SARASOTA MEMORIAL HOSPITAL

NURSING PROCEDURE

TITLE: IMPLANTED VASCULAR ACCESS DEVICE (IMPLANTED PORT) CARE AND MAINTENANCE (vad01)

DATE: 09/84

REVIEWED: 2/17

PAGES: 1 of 17

ISSUED FOR: Nursing

RESPONSIBILITY: *RN, LPN II

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Related Procedures

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PURPOSE: To provide guidelines for the nursing care of implanted vascular access devices, also called implanted ports.

QUALIFICATIONS: Only Registered Nurses (RNs) with documented competency regarding the care of implanted ports will access the devices. These nurses may include (but are not limited to) IV nurses, Oncology nurses, Clinical Educators, and Intervention nurses. Staff RNs may de-access the port. All RNs and LPN IIs may administer medications through implanted ports and draw blood samples.

KNOWLEDGE BASE: NOTE: Instructions for the management of complications associated with implanted ports are located in nursing procedure cen05, Management of Vascular Access Complications.

1. Patients who have an implanted vascular port may have their ports utilized for IV therapy and blood sampling after catheter placement has been verified.

2. It is NOT necessary to obtain a physician order to access an implanted port when IV therapy or labs are ordered.

3. Types of implantable ports include:
   a. Single lumen port – one (1) lumen and one (1) septum. The traditional port is round in shape and the top of the septum is smooth.
   b. Dual lumen port – two (2) attached but independent septums connected to two (2) independent lines. The traditional ports are round in shape and the tops of the septums are smooth.

4. Power ports are single or double lumen implantable ports designed to withstand high pressure power injections of contrast media, such as for some CatScan and MRI procedures. Most power ports have a plate placed on the bottom of the port that is clearly identifiable via x-ray. See Appendix for specific manufacturer identifiers for power ports.

5. Implanted ports have resealable septums which are designed to withstand up to one thousand (1000) punctures with a 19-gauge non-coring needle or two thousand (2000) punctures with a 22-gauge non-coring needle.

6. The preferred location of the catheter tip is at the junction of the superior vena cava and the right atrium.

7. Changes in the patient’s body image and maintenance care are limited. These factors help make the implanted port well-tolerated by patients. After surgical sites are healed, patients
may shower, swim and/or take tub baths with reduced risk of infection.

8. Insertion, repair and removal are performed in Surgery or Interventional Radiology under local anesthesia.

9. Access of the implanted port is a sterile procedure using sterile equipment. If not performed in surgery, access must be performed by an RN with documented competency for implanted vascular access device procedures.

10. Use only non-coring needles to access the devices. Non-coring needles “slice” versus “core” the septum, thus limiting damage to the re-sealable septum. Do not tilt or rock the needle once it is inserted into the port. Fluid leakage may occur.

11. When used for contrast media injection, power ports must be accessed using a safety infusion set specifically designed to withstand the high pressure associated with power injections. (For example: The Bard PowerLoc power injectable infusion set can be identified by the words “PowerLoc Max” on the packaging’s purple label and the presence of the wording “5 ml/sec MAX” on the side of the clamp.) Before accessing the implanted port with the high pressure infusion set, identify the port as a power port by the visualization of the radiopaque CT identifier or by two other identifiers. See Appendix for specific manufacturer identifiers.

12. If a power port is not going to be used for power injection, then it may be accessed with a routine non-coring infusion needle set, although it is preferred that power ports get accessed with a power Huber needle.

13. Always clamp the Luer lock extension tubing prior to opening the implanted port system to air to avoid air embolus. An accessed implanted port is a central venous line.

14. Ten (10) mL (or larger) syringes are to be used for all flushing and maintenance procedures. Use of a smaller size syringe can easily generate high pressure and increase the risk of catheter and/or septum rupture or separation. In addition, the larger syringes allow for more sensitivity to resistance.

15. Aspiration from the implanted port without adequate flushing and heparinization may cause catheter occlusion.

16. Intravenous infusions should be on an electronic infusion device in order to control infusion rates. Central venous lines deliver fluid directly to the heart, increasing the risk for fluid overload.
17. The Vascular Access Maintenance Bundle is a group of individual evidence-based interventions that when implemented together result in better outcomes. The bundle includes hand hygiene, daily chlorhexidine (CHG) bathing, a standardized routine maintenance schedule and other interventions.

