(PORT-A-CATH)

CENTRAL VENOUS ACCESS DEVICE

A SELF DIRECTED LEARNING PACKAGE
# INDEX

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction &amp; Competency</td>
<td>pg 3</td>
</tr>
<tr>
<td>Accessing Port-A-Cath</td>
<td>pg 4</td>
</tr>
<tr>
<td>Administration of IV fluids &amp; Medication</td>
<td>Pg 5</td>
</tr>
<tr>
<td>Changing Dressing, Needle, Needle-less connector</td>
<td>pg 7</td>
</tr>
<tr>
<td>Intermittent Access</td>
<td>pg 7</td>
</tr>
<tr>
<td>Blood Sampling</td>
<td>pg 7</td>
</tr>
<tr>
<td>Removal of gripper plus safety needle</td>
<td>pg 8</td>
</tr>
<tr>
<td>Documentation</td>
<td>Pg 8</td>
</tr>
<tr>
<td>Non Coring Needle</td>
<td>Pg 9</td>
</tr>
<tr>
<td>Assessment of Site</td>
<td>pg 10</td>
</tr>
<tr>
<td>Complications</td>
<td>pg 11</td>
</tr>
<tr>
<td>Patient Home Care</td>
<td>pg 12</td>
</tr>
<tr>
<td>References</td>
<td>pg 13</td>
</tr>
<tr>
<td>Checklist</td>
<td>pg 14</td>
</tr>
<tr>
<td>Test</td>
<td>pg 15</td>
</tr>
</tbody>
</table>
INTRODUCTION

A port (or port-a-cath) is a small medical appliance that is installed beneath the skin. A catheter connects the port to a vein. Under the skin, the port has a septum through which drugs can be injected and blood samples can be drawn many times, usually with less discomfort for the patient than a more typical “needle stick”. Ports are used mostly to treat hematology and oncology patients, but recently ports have been adapted also for hemodialysis patients. The port is usually inserted in the upper chest, just below the clavicle or collar bone, leaving the patient’s hands free.

The Port-a-Cath permits repeated access for short or long-term infusions of medications, blood products, nutritional and other fluids, such as bolus injections, and venous blood sampling.

The purpose of this learning package is to review best practices in the care and management of patients with a Port-a-cath.

Nurses, who complete the required education for competency, will be able to:
A. Access the port
B. Flush the system
C. Withdraw blood from port
D. De-access needle from port
E. Provide overall assessment care, maintenance and troubleshooting

Competency Process

1. Nurses will review the self-learning package
2. Complete written test and return to your Clinical Nurse Educator and achieve a passing mark of 80%
3. Participate in competency validation, which includes observation and sign off of a competency checklist by a Clinical Nurse Educator or certified nurse in teaching/didactic session or actual patient experience
Accessing/De-accessing the Device For:

A) Continuous IV fluid/medication administration  
B) Intermittent infusion  
C) Blood draws  
D) Removal of the gripper plus safety needle

Hand Hygiene:
Wash hands before palpating, inserting, changing or dressing any intravascular device.

Specific steps should be followed when accessing any implanted venous access device (PORT-A-CATH). The PORT-A-CATH system consists of a portal with one or two self-sealing septa and a single or dual-lumen catheter and is accessible by percutaneous puncture with a noncoring needle. PORT-A-CATH systems are indicated when patient therapy requires repeated vascular access for injection or infusion therapy and/or blood sampling.

Note: It is imperative that strict sterile technique is observed in this process to protect the patient from bacterial contamination.

A) Access for Continuous IV fluid/medication Administration

Note: Physician orders must be obtained to access/de-access or perform blood draws on a port-a-cath or the nurse must use the Medical Directive on Care and Maintenance of CVAD (XII-141)
Equipment/Supplies Required

- Dressing Tray
- Mask/s
- Non-coring needle (usually, 20-22 gauge, ¾” needle, 1” is needed if port is implanted deeply)
- (2) 2% Chlorhexidine swab sticks
- Sterile gloves
- Tape
- Large transparent dressing (to dress site, if non-coring needle is to be left in place)
- (1-2) 10 ml syringe/s filled with 10 mls of 0.9% sodium chloride
- Clear Clave Needleless Connectors (cap)

Procedural Steps:

Appropriate care and procedures must be followed when accessing any implanted venous access device (PORT-A-CATH®).

