Accessing and Bolus Injection or Continuous Infusion via an Implanted Port

PURPOSE

To administer a safe and accurate bolus or continuous infusion of medication or solution via an implanted port.

POLICY

1. RNs shall be responsible for this procedure and shall be competent in implanted vascular access port use and maintenance, including port access, identification of potential complications, and appropriate nursing interventions. A patient or caregiver may be instructed on these procedures, if appropriate. A physician's order will be obtained to train the patient/caregiver to access the implanted port.

2. Information necessary to manage the port will be requested at the point of referral intake and may include some or all of the following:
   a. The port type and brand
   b. The location of the port
   c. Whether or not the port is accessed at the time of discharge and if so, the date the needle is due to be changed
   d. The appropriate needle gauge and length of port-specific needle type. Follow manufacturer's recommendations for access and maintenance. (The Bard Cath Link 20 requires a special over-the needle IV catheter and regular non-coring needles should not be used with this device)

3. A bolus injection is defined as a dose of medication or other pharmaceutical preparation given over a short period of time.

4. The implanted port shall be accessed with a non-coring safety port needle, unless otherwise recommended by the manufacturer.

5. Sterile technique shall be used. The skin will be cleansed with soap and water, followed by an appropriate disinfecting agent. Formulations containing a combination of alcohol (ethyl or isopropyl) and either chlorhexidine gluconate or povidone-iodine are preferred.

6. The use of chlorhexidine gluconate in infants weighing less than 1000 grams has been associated with contact dermatitis and should be used with caution in this population.

7. For neonates, isopropyl alcohol or products containing isopropyl alcohol are not recommended for access site preparation. Povidone-iodine or chlorhexidine gluconate solution is recommended but requires complete removal, after the preparatory procedure, with sterile water or sterile 0.9% sodium chloride (USP) to prevent product absorption.

8. The smallest gauge non-coring needle that can deliver the prescribed therapy will be selected. The length should not cause the vertical axis of the needle to extend beyond the level of the skin when properly placed.
9. Needles with sharps engineered protection devices (built-in safety features) must be used unless contraindicated for patient care or if an appropriate device is not commercially available.

10. It is highly recommended that nurses wear a mask during the access procedure. Patients should be encouraged to wear a mask as well. If the patient is unwilling to wear a mask, the patient's head should be positioned away from the access site during the procedure and conversation should be avoided.

11. The access site should be assessed for signs & symptoms of infection prior to access. Any sign or symptom of infection should be reported to the physician prior to attempting to access a port.

12. A sterile, closed system shall be maintained while the needle is in the port. The tip of the non-coring needle shall be inserted perpendicular to the septum. Push firmly through the skin and septum until the needle tip contacts the back of the portal body. Care must be taken to assure appropriate needle placement prior to injecting flush solution.

13. The non-coring needle shall not be tilted or rocked once it has entered the port as this may damage the septum.

14. The usual method for verification of needle placement is to aspirate for blood. If a blood return is not achievable, the patient should be repositioned, and blood return checked again. If no blood return is noted, the needle should be removed and the site re-prepped and reaccessed using a new kit and needle. If there is no blood return after reaccessing the port, contact the physician to obtain orders for a declotting agent, or make arrangements for further assessment of the port. Once blood return has been verified, flush the port with 0.9% sodium chloride. Flushing should be easy and require little pressure on the syringe plunger.

15. Patency will be evaluated prior to administration of any infusion therapy. Correct needle placement in ports should be verified by positive aspiration of blood prior to administration of medications or solutions. In the absence of a positive blood return, infusion therapy should be withheld until the problem can be diagnosed and treated.

16. 0.9% sodium chloride (USP) should be used to confirm that fluid flows through the system.

17. The non-coring needle shall be changed at least every 7 days or as ordered by the physician.

18. Frequency of the port dressing change:
    a. Every 7 days when the port is re-accessed
    b. Immediately if the integrity of the dressing is compromised
19. Special considerations apply to intra-arterial ports:
    a. An intra-arterial port is used to administer medication to a specific target organ via the arterial system.
    b. Placement into the hepatic artery is the most common location for an intra-arterial catheter. The port body is usually placed over the lower rib cage.
    c. Intra-arterial ports should be accessed and heparinized every 7 days to prevent possible catheter or port occlusion.
    d. After each use, the intra-arterial port should be flushed with at least 20ml of 0.9% sodium chloride (USP), followed by 5ml of heparin flush solution (100 units/ml or as prescribed by the physician). The port must be flushed immediately upon access and the non-coring needle removed on therapy completion to prevent blood back flow and possible catheter occlusion.
    e. When flushing an intra-arterial port, positive pressure should be maintained on the syringe plunger at all times to prevent reflux of blood.
    f. Refer to Chemotherapy Protocols for chemotherapy administration policies and procedures.

20. Consideration should be given to manufacturer's recommendations for flush volumes, based on types of infusate, blood draw or size and condition of patient.

21. Consideration may be given to the use of EMLA® or L-M-X® cream with a physician's order to decrease discomfort of the needle stick. Follow manufacturer's instructions. Application of ice or a cold pack for several minutes to reduce pain may be an alternative.