18. Assessment of the implanted port site occurs each shift and includes, but is not limited to, blood return, patency, redness, swelling, tenderness, induration, leakage, needle displacement, and tenderness (pain), and chlorhexidine impregnated patch (if applied) and the infusion tubing. Confirm that the dressing site is labeled with the access date and date of the last dressing change.

19. If the patient is transferred from another unit or facility, port site must be reassessed for blood return, patency, redness, swelling, tenderness, induration, leakage, and needle displacement, before use. Findings must be documented. Blood return and patency also must be documented before infusing any medications.

20. If the patient is admitted with an implanted port accessed by another facility and the access date cannot be determined, the implanted port will be de-accessed and then re-accessed.

21. If the patient is admitted inpatient with an implanted port accessed by another facility and the site does not have a chlorhexidine impregnated patch applied and the patient is not allergic to chlorhexidine, the dressing to the implanted port will be changed and a chlorhexidine patch applied.

22. The chlorhexidine impregnated patch absorbs fluid that may be around the needle insertion site. If the patch size exceeds the size of the printed label, it is considered soaked and should be changed. Site assessment, including patency and blood return should be done.

23. Informed consent for insertion or removal of an implanted port is to be obtained by the physician. The physician will provide information to the patient on the procedure, risks, benefits and alternatives. After informed consent is given, the nurse will obtain a signed consent.

24. Any questions or concerns should be directed to the Oncology Unit, Sarasota Memorial Infusion, Intervention Team, Clinical Educators, or PICC Team for clarification.
25. Identify the patient before all procedures. Refer to SMH Policy (01.PAT.09) Patient Identification: Inpatient/Outpatient.

PATIENT EDUCATION:

1. Nursing personnel will begin patient/support person education as soon as the decision is made to implant the device. The bedside nurse and Interventional Radiology will instruct the patient/support person on signs and symptoms of infection, phlebitis, and other complications. Instruction will also include all aspects of care and discharge teaching when appropriate.

2. A demonstrator device is available on the Oncology Unit or Sarasota Memorial Infusion to demonstrate to the patient how the device functions. An information booklet is provided with the insertion procedure.

3. The patient will be instructed to carry an identification card provided by Surgery/Interventional Radiology that gives information about the date of implantation, size of the catheter, serial number of the device, name of the surgeon/physician, name of the facility where the device was implanted, and the patient's name. This card should be carried by the patient at all times.

4. Patients with a power port will be instructed on the importance of carrying power port identifiers such as an identification card, key chain or wrist band as listed in the Appendix.

5. The implanted port must be irrigated monthly with 5 mL heparin flush solution (100 unit/mL) to maintain patency. If the port will not be used for regular therapy, the nurse shall provide education to the patient regarding monthly flushing recommendations.

6. Patient/support person education about dressing changes to insertion and port-pocket incision lines will be provided. Confirm that home supplies are available (as needed) for dressing changes before discharge.

7. If the port is a power port, assure patient understanding regarding capabilities and access requirements.

PROCEDURE: POST-OPERATIVE CARE

Insertion is performed in Surgery or Interventional Radiology.

1. Vital signs will be taken as ordered.

2. Upon return from surgery or radiology, assess the dressings every fifteen (15) minutes x 4, then every hour x 4, or as ordered by the physician. It is not unusual to see some
bleeding at incision lines, insertion site, or access device pocket incision line. Reinforce dressings PRN. Keep physician informed of excessive bleeding.

3. Before using the implanted port, review the patient’s chart for documentation of proper catheter placement. Placement may be documented in the Operative Note, Surgery Intraop note, Surgery PACU note, or imaging studies. If documentation of placement of the implanted port catheter is unavailable, notify the physician and clarify the need for a chest x-ray to ensure proper position of the catheter.

PROCEDURE:

ACCESSING THE IMPLANTED PORT

When the port is placed for imminent use, it is recommended that the implanted port be initially accessed at that time in surgery/radiology to decrease pain to the patient.

Equipment:

1. An infusion set with a non-coring needle is used to access an implanted port. Use the following table to determine the type of needle to use. Use one non-coring needle per lumen.

