesism, raising serum glucose levels.	Severe hypoglycemia	1 USP Unit = 1IU = 1mg 0.5-1mg over 2-5 min	Reconstitute with provided diluent	N/A
Heparin	Hep-Lock, Hep-Lock U/P, Monoject Prefill	Potentates the effects of anithrombin in the clotting cascade. Inhibits Factors IX, X, XI, XII. Prevents formation of a stable fibrin clot, but will not dissolve existing clots.	Venous thrombosis, pulmonary embolism, disseminated intravascular coagulation	5,000-10,000 Unit bolus over 1-2 min	D5W 0.9% NaCl	- Bleeding/hemorrhage - bruising, blood in urine or stool, bloody nose or gums, drop in Hct, BP change - Hypersensitivity - rash, chills, fevers, itching; report to prescriber
Hydrocortisone	A-Hyrdrocort Solu-Cortef	Stabilizes leukocyte lysosomal membranes; supresses pituitary release of corticotrophin, so the adrenal cortex stops secreting corticosteroids.	Severe inflammation, adrenal insufficiency, shock	100mg over ≥ 1-2 min	D5W 0.9% NaCl	- CNS - affect, mood, behavioral changes, aggression - GI - nausea, vomitting, diarrhea, constipation, abdominal pain, hiccups
Hydromorphone	Dilaudid	Potent u-opiate receptor agonist which produce analgesia	Relief of moderate-severe pain, management of opioid tolerance or chronic severe pain	0.2-1mg via slow IV push over 2-3 minutes	D5W 0.9 % NaCl	- BBW - respiratory depression - notify prescriber if RR < 10/min - CNS - dizziness, drowsiness, hallucinations, euphoria - Allergic reactions - rash, urticaria

Generic Name	Brand Name	Mechanism of Action	Indications	Administration Rate	Compatible IV Solutions if Dilution Required	Nursing Considerations
Insulin (Regular Only)	Humulin-R, Novolin-R	Stimulates carbohydrate metabolism. Promotes intracellular shifts of K and Mg, temporarily reducing elevated serum levels of electrolytes.	Hyperglycemia	10-50 units over ≥ 1-2 min	0.9% NaCl	- Hypoglycemia - sweating, weakness, dizziness, chills, confusion, headache, nausea, rapid weak pulse, fatigue, tachycardia, memory lapses, slurred speech, anxiety, tremors, hunger
Lorazepam	Ativan	Thought to enhance or facilitate the action of a neurotransmitter, which depresses the CNS at the limbic and subcortical levels, producing an antianxiety effect. It also possesses skeletal muscle relaxant, anticonvulsant, and amnesiac properties.	Short term symptomatic relief of anxiety, preoperative sedation, prevention of nausea and vomiting associated with chemotherapy	Max rate: 2mg/min	D5W 0.9% NaCl	- CNS - mood, sensorium, affect, sleeping pattern, drowsiness, dizziness, suicidal tendencies - Renal/hepatic/blood status if receiving high-dose therapy
Methylprednisolone	A-Methapred Solu-Medrol	Suppresses pituitary release of ACTH, preventing adrenocorticol corticosteroid secretion. Suppresses immune responses by stabilizing leukocyte lysosemal membranes.	Severe inflammation or immunosuppression, severe shock, severe lupus nephritis, reduction of spinal cord trauma, adjunctive treatment of *Pneumocystis carinii* pneumonia	125-500mg over ≥ 1-2 min	D5W 0.9% NaCl	- CNS - affect, mood, behavioral changes, aggression
Morphine sulfate	Morphine	Binds opiate receptors in the CNS altering the perception of pain and the emotional response to it.	Relief of moderate to severe pain, chronic pain, pain associated with MI	2.5-15mg diluted in 4-5 ml of compatible solution over 4-5 min	D5W 0.9% NaCl	- CNS - dizziness, drowsiness, hallucinations, euphoria - Alllergic reactions - rash, urticaria - Respiratory depression - notify prescriber if RR <12/min
Ondansetron	Zofran	Blocks serotonin peripherally, centrally, and in the small intestines	Prevention of nausea/vomiting associated with cancer chemotherapy, radiotherapy; prevention of post-op nausea and vomiting	4mg undiluted over 2-5 min	D5W 0.9% NaCl	Monitor ECG in patients with cardiac disease or other products that increase the risk of QT prolongation

