PURPOSE:
To maintain a patent vascular access for continuous or intermittent drug, fluid infusion or blood withdrawal via an implantable vascular access device. Prevention, early detection and management of implanted vascular access device related complications.

CONSIDERATIONS:
1. 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), hepatic artery, peritoneal cavity or epidural space.
2. Sterile 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, designates the type of bevel necessary to avoid tearing or coring of the self-sealing septum. Non-coring needles are either 90-degree angle or straight.
3. Appropriate needle placement is evidenced by all of the following:
   a. Feeling the non-coring needle touch the backplate when inserted.
   b. Evidence of blood return.
   c. IVAD flushes without difficulty.
4. 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.
5. 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.
6. DO NOT exceed 40-psi pressure when administering fluid through the system. Pressure in excess of 40 psi can easily be generated with most syringes. The smaller the volume of the syringe, the higher the pressure that can be generated; therefore, it is necessary to use a 10 mL or larger syringe. Catheter rupture with possible embolization can occur with pressure in excess of 40 psi.
7. 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 every 7 days or PRN.
8. Potential complications include infection, occlusion, inability to draw blood, and superior vena cava syndrome.
9. Confirm physician’s order to use the IVAD to obtain blood specimen, especially if drawing blood culture or specimen for clotting studies.
10. Blood samples can only be withdrawn from an IVAD that has a large lumen catheter.
11. If aspiration of blood becomes difficult, ask the patient to change positions, take a deep breath or lift uninvolved arm above his/her head.
12. Drawing blood for clotting studies from a heparinized line may falsely alter the results obtained.
13. It is strongly recommended that safety devices be utilized during the removal of infusaport needles.
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.

A. INSERTION OF NON-CORING NEEDLE

EQUIPMENT:
Gloves, sterile and non-sterile
Alcohol applicators (wipe/swab/disk/ampule)
Antimicrobial applicators (wipe/swab/disk/ampule)
Needles, 21-gauge
Non-coring safety needle with attached extension tubing
Needles, 25-gauge or needle-less adaptor
Injection port (optional)
10 mL syringes (2)
Normal saline
Heparin solution (100 units/mL or as prescribed)
2x2 gauze sponge, sterile
Transparent semi-permeable adhesive dressing
Self-adhesive bandage
Mask
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. Locate the septum by palpating the outer perimeter of the IVAD.
7. Open all supplies onto sterile field.
8. Don one sterile glove and mask. Prepare normal saline and heparin solution syringes, maintaining sterile technique.


10. Using sterile technique, fill extension tubing and non-coring safety needle with normal saline and, if indicated, an injection port with heparin solution. Clamp extension tubing.

11. Clean area over portal septum with Chlorohexidine 2% solution (ChloroPrep) following manufacturers’ instructions or may use three alcohol applicators beginning at the center of septum and cleaning outward in a circular motion, never returning to the middle. Allow to air dry. Repeat using three antimicrobial applicators. Allow to air dry. DO NOT blot.

12. Stabilize IVAD. Using a perpendicular angle, insert non-coring safety needle into septum until the needle stop is felt. Digital pressure on the top of the needle at the bend point will facilitate septum entry. Once port is accessed, do not tilt or rock the needle as this may cause damage to the septum.

13. Attach 10 mL normal saline filled syringe to the needle extension tubing and after unclamping, aspirate for blood return. After blood return is established, flush with normal saline solution.

14. Clamp the extension tubing and remove the normal saline syringe. Attach the pre-filled injection port. Insert the heparin-filled syringe with 25-gauge needle or needle less adaptor into injection port. Inject 3-5 mL heparin solution, using steady pressure. Before syringe is empty, clamp extension tubing and slowly remove syringe and needle or needle less adaptor while applying steady pressure on plunger. Apply dressing to site. (See Infusion Therapy- Central Venous Catheter: Transparent Semi-Permeable Adhesive Dressing.)

15. If needle is to be removed: Clamp the extension tubing and remove the normal saline syringe. Attach the heparin-filled syringe and unclamp extension. Flush with 3-5 mL of heparin solution. Clamp extension tubing before removing final syringe.

16. Clean site after needle removal and maintain pressure with sterile gauze until bleeding stops. Apply self-adhesive bandage if indicated.

17. 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.