<table>
<thead>
<tr>
<th>Needle Gauge</th>
<th>Needle Length</th>
<th>Type</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 or 22</td>
<td>¾ inch or 1-inch</td>
<td>90-degree</td>
<td>All purpose, blood sampling and irrigation</td>
</tr>
<tr>
<td>20 or 22</td>
<td>1½-inch</td>
<td>90-degree</td>
<td>All purpose as above. Use only if more subcutaneous tissue over port.</td>
</tr>
</tbody>
</table>

**PowerLoc Infusion Set for Power Ports**
(max rate 5 mL/second or max pressure 300 psi)

<table>
<thead>
<tr>
<th>Needle Gauge</th>
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</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>¾ inch or 1-inch</td>
<td>90-degree</td>
<td>All purpose as above. Use for power injection of contrast media.</td>
</tr>
<tr>
<td>20</td>
<td>1½-inch</td>
<td>90-degree</td>
<td>All purpose as above and if more subcutaneous tissue over port. Use for power injection of contrast media.</td>
</tr>
</tbody>
</table>
2. Vascular Access Tray with two (2) 10 mL syringes pre-filled with 10 mL normal saline.
3. If the implanted port is double lumen and both lumens will be accessed: two (2) additional 10 mL syringes pre-filled with 10 mL normal saline.
4. Needleless connector, one per lumen.
5. Chlorhexidine impregnated patch: Use one 1-inch disk for single lumen access; Use two ¾-inch disks for dual lumen access.
6. If the implanted port will not immediately be used: 10 mL syringe pre-filled with 5 mL heparin flush solution (100 units/mL), one syringe per lumen.
7. Masks.

Accessing Steps:
1. Clean work space area with germicidal surface wipes.
2. Perform hand hygiene.
3. Palpate the implanted port site to locate septum.
4. Open the sterile vascular access tray. Open syringe(s) and connector(s), placing them in the sterile field.
5. Apply mask to patient. Instruct all persons within three feet of the patient to don masks.
6. Don mask, perform hand hygiene and don sterile gloves.
7. Prep skin over the device using chlorhexidine swabsticks. Begin cleansing in the center and use a “back and forth” motion around the site for approximately 30 (thirty) seconds, or per package instructions. Cleanse an area approximately 5 inches x 6 inches. Each chlorhexidine swabstick cleans an area of 4 inches x 4 inches.
8. Allow area to naturally dry for 90 seconds.
9. Attach sterile needleless connector(s) to the infusion set(s).
10. Attach 10 mL syringe pre-filled with normal saline to connector and prime the connector, infusion set needle, and tubing. Repeat if second set required for double lumen port.
11. Before removing the protective needle cover, slide the needle through the chlorhexidine impregnated patch slit and into the center hole of the patch with the writing on the patch facing up and visible. Place the slit parallel to the infusion set tubing with open end facing the connector. Remove the protective needle cover. During needle insertion, hold the patch in place around the needle.

NOTE: If the port will be de-accessed within 48 hours of
accessing, application of the chlorhexidine impregnated patch may be omitted.

12. Grasp the implanted port within the prepped area using the thumb and middle finger of the non-dominant hand.

13. Insert the infusion set needle perpendicular to and directly into the center of the port septum using a quick motion. The needle tip will stop if it reaches the base of the portal chamber.

14. Withdraw plunger of the syringe and check for blood return.

15. Upon positive blood return, flush with 20 mL normal saline. Then flush with 5 mL heparin solution (100 units/mL) if the implanted port will not be immediately used.

**NOTE:** If no blood return is achieved, refer to nursing procedure cen05, *Management of Vascular Access Complications*, for de-clotting central venous lines. **Do not** use the implanted port unless blood return is achieved.


17. Repeat steps 11 through 16 to access the second lumen.

18. Maintaining sterile technique, apply 4 inch X 5 inch sterile semi permeable membrane, transparent dressing over needle insertion site, making certain that a secure seal around the needle and tubing is achieved.

19. Label dressing with date, time, and initials.

20. For a verified power port accessed with a PowerLoc infusion set:
   a. Open the label on the PowerLoc infusion set package.
   b. Initial and date the Implanted PowerPort device verified label.
   c. Remove label and fold around infusion set tubing near the needleless connector.