EQUIPMENT

Liquid soap and sanitizing gel

Central Line Dressing Kit (pre-packaged), and 1 sterile non-coring needle or the following supplies:

1-2 pair of sterile gloves

2 masks

1 packet of alcohol swabsticks (3 per packet), 1 packet povidione-iodine swabsticks (3 per packet), or other disinfectant product (e.g. ChloraPrep®, IV Prep®, DuraPrep®)

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1 sterile safety non-coring needle of appropriate size with attached extension tubing

1 sterile injection cap / needleless connector

2 10ml pre-filled 0.9% sodium chloride (USP) syringes or 30ml vial of 0.9% sodium chloride (USP)

1 5ml pre-filled heparin syringe (100 units/ml) or 10ml vial of heparin 100 unit/ml (if applicable)

3 sterile 10ml syringes

Catheter stabilization device as appropriate

Transparent dressing

Sterile barrier

Alcohol swabs

Sterile gauze 2x2

Medication bag, cassette or syringe

Sharps container

Antimicrobial disc

PROCEDURE

1. Verify physician order. Explain procedure to patient.

2. Wash hands thoroughly with soap and water. Dry with clean paper towel.

3. Working on a clean and dry surface, open the central line dressing kit and arrange supplies.

4. Put on mask and have patient put on mask or turn head away from site, as appropriate.

5. Palpate skin to locate port.

6. Scrub the skin over the port with liquid soap and dry with a clean paper towel.

7. Examine the site for redness, drainage, swelling or discomfort. Notify the physician before accessing if any of these symptoms are present and it is beyond the usual healing period.

8. Remove pre-filled syringes from their packages and dispel air. The exterior of the syringes is not sterile; they should not be placed in the center of the sterile field. If not using pre-filled syringes, cleanse the heparin and saline vial tops with alcohol and allow to dry completely. Using the sterile 10ml syringes, draw up the appropriate amounts of heparin and saline.

9. Open one end of the needleless connector package, leaving the connector in the package. Remove protective cover from the needleless connector and attach the 0.9% sodium chloride syringe to the connector. With the connector still in its package, invert the connector and syringe, then prime the connector. Remove the package from the connector and lay the syringe/connector on the outer edge of the sterile field. Keep in mind that the exterior of the syringe is not sterile.
10. Put on sterile gloves. Using firm pressure and friction, scrub the skin over the port with alcohol to a diameter of approximately 4 inches. Repeat the procedure with the ChloraPrep® cleanser, scrubbing for 30 seconds. Allow solution to dry for at least one minute (or longer if indicated). Note: If ChloraPrep® allergy is documented, povidone-iodine may be used to cleanse the site. This solution must be allowed to dry for at least 2 full minutes.

11. Remove and discard gloves. Sanitize hands with gel.

12. Put one sterile glove on dominant hand.

13. Pick up the non-coring needle with the gloved hand, and the sodium chloride flush/needleless connector with the non-gloved hand. Attach the needleless connector to the non-coring needle extension tubing. Prime the tubing and non-coring needle, expelling the sodium chloride away from the sterile field. Place the non-coring needle/extension set on the sterile field, with the attached sodium chloride syringe positioned on the outside edge of the field.

14. Put on remaining sterile glove.

15. Locate and stabilize the port between the middle and index finger or the index finger and thumb of the non-dominant hand.

16. Using the dominant hand, pick up the non-coring needle (with the sodium chloride flush still attached) and remove the protective sheath.

17. Insert the safety non-coring needle firmly through the skin and portal septum until the needle gently touches the back of the portal body. If the needle is pushed too hard, the tip of the needle may bend.

18. Correct needle placement in vascular ports should be verified by positive aspiration of blood prior to administration of medication and/or solutions. It may be necessary to re-position the patient (extend right arm over the head or out to the side, have patient sit up in a chair and bend over at the waste, roll to one side or another). If a blood return is still not achieved, withdraw the needle, re-prep the site and use a new needle to re-access.

19. Flush port with 10ml of 0.9% sodium chloride prior to administering medication or initiating the infusion of solution. To prevent reflux, maintain positive pressure by inserting all but the last 0.5ml of solution (do not bottom out the syringe).

20. If port is to remain accessed, anchor the non-coring needle with appropriate stabilization device. Apply antimicrobial disc around the needle insertion site. If necessary, gauze may be used to support the wings of the access needle, as long as it does not obscure the needle insertion site. Cover the site with a transparent dressing and occlude the bottom border with tape.

21. Remove gloves.

22. Cleanse needleless connector with alcohol, wiping for one full minute. Attach IV tubing or medication syringe to the connector to initiate the infusion.

23. Infuse the medication over the appropriate time period.

24. When the infusion is complete, flush the port with 10ml of 0.9% sodium chloride, followed by 5ml of 100 unit/ml heparin (or other prescribed amount as directed).

25. To remove the non-coring needle:
    a. Put on sterile gloves.
    b. Place a sterile 2x2 gauze around the non-coring needle insertion site.
    c. While stabilizing the port and framework on the non-coring needle, pull back on the plastic lever on top of the port needle. Once a “click” is heard, the needle has been secured within the safety casing and the device can be “lifted off” of the insertion site. Note: follow manufacturer’s instructions for other brands of non-coring needles.
    d. Apply Band-Aid or sterile 2x2 over site if necessary.
    e. Dispose of needle in sharps container.
    f. Remove gloves and wash hands.

26. Document procedure in the patient’s medical record.

RESPONSIBILITY
The Clinical Specialist has the responsibility for approval of, compliance with, and revisions to this policy.

MODIFICATION/REVISION

This policy is subject to modification or revision in part or its entirety to reflect changes in conditions subsequent to the effective date of this policy.

REFERENCES

1. Infusion Nursing Standards of Practice – Revised 2016; Journal of Infusion Nursing, Supplement to January/February 2016, Volume 39, Number 1S.

2. Infusion Nursing: An Evidence-Based Approach, Third Edition edited by Mary Alexander, Ann Corrigan, Lisa Gorski, Judy Hankins, and Roxanne Perucca.

3. INS (Infusion Nurses Society) Policies and Procedures for Infusion Nursing, 3rd Edition.