A. Prepare patient for procedure. Position patient and offer mask if he/she declines, instruct them to turn their head away from the catheter site.
B. Gather supplies as listed above.
C. Wash hands thoroughly. Wear mask.
D. Assess port site and palpate site to locate septum. If any signs/symptoms of infection are noted, inform MD.
E. Prepare a sterile field, open dressing tray, place sterile towel on bedside table and another close to site.
F. Using sterile technique, place sterile 2% chlorhexidine swab sticks into dressing tray, transparent occlusive dressing, clear clave needle-less connector/s and sterile gloves, non-coring needle extension set onto field and syringes onto side.
G. Apply sterile gloves, prime non-coring and extension tubing with 0.9 Normal Saline, leave syringe attached
H. Prime Clear Clave needle-less connector with normal saline.
I. Remove non-coring needle cover.

J. Cleanse site with 2% chlorhexidine swabsticks. Scrub in an up, down, side to side friction for 30-60 seconds. Cleanse from clean to dirty and do not go back over previously cleansed area with the same swab. Repeat process using new swabstick each time and let air dry for 30-60 seconds prior to access.

K. While holding port securely with one hand, insert non-coring needle at a 90-degree angle into center of the septum, pushing firmly through skin and septum until you feel the back of the portal chamber. (It may be helpful to have the patient take a deep breath just before you insert the needle and exhale as you enter the skin.)

**Note:** for patients who are highly sensitive, topical xylocaine cream can be applied over the insertion site to decrease pain. This is done prior to cleaning the site and a physician’s order is required for the cream.

L. Aspirate with 10-mL syringe and observe for blood return. Flush with 10 mL of normal saline

M. Apply tegaderm to cover entire Huber needle

N. Apply clear clave needle-less connector, flush with another 10 mls normal saline

O. Connect to IV tubing and initiate infusion promptly to prevent occlusion

**Troubleshooting:**
If no blood return is obtained, follow these steps:
   1. Check placement of needle by palpation
   2. Reposition patient, ie, lie back and then raise and lower arms
   3. Have patient take deep breaths and cough

   If none of these results in blood return notify MD

• Review: video at [http://www.youtube.com/watch?v=rKXmySpexi8](http://www.youtube.com/watch?v=rKXmySpexi8)
Dressing, Non-Coring Needle & Needle-less Connector Changes

a. Non-coring needle and dressing can stay in place for up to 7 days and must be changed every 7 days utilizing aseptic technique.
b. The clear clave needle-less connector must be changed q 4 days
c. Tubing must be changed Q4 days and labeled with date
d. Document assessment and interventions

B) Intermittent Access and Locking with Heparin

• If a continuous infusion is no longer required or contra-indicated the infusion will be removed, however the non-coring needle and dressing can stay in place for 7 days, and must be Heparin locked with 5 ml heparin flush (100 units/ml)
• The dressing, non-coring needle can stay in place for 7 days and clear clave needle-less connector (cap) must be changed Q4 days, and 5mls(100 units/ml) heparin flush provided after every access

C) Access for blood sampling

Additional supplies required:

• 10 ml sterile syringe
• Tubes for specimen collection and waste volume
• Vacutainer needle/adapter

A. Follow instruction A to L as above
B. Aspirate with 10-mL syringe and observe for blood return. Flush with 10 mL of normal saline.
C. Aspirate 5mls of blood for discard to avoid heparin contamination
D. Draw samples in order of draw, use vacutainer and specimen tubes, inserting needle/adapter into extension set of non-coring needle.
E. After obtaining blood specimens, scrub needle-less connector with alcohol and flush with a minimum of 20 mL normal saline using 10 ml syringes
D) De-Accessing after blood draw

F. If access is not required after the blood draw
   follow with 5 mL Heparin Lock (100 units/per ml) --- (It is important to flush with
   NS until all remaining blood is removed from the non-coring needle, extension
   set and needle-less connector, then instill Heparin Lock flush.)

Removal of the Non-Coring Safety Needle

A) Wash/sanitize hands and apply face mask
B) Prepare sterile field (dressing tray etc).
C) Apply sterile gloves
D) Flush with 10mL of 0.9% NS & Lock with 5ml Heparin 100u/mL
E) Places a finger on each side of the base while gently pressing down to secure portal.
   From behind the needle lifts the safety arm straight back to the lock position until
   audible “CLICK” is heard
F) Disposes of used needles in the sharps container or for Chemotherapeutic agent – in the
   biohazard containers
G) Observe for bleeding, a band aid can be applied over site

Documentation:

Document in the Central Line Assessment/Care/Removal powerform located in the
Activities/Interventions section of Powerchart
1. Document accessing/de-accessing procedure done, needle insertion site appearance, size and type of needle used.