Appendix E

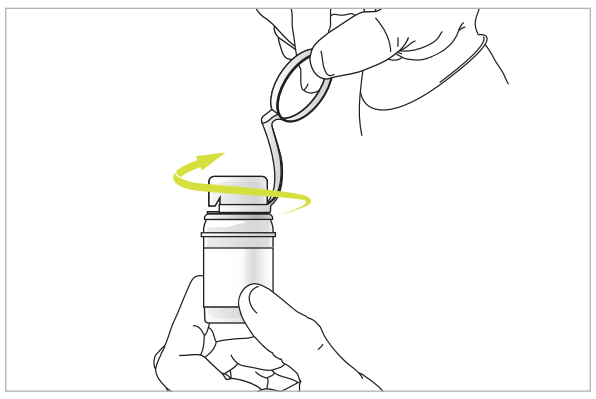
Guides For:

1. ADD-Vantage System
2. Baxter Vial-Mate Adapter
3. Mini-Bag Plus Container

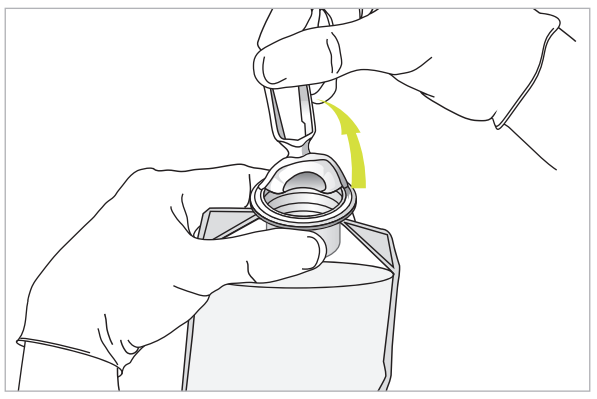
ADD-Vantage™ System

Instructions for use

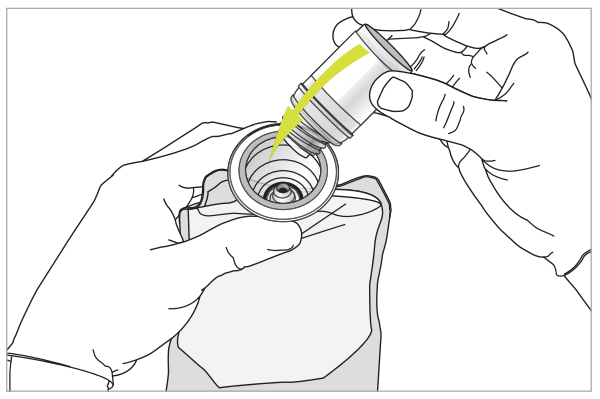
1. Assemble - Use Aseptic Technique



Swing the pull ring over the top of the vial and pull down far enough to start the opening. Then pull straight up to remove the cap. Avoid touching the rubber stopper and vial threads.

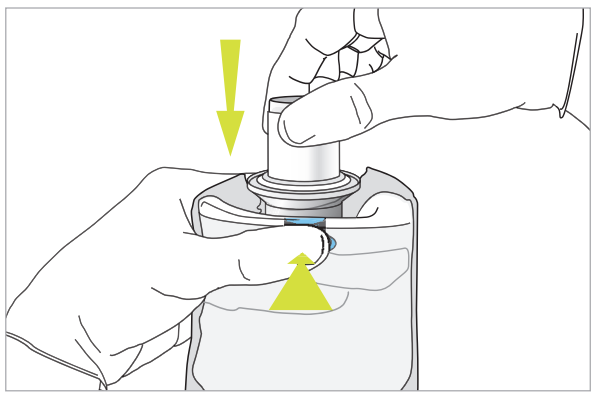


Hold diluent container and gently grasp the tab on the pull ring. Pull up to break the tie membrane. Pull back to remove the cover. Avoid touching the inside of the vial port.

