

**CONSIDERATIONS:**

1. LPNs working in New Hampshire may not care for central lines based on the NH State Practice Act.
2. An implantable vascular access device (IVAD) consists of a self-sealing septum, reservoir, and radiopaque catheter. The catheter may terminate in the venous system (e.g., superior vena cava or right atrium), hepatic artery, peritoneal cavity or epidural space.
3. Aseptic technique is MANDATORY when accessing the port. The use of a non-coring needle is required to safely access the self-sealing septum. The non-coring needle, i.e., Huber, is characterized by the bevel which allows the septum to self-seal after removal.
4. The IVAD flushes without difficulty and without evidence of fluid infiltration.
5. The portal septum varies in size and ease of accessibility. Correct and secure needle placement is MANDATORY before IVAD is used. The life of the silicone septum is approximately 2,000 punctures with a 22-gauge non-coring needle.
6. Flushing protocols for IVADs are as follows:
  - a. Intravenous - every 4 weeks when not in use, Heparin solution (100 units/mL), 3-5 mL
  - b. Intra-arterial - every week when not in use, Heparin solution (100 units/mL), 3-5 mL
  - c. Intraperitoneal - normal saline after each use, no periodic flushing required
7. Use a 10 mL or larger syringe when flushing an IVAD. Excessive pressure is generated with smaller syringes which can cause catheter rupture.
8. When continuous access for therapy is required, a 90 degree, or right angle, non-coring safety needle with attached extension tubing should be used. Non-coring needles should be changed at least every 7 days.
9. Some patients experience pain/anxiety with port access. Potential interventions include: distraction, ice over the port site for about 5 minutes prior to needle insertion, and anesthetic creams (e.g. EMLA).
10. Potential complications include, but are not limited to, infiltration/extravasation, infection, occlusion, and catheter associated venous thrombosis.
11. Confirm physician's order to use the IVAD to obtain blood specimen, especially if drawing blood for clotting studies; clotting studies from a heparinized line may result in falsely elevated results
12. If aspiration of blood becomes difficult, ask the patient to change positions, take a deep breath or lift uninjured arm above his/her head.
13. For patients with running infusions via an IVAD, it is important to instruct patients in risk of needle dislodgement and potential infiltration/extravasation. Instructions should include turning off the infusion and immediately calling the home care nurse if there

is any pain, burning, stinging, wetness, swelling, redness at the site. Instructions should also include avoiding any tension at the insertion site and attention to clothing that might cause irritation during needle placement (e.g. bra straps).

14. Per Joint Commission recommendations, all tubes and catheters should be labeled to prevent the possibility of tubing misconnections. Staff should emphasize to all patients the importance of contacting a clinical staff member for assistance when there is an identified need to disconnect or reconnect devices.

**Insertion of Non-Coring Needle**

**EQUIPMENT:**

Local anesthetic (optional)

Central line dressing tray (preferable)

If no central line tray:

    Sterile barrier

    Mask

    Gloves, sterile

    Antimicrobial applicators (/swab/disk/ampule) – chlorhexidine/alcohol solution preferred

    2 x 2 gauze sponge, sterile

    Transparent semi-permeable adhesive dressing

Non-coring safety needle with pre-attached extension tubing

Vials of normal saline/heparin (100 units/mL or as prescribed) with attached needleless vial adaptor\*

Needleless connector, optional; if leaving noncoring needle in place for infusions

10 mL syringes (2)

Puncture-proof container

Impervious trash bag

\*If prefilled saline/heparin syringes are available in sterile packaging, can eliminate vials

**PROCEDURE:**

1. Adhere to Standard Precautions.
2. Explain the procedure and purpose to the patient/caregiver.
3. Explore patient's pain tolerance and preferences regarding use of local anesthetic prior to IVAD access and provide intervention if appropriate.
4. Assemble the equipment on a clean surface close to the patient.
5. Place patient in comfortable position, making sure that site is accessible; expose site while maintaining maximum privacy.
6. Ensure adequate lighting.
7. Locate the septum by palpating the outer perimeter of the IVAD.
8. Open central line tray, or sterile barrier, to establish sterile field and sterile supplies onto field.
9. Don one sterile glove and mask. Prepare normal saline and heparin solution syringes, using non-

gloved hand to hold prepared non-sterile vials and holding sterile syringe with gloved hand; place filled syringes on sterile field. Don second sterile glove.

10. Using aseptic technique, fill cap, extension tubing and non-coring safety needle with normal saline. Clamp extension tubing.
11. Provide skin antisepsis by cleansing skin with chlorhexidine applicator using a back and forth motion for at least 30 seconds and allow to air dry. Alternative options for skin antisepsis include: povidone iodine, and 70% alcohol. Apply using swab sticks in a concentric circle beginning at port site. Note that povidone iodine must remain on the skin for at least 2 minutes to dry completely and provide adequate skin antisepsis. Allow to air dry. Do not blot or fan.
12. Stabilize IVAD with non-dominant gloved hand. Using a perpendicular angle, insert non-coring safety needle (attached to pre-primed saline syringe) into septum until the bottom of the port is felt. Once port is accessed, do not tilt or rock the needle as this may cause damage to the septum.
13. Unclamp extension tubing, aspirate for blood and after blood return is established, flush with normal saline solution.
14. If port is being accessed for medication/IV solution infusion, secure noncoring needle in position using sterile gauze under wings of needle as needed and placing sterile transparent dressing over the area. Secure tubing to patient skin to prevent any traction at needle insertion site.
15. Clamp the extension tubing and remove the normal saline syringe.
16. If IVAD is being accessed for patency only. Attach the heparin-filled syringe and unclamp extension. Flush with heparin solution and while stabilizing port, remove noncoring needle while activating safety mechanism, always stabilize port by placing thumb and forefinger of non-dominant hand on edges of the IVAD while removing the non-coring needle.
17. Maintain pressure with sterile gauze until bleeding stops. Apply self-adhesive bandage if indicated.
18. Discard soiled supplies in appropriate containers.