B. 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

Heparin solution (100 units/mL, or as prescribed)

2x2 gauze sponge, sterile

Self-adhesive bandage

Medication

Supplies appropriate for infusing medications (i.e., syringes with needles or needle less 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 5 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:

   b. Insert normal saline syringe with needle or needle less adaptor into injection port and aspirate for a blood return. After blood return is established, flush injection port with all of the normal saline. Remove syringe and needle or needle less adaptor.

   c. Clean injection port of extension tubing with alcohol applicator, using friction. Allow to air dry.

   d. Insert medication-filled syringe with needle or needle less adaptor into injection port. Slowly inject medication, using steady pressure, over time frame indicated by medication or physician’s orders. Remove syringe and needle or needle less adaptor.
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e. Clean injection port of extension tubing with an alcohol applicator, using friction. Allow to air dry.
f. Insert normal saline syringe with needle or syringe. Inject normal saline into injection port and remove syringe with needle or needle less adaptor.
g. Repeat steps c through f for each medication.
h. Clean injection port of extension tubing with an alcohol applicator, using friction. Allow to air dry.
i. Insert heparin-filled syringe with needle or needle less adaptor into injection port. Inject heparin solution into injection port. Clamp extension tubing before removing final syringe.
j. If needle is to be removed: Flush injection port with heparin solution. Maintain positive pressure in IVAD while withdrawing non-coring needle and continue flushing with last 0.5 mL of heparin solution. Clean site after needle removed and maintain pressure with sterile 2x2 gauze until bleeding stops. Apply self-adhesive bandage.

9. For one-time infusion dose:
b. Insert normal saline syringe with needle or needle less adaptor into injection port and aspirate for a blood return. After blood return is established, flush injection port with all of the normal saline. Remove syringe and needle or needle less adaptor.
c. Clean injection port of extension tubing with alcohol applicator, using friction. Allow to air dry.
d. Insert infusion tubing into injection port and start infusion by regulating IV flow using roller clamp, dial-a-flow, or infusion pump. Tape connection of tubing to injection port.
e. When infusion is complete, close roller clamp. Remove tubing from injection port. Clean injection port with alcohol applicator, using friction. Allow to air dry.
f. Insert normal saline syringe with needle or needle less adaptor into injection port. Inject normal saline into injection port to flush extension tubing and needle. Remove syringe and needle or needle less adaptor.
g. Clean injection port with alcohol applicator, using friction. Allow to air dry.
h. Insert heparin-filled syringe with needle or needle less adaptor into injection port. Inject heparin solution into injection port using steady pressure. Clamp extension tubing before removing final syringe.
i. Securely anchor IVAD by placing thumb and forefinger of non-dominant hand on edges of the IVAD while pulling the non-coring needle straight up and out of the IVAD septum.
j. Clean site after needle removed and maintain pressure with 2x2 gauze until bleeding stops. Apply self adhesive-bandage.

10. For continuous intermittent doses:
a. Follow Steps A though G of one-time infusion dose.
b. Insert heparin-filled syringe with needle or syringe into injection port. Inject heparin solution into injection port. Clamp extension tubing before removing final syringe.

11. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient's 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.

C. DRAWING BLOOD (non-coring needle in place)

EQUIPMENT:
- Gloves
- Alcohol applicator (wipe/swab/disk/ampule)
- Normal saline
- Heparin solution (100 units/mL, or as prescribed)
- 10 mL syringe (2)
- 20 mL syringe
- Syringes appropriate for lab specimens
- Lab tubes
- Needles or needle less adaptor
- 2x2 gauze sponge, sterile
- Self-adhesive bandage
- Tape
- Disposable apron (optional)
- Protective eye wear (optional)
- 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 heparin and normal saline syringes.
7. Label the lab tubes with patient's name, date of birth, date, ID number, physician's name and nurse initials.
9. Insert normal saline syringe with needle or needle less adaptor into injection port and aspirate for blood. After blood return is established, flush the port with 10 mL normal saline. If using luer-lock adaptor, after flush, attach luer adaptor to hub; attach 10 mL tube, fill and discard. Then fill appropriate tubes. Clamp line disconnect adaptor; follow steps 14 – 19 below.
10. Withdraw 10 mL of blood for discard. Remove syringe.
12. Attach appropriate size, empty syringe to injection port and withdraw blood specimens. Remove syringe.
13. General order of sample collections:
   a. First - Blood culture tubes or vials.
   b. Second - Coagulation tube (e.g., blue-top tubes).
   c. Third – Serum tube with or without clot activator or gel (e.g., red, gold, or speckle-top tubes).
   d. Fourth – Heparin tubes (e.g., green-top tubes).
   e. Fifth – EDTA tubes (e.g., lavender-top tubes).
   f. Sixth (Last) – Oxalate/fluoride tubes (e.g., gray-top tubes).
15. Flush port with 20 mL of normal saline.
17. Insert heparin-filled syringe with needle or needle less adaptor into injection port. Inject heparin solution into injection port using steady pressure. Clamp extension tubing before removing final syringe.
18. If needle is to be removed:
   a. Insert heparin-filled syringe with needle or needle less adaptor into injection port. Inject heparin solution into injection port using steady pressure. Clamp extension tubing before removing final syringe.
   b. Securely anchor IVAD by placing thumb and forefinger of non-dominant hand on edges of the IVAD while pulling the non-coring needle straight up and out of the IVAD septum.
   c. Clean site after needle removed and maintain pressure with sterile gauze until bleeding stops. Apply self-adhesive bandage.
19. Discard soiled supplies in appropriate containers.