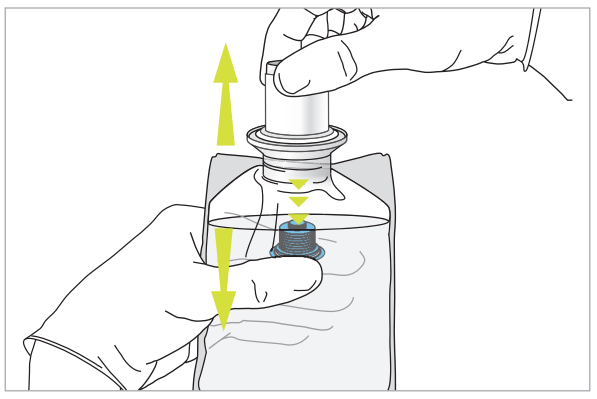


Screw the vial into the vial port until it will go no further. Recheck the vial to assure that it is tight. Label appropriately.

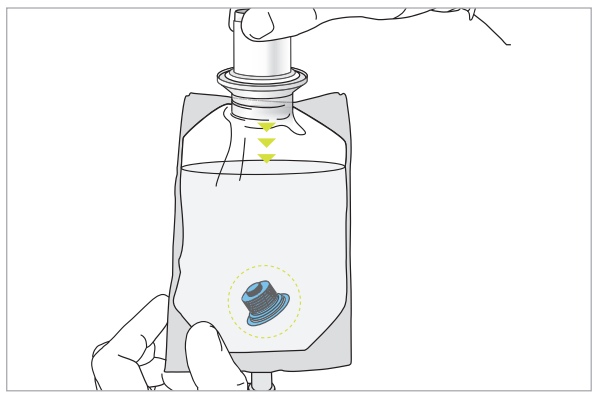
2. Activate - Pull Plug/Stopper to Mix Drug with Diluent



Hold the vial as shown. Push the drug vial down into container and grasp the inner cap of the vial through the walls of the container.



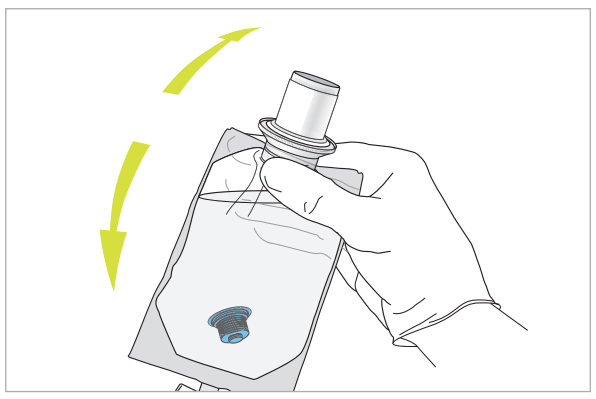
Pull the inner plug from the drug vial: allow drug to fall into diuent container for fast mixing. Do not force stopper by pushing on one side of inner cap at a time.



Verify that the plug and rubber stopper have been removed from the vial. The floating stopper is an indication that the system has been activated.

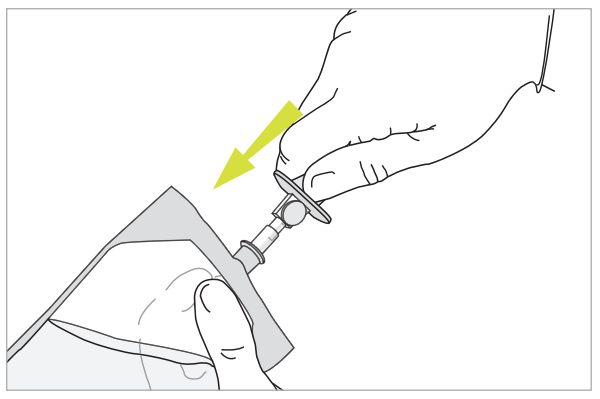
If the rubber stopper is not removed from the vial and medication is not released on the first attempt, the inner cap may be manipulated back into the rubber stopper without removing the drug vial from the diluent container. After repositioning the inner cap, repeat the "Activate" step.