**PROCEDURE:**

**FLUSHING THE IMPLANTED PORT**

1. The “Nurse IV Flush Orders” for normal saline and heparin flush solutions will be entered per nursing protocol.

2. The accessed implanted port will be flushed every shift when not in use.

3. The de-accessed implanted port will be accessed and flushed monthly.

**Equipment:**

1. One (1) 10 mL syringe pre-filled with 10 mL normal saline for flushing:
a. Between different IV pushes or IV drips
b. With IV tubing changes
c. Every day when the continuous IV infusion rate is 50 mL/hour or less
d. Between 24-hour IV drips (e.g., chemotherapy).

2. Two (2) 10 mL syringes pre-filled with 10 mL normal saline for flushing:
   a. After drawing a blood specimen
   b. After blood administration.

3. Three (3) 10 mL syringes pre-filled with 10 mL normal saline for flushing:
   a. After 24-hour infusions of TPN
   b. Between bags of TPN
   c. Upon discontinuation of TPN.

4. If the implanted port will not be immediately used: 10 mL syringe pre-filled with 5 mL heparin flush solution (100 units/mL).

5. Alcohol wipes.

6. Curos Caps

**Flushing Steps:**

1. Perform hand hygiene.

2. Vigorously scrub the end of the needleless connector with an alcohol wipe for 15 seconds. Allow to dry thoroughly.

3. Attach the flush syringe onto the connector.

4. Unclamp the infusion set.

5. Gently irrigate the implanted port using a turbulent (push-pause) flush technique. NEVER USE EXCESSIVE FORCE.

6. Clamp the infusion set.

7. Remove syringe and discard in the appropriate container.

8. Repeat steps 2 through 7 for each additional flush syringe.

9. If the needleless connector does not appear clear after flushing with normal saline, flush with an additional 10 mL of normal saline. If the connector is still not clear, change the connector.

10. Apply new Curos Cap

**PROCEDURE:**

**NEEDLELESS CONNECTOR CHANGE**

When long-term access is required, the needleless connector...
will be changed every Sunday and Thursday, PRN for suspected or actual contamination or damage, and daily when TPN is infusing. For a double lumen implanted port, both connectors will be changed.

**Equipment:**

1. Clean gloves
2. Sterile alcohol wipes
3. Needleless connector(s)
4. If implanted port will immediately be used: 10 mL syringe(s) pre-filled with 10 mL normal saline
5. If implanted port will not be immediately used: 10 mL syringe(s) pre-filled with 5 mL heparin flush solution (100 units/mL)
6. Curos Cap

**Connector Change Steps:**

1. Perform hand hygiene and don gloves.
2. Clamp the catheter.
3. Using aseptic technique, open the sterile connector package.
4. Attach the syringe containing the normal saline or heparin flush solution onto the new connector and prime the connector.
5. Vigorously scrub the connection between the hub and the old connector for 15 seconds and allow to air dry. Remove the old connector from the catheter hub and discard.
6. Vigorously scrub the outside of the catheter hub with a sterile alcohol wipe for 15 seconds. Allow to dry.
7. Twist the new connector clockwise onto the catheter hub.
8. Unclamp the catheter.
9. Flush the catheter with the remaining solution in the syringe using a turbulent (push-pause) flush technique.
10. Clamp the catheter.
11. Remove the syringe from the connector and discard in the appropriate container.
12. Apply Curos Cap to needleless connector if not connected to IV tubing.

**PROCEDURE:** **ADMINISTRATION SET CHANGE**

Administration sets and attachments will be changed every Thursday and Sunday, with a new implanted port placement, and PRN for suspected or actual contamination or damage.
Routine changing of the non-coring needle(s) does not constitute a change in device. Tubing does not need to be changed with routine access/deaccess outside of the guidelines described above.

NOTE: Device refers to the actual implanted port device. It does not refer to the non-coring needle set used for accessing the device.

Equipment:
1. Administration set
2. Extension tubing
3. Other add on devices as needed consistent with Appendix B
4. IV tubing date label
5. Alcohol wipes
6. Red caps
7. Curos caps

Administration Set Change Steps:
1. Obtain administration set, including extension tubing and add on devices as needed consistent with Attachment A.