**AFTER CARE:**

1. Document in patient's record:
  - a. Date, time, procedure and observations
  - b. Needle size - gauge and length
  - c. Amount of normal saline and heparin flush, including strength of heparin
  - d. Patient's response to procedure, side effects and management
  - e. Instructions given to patient/caregiver

**Medication Administration**

(non-coring needle in place)

**EQUIPMENT:**

- Gloves
- Alcohol applicator (wipe/swab/disk/ampule)
- Needles or needle less adaptor (3)
- 10 mL syringes (3)
- Normal saline (prefilled syringes preferred)
- Heparin solution, 100 units/mL, or as prescribed (prefilled syringes preferred)
- 2 x 2 gauze sponge, sterile
- Self-adhesive bandage
- Medication
- Supplies appropriate for infusing medications (i.e., syringes with needles or needleless adaptor, infusion set)
- Tape
- Puncture-proof container
- Impervious trash bag

**PROCEDURE:**

1. Adhere to Standard Precautions.
2. Explain the procedure and purpose to the patient/caregiver.
3. Assemble the equipment on a clean surface close to the patient.
4. Place patient in comfortable position, making sure that site is accessible.
5. Ensure adequate lighting.
6. Prepare medication.
7. Prepare two normal saline syringes with 10 mL of normal saline in each syringe. Prepare a heparin syringe with 3 - 5 mL of 100 units/mL heparin solution per physician order.
8. For IV push medication:
  - a. Scrub needleless connector with alcohol applicator, using friction for at least 15 seconds. Allow to air dry
  - b. Attach normal saline syringe to needleless connector and aspirate for a blood return. After blood return is established, flush injection port with the entire normal saline and. remove
  - c. Scrub needleless connector again with alcohol applicator, using friction for at least 15 seconds. Allow to air dry. Attach medication-filled syringe to needleless connector. Slowly inject medication, using steady pressure, over time frame indicated by medication or physician's orders. Remove syringe
  - d. Scrub needleless connector with alcohol applicator, using friction for at least 15 seconds. Allow to air dry
  - e. Attach normal saline syringe and flush IVAD
  - f. Repeat steps c through f for each medication

- g. Scrub needleless connector with alcohol applicator, using friction for at least 15 seconds. Allow to air dry
  - h. Attach heparin filled syringe to needleless connector and inject heparin solution and remove syringe
  - i. If needle is to be removed: Remove noncoring needle while activating safety mechanism. Always stabilize port by placing thumb and forefinger of non-dominant hand on edges of the IVAD while removing the non-coring needle. Maintain pressure with sterile 2 x 2 gauze until bleeding stops. Apply self-adhesive bandage
9. For one-time infusion dose:
- a. Scrub needleless connector with alcohol applicator, using friction for at least 15 seconds. Allow to air dry
  - b. Attach normal saline syringe to needleless connector and aspirate for a blood return. After blood return is established, flush injection port with all of the normal saline and remove
  - c. Scrub needleless connector again with alcohol applicator, using friction for at least 15 seconds. Allow to air dry
  - d. Attach IV tubing to needleless connector and start infusion by regulating IV flow using roller clamp, dial-a-flow, or infusion pump
  - e. When infusion is complete, close roller clamp. Detach IV tubing from needleless connector
  - f. Scrub needleless connector again with alcohol applicator, using friction for at least 15 seconds. Allow to air dry
  - g. Attach normal saline syringe and flush IVAD
  - h. Scrub needleless connector again with alcohol applicator, using friction for at least 15 seconds. Allow to air dry
  - i. Attach heparin-filled syringe to needleless connector and inject heparin solution and remove syringe
  - j. Remove noncoring needle while activating safety mechanism. Always stabilize port by placing thumb and forefinger of non-dominant hand on edges of the IVAD while removing the non-coring needle
  - k. Maintain pressure with 2 x 2 gauze until bleeding stops. Apply self-adhesive-bandage
10. For continuous or intermittent doses:
- a. Follow Steps A through G of one-time infusion dose
  - b. For intermittent doses, attach heparin-filled syringe to needleless connector and inject heparin solution and remove syringe. IVAD will remain accessed with noncoring needle for each intermittent dose
11. Discard soiled supplies in appropriate containers.

**AFTER CARE:**

1. Document in patient record:
  - a. Medication administered dosage, time, route and rate
  - b. Amount of normal saline and heparin flush, including strength of heparin
  - c. Appearance of vascular access site
  - d. Patient's response to procedure, side effects and management
  - e. Instructions given to patient/caregiver

**REFERENCE:**

- Gorski, L., Perucca R., Hunter, M. Central Venous Access Devices: Care, Maintenance, and Potential Complications. In: Alexander, M., Corrigan A., Gorski, L., Hankins J., Perucca, R., Eds. *Infusion Nursing: An Evidenced Based Approach*. 3<sup>rd</sup> Edition. St. Louis, MO: Saunders/Elsevier; 2010: 495-515.
- Infusion Nurses Society (2011) Infusion Nursing Standards of Practice. *Journal of Infusion Nursing* 34 (1S), S1-S110.
- Infusion Nurses Society, Inc. (2011). *Policies and Procedures for Infusion Nursing*. 4<sup>th</sup> Edition. INS, 220 Norwood Park South, Norwood, MA.

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Revised: Policy Committee 08/12/14

Adopted from VNAA; Approved Policy Committee 08/13