3. Mix and Administer - Within Specified Time



Mix container contents thoroughly to assure complete dissolution. Look through bottom of vial to verify complete mixing. Check for leaks by squeezing container firmly. If leaks are found, discard unit.

Pull up hanger on the vial.



Remove the white administration port cover and spike (pierce) the container with the piercing pin. Administer within the specified time.

For more information, contact your Hospira representative at 1-877-9Hospira (946-7747) or visit www.hospira.com

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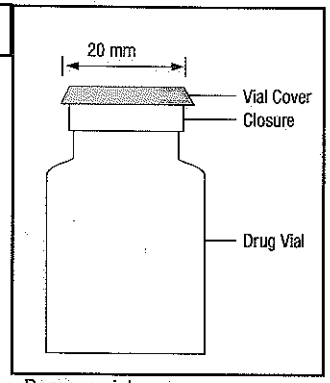
VIAL-MATE Adaptor

UPN 8541027388 (ea.)

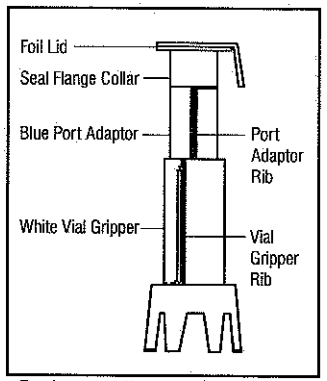
Only for Single Dose Drug Vials with 20 mm Closures and VIAFLEX Containers

Assembly Use Aseptic Technique to Assemble

1

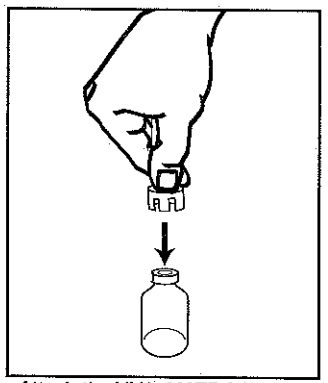


- Remove vial cover
- Disinfect vial septum



- Peel open blister pack
- Do not use if foil seal is compromised

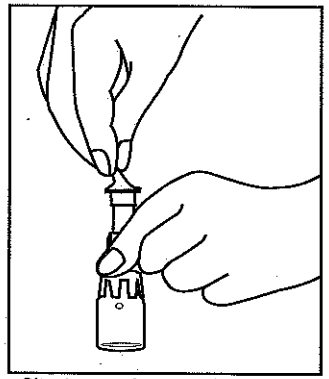
2



Attach the VIAL-MATE Adaptor to the drug vial:

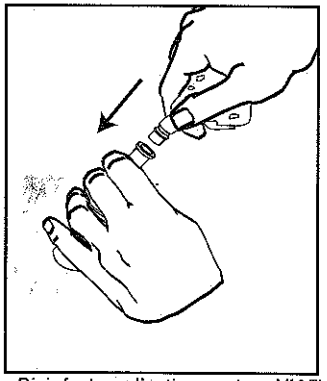
- Place vial upright
- Hold white vial gripper firmly
- Push vial gripper straight down until vial snaps into place DO NOT TWIST

3



- Check to make sure vial is securely attached by pulling the vial straight down
- DO NOT TWIST vial in device
- Remove foil lid. Area under foil is sterile

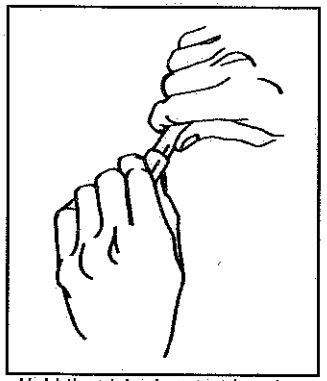
4



- Disinfect medication port on VIAFLEX container
- Hold the blue port adaptor just beneath the seal flange collar
- Push the medication port straight into the blue port adaptor until the seal flange collar touches the container