2. Apply the appropriate IV tubing date label to tubing below the drip chamber.

3. Attach the solution bag to the tubing and purge air.

4. Stop the electronic regulator and close the clamps on the existing administration set, if relevant.

5. Disconnect tubing.

6. Vigorously scrub the needleless connector for 15 seconds with an alcohol wipe and allow to air dry.

7. Attach the new tubing.

8. Open clamps and resume IV infusion at the ordered rate.

9. Check to see that all of the connections are secure.

10. When disconnecting tubing from the needleless connector, protect the IV tubing ends by applying a red cap.

11. Place Curos Cap on all needleless connector.

PROCEDURE: DE-ACCESSING THE IMPLANTED PORT
When long-term IV access is required, the implanted port will be re-accessed every seven (7) days and PRN for suspected or actual contamination or other concerns.

Equipment:
1. Clean gloves
2. Masks
3. 2 X 2 gauze pad(s)
4. Band-aid (if implanted port will not be re-accessed for continued use)
5. One (1) 10 mL syringe pre-filled with 10 mL normal saline per lumen
6. If the implanted port will not be reaccessed: 10 mL syringe pre-filled with 5 mL heparin flush solution (100 units/mL).

De-Accessing Steps:
1. Perform hand hygiene and don clean gloves.
2. If the infusion set is attached to IV tubing, turn off IV infusion and disconnect the IV tubing from the non-coring infusion set.
3. Flush each lumen of the implanted port with 10 mL normal saline. If the port will not be reaccessed, flush with 5 mL heparin flush solution.
4. Remove the dressing over the needle insertion site to expose the needle infusion set(s) for removal.
5. Remove the non-coring needle infusion set(s) from the patient:
   a. Using the non-dominant hand, place the index and third fingers on either side of the inserted needle and securely hold down the needle base to stabilize the port.
   b. Using the dominant hand, grasp the textured needle handle and pull straight up until you hear or feel a “click” and the needle is locked in the safety position.
6. Dispose of the needle in a sharps container.
7. Repeat steps 6 and 7 for each additional lumen.
8. Place a 2 X 2 gauze pad over the needle insertion site and apply gentle pressure until bleeding is controlled or stopped.

NOTE: Bleeding should be minimal unless clotting factors or platelet counts are abnormal. Remember, this is a subcutaneously implanted port.

9. If the implanted port will not be re-accessed for continued use, apply a band-aid to the site. Instruct the patient to leave the band-aid in place until puncture site has stopped bleeding.

10. If the implanted port will be used for continued use, re-access the implanted port and apply a new dressing per the “Accessing the Implanted Port” section in this nursing
TROUBLESHOOTING:

1. Never forcefully push fluid through an implanted port. If saline flush does not enter easily, the non-coring needle may be misplaced or occluded.

2. Sometimes, when flow is not easily obtained, the non-coring needle is not in place at the bottom of the port. When this happens, place finger on top of the needle and push firmly.

3. If the patient complains of pain, check needle position. The patient should not feel pain after the access is complete.

4. If swelling or redness occurs at the site post-operatively, check for blood return and immediately heparinize. If no blood return is present, and pushing down on non-coring needle does not yield a blood return, re-access and document.

5. Because the port is a totally implanted device, complications are primarily limited to those of central intravenous lines. However, during the first 48 hours post-op, local tenderness, erythema and febrile reactions may be noted at the port pocket. This reaction most commonly subsides after 48 hours and usually does not require removal of the device.

6. See nursing procedure cen05, Management of Vascular Access Complications, for instructions for common complications associated with a central intravenous line. If, after trouble shooting, there is resistance or sluggish flow, no blood return, or patient complains of pain with flushing, do not use port. Contact physician and ask for radiologic confirmation of port tip placement and port integrity.

7. When in doubt, call the Oncology Clinical Educator or Oncology RN.

DOCUMENTATION:

1. IV/Lines Flowsheet – Implanted Port (added parameter): port site location, type (single lumen, double lumen, power port), first access date, access date, de-access date, Huber needle size, site appearance, blood return, interventions, date of dressing change, date of connector change, date of tubing change.
   a. All access starts and attempts are to be documented in the electronic record.
   b. Site assessment shall be documented at least once per shift in the electronic record.
   c. Document in the electronic record as needed if the site
requires more frequent assessment.

   d. All de-accessed sites will be documented.

   e. All de-accessed sites are to be assessed by nursing and
documented in the electronic record.

   f. If the site infiltrates or extravasates or develops other
complications, review nursing procedure cen05,
Management of Vascular Access Complications, and
document in the Central Line Complication section once
per shift until resolved or until the patient is discharged.
Complete an incident report.

