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 are also discussed.

CONSIDERATIONS:
1. An implantable vascular access device (IVAD) consists of a self-sealing septum, reservoir and radiopaque catheter. The catheter may terminate in the superior vena cava.
2. Use sterile technique when accessing the port. The use of a non-coring needle is required to safely access the self-sealing septum. The non-coring needle 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 indicated by all of the following:
   a. Feeling the non-coring needle touch the backplate of the septum when inserted.
   b. Evidence of blood return.
   c. IVAD flushes without difficulty.
4. The portal septum varies in size and ease of accessibility. Assess for correct and secure needle placement is before IVAD is used. The life of the silicone septum is approximately 2,000 punctures with a 22-gauge, non-coring needle.
5. Flushing protocol for IVADs is as follows:
   a. Intravenous - every 4 weeks when not in use, heparin solution 100 units/mL.
6. DO NOT exceed 40 pounds per square inch (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 as needed.
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 Blood samples can only be withdrawn from an IVAD that has a large lumen catheter.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, assist the patient to change position or, if appropriate, ask the patient to change position, take a deep breath or lift the uninvolved arm above his/her head.
12. Drawing blood for clotting studies from a heparinized line may falsely alter the results obtained.
13. Per Joint Commission recommendations, all tubes and catheters should be labeled to prevent the possibility of tubing misconnections. Staff should emphasize to all patients/caregivers 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)
Non-coring safety needle with attached extension tubing
Needle less adaptor
10 mL syringes (2)
Normal saline
Heparin solution (100 units/mL or as prescribed)
2x2 gauze sponge, sterile
Transparent semi-permeable adhesive dressing
Sel-adhesive bandage
Puncture-proof container
Trash bag

PROCEDURE:
1. Perform hand hygiene and don non-sterile gloves.
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, ensuring that site is accessible.
5. Ensure adequate lighting.
6. Palpate the venous access device borders and locate the septum and the center of the septum.
7. Assess site for signs and symptoms of infection.
8. Discard gloves and perform hand hygiene.
9. Open all supplies onto sterile field.
11. Clean area over portal septum with Chlorohexidine 2% solution (ChloroPrep) following manufacturer's instructions or use three alcohol applicators
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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 with nondominant hand. 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 less 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. Insert the heparin-filled syringe into needle less adaptor. Inject 5 mL heparin solution, using steady pressure. Before syringe is empty, clamp extension tubing and slowly remove syringe from needle less adaptor while applying steady pressure on plunger. Apply dressing according to your agency’s protocol.
   a. If deaccessing: Clamp the extension tubing and remove the normal saline syringe. Attach the heparin-filled syringe and unclamp extension. Flush with 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)
Chlorhexidine 2% solution
Needle less adaptor
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 medication
Tape
Puncture-proof container
Trash bag

PROCEDURE:

1. Perform hand hygiene.
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, ensuring that site is accessible.
5. Ensure adequate lighting.
6. Prepare medication.
7. Prepare two 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 one-time infusion dose:
   a. Clean needle less adaptor of extension tubing with alcohol applicator using friction. Allow to air dry.
   b. Insert normal saline syringe into needle less adaptor and aspirate for a blood return. After blood return is established, flush with all of the normal saline. Remove syringe and clean needle less adaptor with alcohol applicator using friction. Allow to air dry.
   c. Insert infusion tubing into needle less adaptor and start infusion by regulating (intravenous) IV flow using roller clamp, dial-a-flow or infusion pump. Tape connections.
   d. When infusion is complete, close roller clamp. Remove tubing from needle less adaptor. Clean with alcohol applicator using friction. Allow to air dry.
   e. Insert normal saline syringe into needle less adaptor. Inject normal saline to flush extension tubing and needle. Remove syringe.
   f. Clean needle less adaptor with alcohol applicator using friction. Allow to air dry.
   g. Insert heparin-filled syringe into needle less adaptor. Inject heparin solution using steady pressure. Clamp extension tubing before removing final syringe.
   h. 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.
   i. Clean site after needle removed and maintain pressure with 2x2 gauze until bleeding stops. Apply self-adhesive bandage.
9. For continuous intermittent doses:
   a. Follow Steps 8a through 8g of one-time infusion dose.
10. 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 (4)
Syringes appropriate for lab specimens
Lab tubes
Needle less adaptor
2x2 gauze sponge, sterile
Self-adhesive bandage
Tape
Disposable apron (optional)
Protective eye wear (optional)
Puncture-proof container
Trash bag

PROCEDURE:
1. Perform hand hygiene.
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, ensuring 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, identification number, physician's name and nurse nitials.
8. Clean needle less adaptor with alcohol applicator using friction. Allow to air dry.
9. Insert normal saline syringe into needle less adaptor and aspirate for blood. After blood return is established, flush the port with 10 mL normal saline.
10. Attach a new sterile 10 mL syringe; gently withdraw 3-5 mL of blood for discard. Remove syringe and discard in appropriate receptacle.
11. Clean needle less adaptor with alcohol applicator using friction. Allow to air dry.
12. Attach appropriately sized sterile, empty syringe and withdraw blood for specimens. Remove syringe and fill lab tubes per agency or lab protocol.
15. Flush port with 10 mL of normal saline.
   b. If IVAD is to be deaccessed:
      (1) 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.
      (2) Clean site after needle removed and maintain pressure with sterile gauze until bleeding stops. Apply self-adhesive bandage.
   c. Discard soiled supplies in appropriate containers.

AFTER CARE:
1. Document in patient's record:
   a. Date, time, procedure and observations.
   b. Blood samples drawn and 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.

REFERENCES:
Infection Control in Home Care and Hospice (2nd edition) Sudbury, MA. Emily Rhinehart & Mary McGoldrick, Jones and Bartlett Publishers.