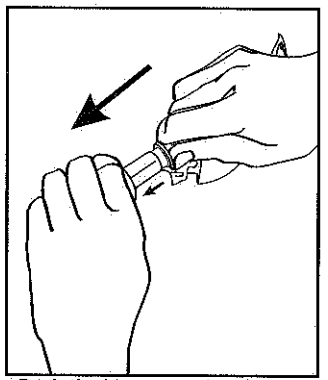
Activation

5



- Hold the vial gripper and port adaptor assemblies firmly
- Twist slightly to align the ribs of the blue port adaptor and the white vial gripper

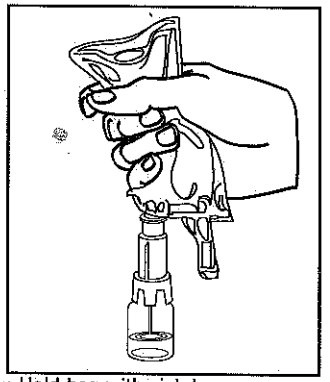
6



- Push the blue port adaptor assembly into the white vial gripper until the seal flange collar meets the white vial gripper

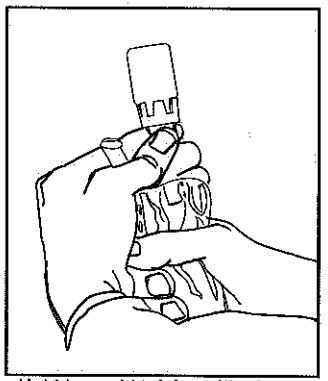
Reconstitution

7



- Hold bag with vial down
- Squeeze solution into vial until half full
- Shake to suspend drug in solution

8



- Hold bag with vial upside down
- Squeeze bag to force air into vial
- Release to drain suspended drug from vial

9 • Repeat steps 7 and 8 until vial is **empty** of drug and solution is thoroughly mixed. **Ensure drug is completely dissolved. Do Not Remove VIAL-MATE Adaptor and Drug Vial.**

10 • Remove port protector. Attach administration set per its directions.

- Hang container on I.V. pole and prime set per directions. Ensure that vial is empty of drug and solution. Repeat step 8 if drug and solution remain in vial. **Warning:** Do not use in series connections.
- Administer medication per directions. Use within specified time for drug stability. Refer to drug package insert.

Use only with 5% Dextrose and 0.9% Sodium Chloride VIAFLEX Containers:	
Single Pack	50, 100, 250 mL