**Non-Coring Needle**

**Only 20 - 22 gauge non coring needles** must be used to access the Port-A-Cath system utilizing the following guidelines:

- Ninety-degree needles must be used for bolus or continuous infusions.
- The needle must be inserted perpendicular to the portal septum.
- The needle must never be tilted or rocked once the port has been entered.
- Positive pressure must be maintained while clamping the tubing prior to withdrawing needle from the port to prevent reflux.
Assessment of Insertion Site:

The insertion site must be assessed for tenderness through the intact dressing at the beginning of each shift, hourly and PRN (see Policy Intravascular Therapy Care & Maintenance (Peripheral & Central Devices) NUMBER: II-40) If tenderness develops, if there is fever with no obvious source, or symptoms of local and/or blood stream infection occur, the site must be visually inspected and symptoms reported promptly to the physician.

Checking Patency Prior to Administration:

The system must be checked for patency (blood return) prior to administration of any fluids, medications, or blood. The needle must be inside the portal chamber and against the needle stop before starting the injection for infusion.

Potential Obstruction:

Unusually high resistance encountered while administering any agent through the system may indicate blockage. The physician must be notified immediately when this occurs, and the administration of the fluid stopped. Blockage may be caused by:

a. kinking of the catheter due to movement.
b. lodging of the distal end against the wall of a vessel.
c. occlusion by an intraluminal thrombus.
d. growth of a fibrin sheath around the catheter end.

Flushing the System

The system must be flushed using sterile technique with 10ml normal saline before and after medications are given. The port must be flushed with a 10 ml syringe of Normal Saline

(a) Accessing the port after determining patency
(b) Before and after drug administration
(c) Before and after blood sampling
(d) Flush in a pulsatile (stop/start) manner.

Refer to Medical Directive for Care and Maintenance of CVAD –XII-141)
Complications:

1) Difficulty flushing and/or aspirating blood:
   (a) Check if clamps on non-coring needles are open
   (b) If caused by catheter position in vessel wall then try the following: lie patient down, move patient’s arm into different positions, instruct patient to take deep breaths plus/minus cough; instruct patient to move head from side to side
   (c) If caused by ‘pinched off syndrome’ then catheter will be pinched off when the patient is sitting but will be free when patient lying flat. Therefore use whilst patient is lying flat.
   (d) Needle may not be inserted completely through septum or may be too short. Check that needle length is adequate and is pushed through septum until the bottom of port felt. A second attempt with a longer needle may be required.
   (e) May be due to drug precipitate, if suspected consult with physician.
   (f) May be due to clot or fibrin sheath formation. If suspected then attempt to clear by altering flushing and aspirating several times. If resistance still detected then the use of fibrinolytic agent may be indicated. Consult with physician.
   (g) If flushing is possible but aspirating is not then consult with physician.

2) Pain at Port Site:
   (a) Redness, discharge, tenderness, swelling, heat patient temperature and general unwellness are symptoms of infection associated with the port. The infection may be at the insertion site, in the port pocket or in the vein. Do not access port until discussion with physician. If proceeding with accessing the device be aware of a possible ‘septic shower’ from the rapid circulation of toxins when flushing the port.
   (b) Pain and swelling around the port site may be symptoms of extravasation or leaking of fluid into surrounding tissues. Stop infusion immediately, notify physician and follow policy for extravasation.

3) Leakage of Fluid around Needle:
   (a) May be due to loose connection between needle and IV line. Tighten connections.
   (b) Non-coring needle may be displaced. Remove needle and replace with new primed non-coring needle following aseptic technique ensuring it reaches the bottom of the port. Observe for extravasation of fluid.
   (c) Needle may be inserted into surrounding tissue rather than into port.
(d) Dressing may be wet from shower or patient’s perspiration. Change dressing.

**Patient Home Care Instructions**

If the patient is to be discharged with a port-a-cath, the patient must be given instructions on home care prior to discharge. Special arrangements may need to be made with CCAC or physician to ensure port-a-cath is flushed and maintained for patency.

These instructions may include the following:
Unless the device is accessed (needle or tubing attached), no special care is needed. If the patient is to be discharged with an accessed portal device (needle and tubing attached), the physician must be aware that the port is accessed on discharge and why, and this information must be documented in the medical record. The site must be covered with a bio-occlusive dressing and the patient and significant other /family instructed to keep the dressing clean and dry and not to attempt to cut, remove and/or otherwise alter the dressing or access in any way.