**AFTER CARE:**

1. Document in patient's record:
   a. Date, time, procedure and observations.
   b. Blood samples drawn, identity and location of laboratory where specimens taken.
   c. Amount of normal saline and heparin flush, including strength of heparin.
   d. Appearance of vascular access site.
   e. Patient's response to procedure, side effects and management.
   f. Instructions given to patient/caregiver.

**D. OBTAINING BLOOD FOR BLOOD CULTURES**

If two sets of blood cultures are ordered, draw one set, then repeat procedure for second set 15 to 30 minutes later, or as ordered by physician. Two blood culture bottles are used per each blood culture. Cultures should be left at room temperature and sent to the laboratory within four hours.

**EQUIPMENT:**

Gloves, sterile and non-sterile
Alcohol applicator (wipe/swab/disk/ampule)
Antimicrobial applicator (wipe/swab/disk/ampule)
Blood culture bottles (aerobic and anaerobic)
Non-coring needle with attached extension tubing
21-gauge needles or needle less adaptors
Normal saline
Heparin solution (100 units/mL, or as prescribed)
20 mL syringe
10 mL syringes (6)
2x2 gauze sponge, sterile
Self-adhesive bandage
Tape
Mask
Disposable apron (optional)
Protective eye wear (optional)
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. Locate the septum by palpating the outer perimeter of the IVAD.
7. Open all supplies onto sterile field.
8. Don one sterile glove and mask. Prepare normal saline and heparin solution syringes.
10. Using aseptic technique, fill extension tubing and non-coring needle with normal saline and if indicated an injection port with heparin solution. Clamp extension tubing.
11. Clean area over portal septum with 3 alcohol applicators beginning at the center of septum and cleaning in circular motion, never returning to the middle. Allow to air dry. Repeat using 3 antimicrobial applicators. Allow to air dry. DO NOT blot.
12. Stabilize IVAD. Using a perpendicular angle, insert non-coring needle into septum until the needle stop is felt. Digital pressure on the top of the needle at the bend point will facilitate septum entry. Once IVAD is accessed, DO NOT tilt or rock the needle as this may cause damage to the septum.
13. Attach 10 mL normal saline filled syringe to the needle extension tubing and after unclamping, aspirate for blood return. After blood return is established, flush with normal saline solution.
14. Withdraw 10 mL of blood for discard. Reclamp extension.
15. Attach 10 mL syringe to extension, unclamp and withdraw blood for blood cultures. Reclamp extension.
17. Attach 21-gauge needle or needle less adaptor to blood sample syringe. Place 5 mL in each culture bottle. Invert culture bottle gently 5 to 6 times to mix the sample thoroughly. DO NOT shake the bottles. Be careful not to touch the tops of the culture bottles before filling and after filling.
18. Using a new 21-gauge needle or needle less adaptor for each culture bottle, insert needle into the top of the culture bottle to remove air from culture bottle (air will vent out in 3 to 5 seconds). Remove the needles from culture bottles.
19. Attach 20 mL syringe with normal saline, unclamp extension and flush vigorously. Reclamp extension.
20. Attach 10 mL syringe with 5 mL heparin and flush with 4.5 mL of heparin. Maintain pressure on either side of IVAD septum and flush with last 0.5 mL of heparin while removing non-coring needle.
21. Clean site after needle removal and maintain pressure with sterile 2x2 gauze until bleeding stops. Apply self-adhesive bandage if indicated.
22. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient's record:
   a. Date, time, procedure and observations.
   b. Blood samples drawn, identity and location of laboratory where specimens taken.
   c. Amount of normal saline and heparin flush, including strength of heparin.
   d. Appearance of vascular access site.
   e. Patient's response to procedure, side effects and management.
   f. Instructions given to patient/caregiver.