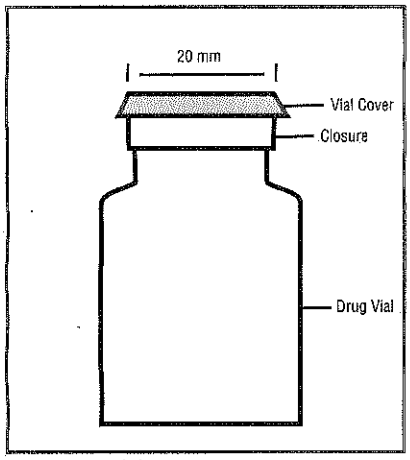
Mini-Bag™ Plus Container Directions

Only For Single Dose Powdered Drug Vials with 20 mm Closures

Use Aseptic Technique

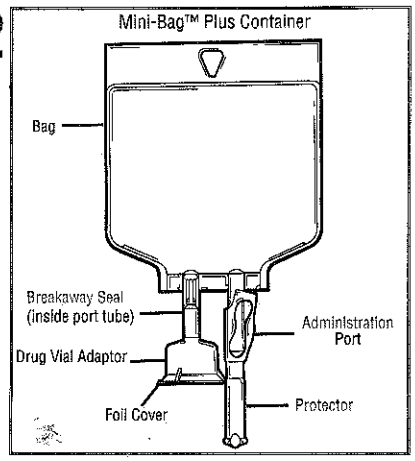
Assembly

1



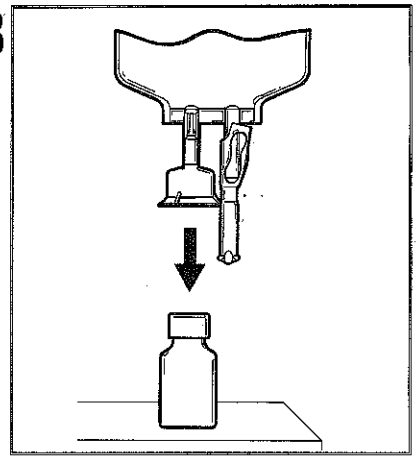
- Remove vial cover.
- Disinfect stopper.

2



- Peel off foil cover.
- Inspect adaptor for moisture. Discard if found.

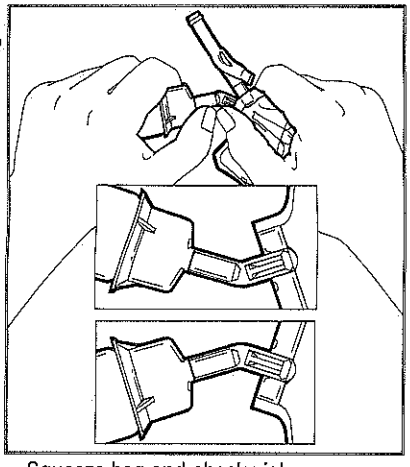
3



- Place vial upright.
- Hold firmly.
- Push adaptor down until vial snaps in place.
- DO NOT TWIST.
- Pull vial to ensure fully seated.

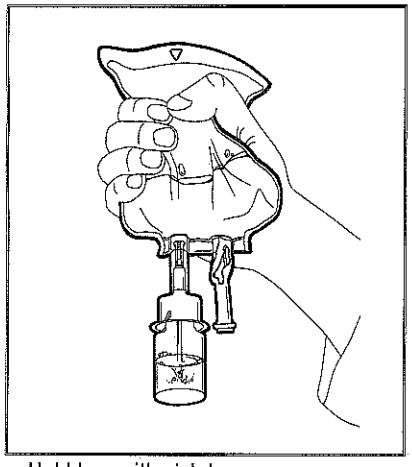
Reconstitution

4



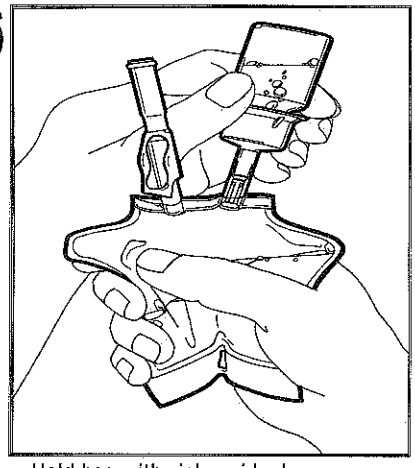
- Squeeze bag and check vial.
- Use only if vial fully seated and dry.
- Bend up then down to break seal.

5



- Hold bag with vial down.
- Squeeze solution into vial until **half full**.
- Shake to suspend drug in solution.

6



- Hold bag with vial upside down.
- Squeeze bag to force air into vial.
- Release to drain suspended drug from vial.
- Repeat steps 5 and 6 until vial is **empty** of drug and solution is thoroughly mixed. **Ensure drug is completely dissolved. Do Not Remove Drug Vial.**

7 Remove port protector. Attach administration set per its directions.

8 Hang container on I.V. pole and prime set per directions. Ensure that vial is empty of drug and solution. Repeat step 6 if drug and solution remain in vial.
Warning: Do not use in series connections.

9 Administer medication per directions. Use within specified time for drug stability. Refer to drug package insert.

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