2. Medication Administration Record (EMAR): irrigation and/or
flushes.

3. Education Record: patient/support person education
including content, patient participation and response,
education materials utilized and/or given to patient/support
person.

4. Nursing Assessment/Reassessment flowsheet: any other
pertinent information or physician communication relevant to
the care of the patient’s implanted port.

REFERENCE:

System Nursing Guide. Retrieved January 12, 2017 from
http://www.powerportadvantage.com/assets/pdfs/072232
8_09-102_PowerPort_IFU_web.pdf

Port. PowerLoc* Safety Infusion Set Nursing Guide.
Retrieved January 12, 2017 from
http://powerportadvantage.com/assets/pdfs/MC-0475-
01_PowerPort_Nursing_Guide_web.pdf

Guidelines for the Prevention of Intravascular Catheter

Standards of Practice. Cambridge, MA: Author.

Evidence-based Approach (3rd ed.). St. Louis, MO:
Saunders Elsevier.

Instructions for Use Sheet.


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**APPROVAL:**

Clinical Practice Council 2/2/17
## Appendix A
### Implantable Power Port Manufacturer Identifiers

<table>
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<th>Manufacturer and Port Name</th>
<th>Port Identifiers</th>
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<tr>
<td>Single PowerPort Identification</td>
<td>1. Radiological confirmation.</td>
</tr>
<tr>
<td>Angiodynamics Smart Port® Power Injectable Port</td>
<td>2. Patient medical record documenting implantation of port</td>
</tr>
<tr>
<td></td>
<td>3. Radiopaque CT identifier&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>4. Smart Port® identification card</td>
</tr>
<tr>
<td></td>
<td>5. Smart Port® ID key chain</td>
</tr>
<tr>
<td>Bard® PowerPort</td>
<td>1. Patient medical record documenting implantation of port</td>
</tr>
<tr>
<td></td>
<td>2. Radiopaque CT identifier&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>3. PowerPort identification card</td>
</tr>
<tr>
<td></td>
<td>4. PowerPort ID key chain</td>
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<tr>
<td></td>
<td>5. PowerPort ID bracelet</td>
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<td></td>
<td>6. Palpation of the port:</td>
</tr>
<tr>
<td></td>
<td>a. Triangular shape of single lumen port housing</td>
</tr>
<tr>
<td></td>
<td>b. Three palpation bumps arranged in a triangular shape on top of the septum</td>
</tr>
<tr>
<td>Navilyst Xcela® Power Injectable Port</td>
<td>1. Patient medical record documenting implantation of port</td>
</tr>
<tr>
<td></td>
<td>2. Radiopaque CT identifier&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>3. Xcela® Wallet ID Card</td>
</tr>
<tr>
<td></td>
<td>4. Xcela® Key Chain ID Card</td>
</tr>
<tr>
<td></td>
<td>5. Purple Port Arm Band</td>
</tr>
</tbody>
</table>


### Appendix B – Administration Set Changes

(INS 2011 Guidelines pg. 84; CDC 2011 Guidelines pg. 19).

<table>
<thead>
<tr>
<th>Administration Set Device</th>
<th>Infusion Status</th>
<th>Frequency of Administration Set &amp; Needleless Connector Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary &amp; Secondary Sets</td>
<td>Continuous &amp; Intermittent</td>
<td>Every Sunday and Thursday, with new implanted port (device) placement, and PRN</td>
</tr>
<tr>
<td>Add on devices including Dial-a-flow, filters and all other add on devices</td>
<td>Continuous or Intermittent</td>
<td>With each device change or administration set change</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Infusate</th>
<th>Administration Set</th>
<th>Frequency of Administration Set &amp; Needleless Connector Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood &amp; Blood Components</td>
<td>Intermittent</td>
<td>At the end of 4 hours (unless indicated otherwise)</td>
</tr>
<tr>
<td>Parenteral Nutrition with or without Intravenous Fat Emulsion</td>
<td>Continuous or Intermittent</td>
<td>Every 24 hours</td>
</tr>
<tr>
<td>Propofol</td>
<td>Continuous</td>
<td>Every 12 hours</td>
</tr>
<tr>
<td>Vasoactive drugs</td>
<td>Continuous</td>
<td>Every 96 hours</td>
</tr>
<tr>
<td>Ativan</td>
<td>Continuous</td>
<td>Every 96 hours</td>
</tr>
</tbody>
</table>