The site must be regularly inspected for signs and symptoms of infection such as redness, leakage, purulent drainage, bruising, or tenderness and the patient instructed to watch for fever and generalized tiredness. Should any of these occur, the physician/clinic must be notified immediately.
References


Nicole Rocca (N.D.). Port-A-Cath Module. Queens University Faculty of Health Sciences Patient Simulation Lab.

UT Medical Center (2002). Nursing Management of Intraperitoneal Access Devices(Port-A-Cath Systems)
## Port –A-Cath Access & De-Access Checklist

### Technique Verification Checklist

Name: _________________________                            Date ___________
Unit___________________

<table>
<thead>
<tr>
<th>Demonstration Technique</th>
<th>Yes</th>
<th>No</th>
<th>Trainer’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INSERTION OF THE GRIPPER PLUS SAFETY NEEDLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choose appropriate needle size for patient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wash hands and gather supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply face mask &amp; sterile gloves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepares patient for needle insertion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer face mask or if patient decline instruct to turn face away</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepares portal site for aseptic needle insertion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assess port site – palpating site to locate septum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrub the site with 2% chlorehexidine swab sticks repeat with a 2nd swab stick and allow to air dry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepares sterile field with non-coring needle, syringe, gauze, 10 mL NS and transparent dressing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applies sterile glove and prime non-coring needle/ Flushes the set ( and primes Y site if present)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removes Needle guard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holding port securely with non-dominant hand inserts the non-coring PLUS safety needle into port at 90° angle until the point of needle makes contact with reservoir floor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removes and discards GRIPPER PLUS safety needle tab</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applies a semi-permeable dressing over GRIPPER PLUS safety needle Base, ensuring a minimum 4cm area surrounding the base is covered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspirates with 10mL syringe and observe for blood return. flushes with 10mL of 0.9% NS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REMOVAL OF THE non-coring PLUS SAFETY NEEDLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare sterile field (dressing tray etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply face mask &amp; sterile gloves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flush with 10mL of 0.9% NS &amp; Lock with 5ml Heparin 100u/mL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Places a finger on each side of the base while gently pressing down to secure portal. From behind the needle lifts the safety arm straight back to the lock position until audible “CLICK” is heard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposes of used needles in the sharps container or for Chemotherapeutic agent – in the biohazard containers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Trainer signature: ________________________________ __________
Date:___________

Adapted from Smith Medical (June 2012)
Port-a-Cath Test

Name: ____________________    Unit: _______ Date: __________________

1. Nurses educated to care for patients with Port-A- Cath:
   a) Have completed the competency process for NYGH
   b) Can access/de-access and draw blood
   c) Can assess the site and monitor for complications
   d) all of the above
   (e) none of the above

2. When accessing the Port –A- Cath the nurse should:
   (a) Observe strict sterile procedure
   (b) Clean site with betadine
   (c) Clean site in a circular motion from outwards to inwards.
   (d) Insert non-coring needle at a 90-degree angle
   (e) a and d
   (f) b, c, d

3. Your patient has a continuous IV, and medication infusing through the port-a-cath:
   (a) The site needs to be flushed daily and Heparin Locked with 5mls(100units/ml)
   (b) The dressing and non-coring needle must be changed Q7 days
   (c) IV tubing and needle-less connector must be changed Q4 days and tubing labeled
   (d) all of the above
   (e) b and c
   (f) c only

4. Prior to administration of fluid an assessment of site and patency check/s include:
   (a) Observe for redness, swelling, tenderness or discharge at the portal site
   (b) Have patient cough
   (c) Patency is checked by drawing back using a 10 ml syringe and observing for blood return
   (d) Use a 10ml syringe with normal saline
   (e) all of the above
   (f) a, c, d only

Answer True or False for Questions 5-10

5. T F The non-coring needle and attached extension must be primed with normal saline in preparation for accessing the port-a-cath.

6. T F Pain and swelling at the insertion site may be sign of extravasation or infection.

7. T F When changing a Port-A-Cath dressing the nurse can use regular latex gloves.

8. T F Port-A-Cath dressings must be changed every 72hours and when soiled.

9. T F When withdrawing blood from a Port-A-Cath the first 5ml of blood must be discarded before collecting the sample.

10. T F Blockage of the Port-A-Cath may be due to lack of flushing.