Department of Health Government of Nunavut	NURSING POLICY, PROCEDURE AND PROTOCOLS	
	Community Health Nursing	
TITLE:	**SECTION:**	**POLICY NUMBER:**
Central Venous Access Device: Care and Maintenance	Clinical Procedures	11-001-00
EFFECTIVE DATE: / **REVIEW DUE:**	**REPLACES NUMBER:**	**NUMBER OF PAGES:**
February 10, 2018 / February 2021		14
APPLIES TO:		
Community Health Nurses		

Registered Nurses are required to be knowledgeable and skillful in the implementation of basic nursing procedures, as acquired through their formal nursing educational programs. It is the policy of the Department of Health and Social Services that the textbook *Clinical Nursing Skills and Techniques 7th edition* (Potter and Perry, 2010) shall be used to guide all basic nursing skill procedures, unless another policy and procedure is contained within this manual.

POLICY:

A Registered Nurse is responsible for the care and maintenance of Central Venous Access Devices. The nurse must complete additional training with the Nurse Educator or Delegate prior to assuming this responsibility.

DEFINITIONS:

Central Venous Access Devices (CVAD) is any intravenous device whose tip is resting in the superior vena cava. This includes percutaneously inserted subclavian and jugular catheter, tunnelled/cuffed catheters (e.g. Leonard®, Hickman®), implanted ports, peripherally inserted central catheters (PICC) and Hemodialysis/Plasmapheresis catheters (percutaneous or tunnelled/cuffed). These devices may have single or multiple lumens.

PRINCIPLES:

Clients may return to the community with a PICC line or implanted port in situ. It is unlikely that a client will return to the community with any other central venous access device.

Guidelines, from the referral site, for the care of the central venous access device shall accompany the client to the community. These guidelines shall become part of the client's health record.

RELATED POLICIES, GUIDELINES AND LEGISLATION:

Procedure 11-001-01	Care of PICC Lines
Procedure 11-001-02	Central Venous Access Device: Heparin Flush
Policy 11-002-00	PICC Removal
Procedure 11-002-01	PICC Removal
Policy 11-004-00	Central Venous Access Device: Blood Procurement
Procedure 11-004-01	Central Venous Access Device: Blood Procurement

REFERENCES:

Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2002. MMWR Recommendations and Reports, Volume 51, Number RR-10

Potter, P.A. & Perry, A.G. (2010). Clinical Nursing Skills & Techniques, 7th edition, Mosby: Toronto.

Registered Nurse's Association of Ontario (2005). *Care and maintenance to reduce vascular access complications*. Toronto: Author.

NURSING CONSIDERATIONS:

1. If the Peripherally Inserted Central Catheter (PICC) migrated in/out as determined by measurement at dressing change, notify the appropriate physician. (This measurement should be documented on the discharge notes that accompany the client back to the community.)

2. High permeability transparent dressings over the PICC line are changed routinely every 7 days; and/or if fluid accumulated underneath the dressing; and/or if the dressing is no longer occlusive.

    - Sterile adhesive gauze dressings (e.g. Primapore®) are used if the client is sensitive to transparent dressings or if drainage is present.
    - Gauze dressings are changed every 2 days and as required.

3. The insertion site is assessed daily both visually and by palpation through the intact dressing. The client should be taught to do this if daily visits to the health centre are not warranted.

    - If the client has fever, tenderness, signs of infection and has a gauze dressing, remove the dressing to examine the site more closely.
    - A swab for culture and sensitivity is obtained if infection is suspected and drainage is present. The physician must be notified.

4. If catheter-related infection is suspected, notify the appropriate physician to discuss appropriate treatment. Do not administer antibiotics without prior consent with the physician.

    - While awaiting further direction from the physician, the dressing, solutions and tubings should be changed, but the catheter is to be left in place.

5. A mask is worn only if the nurse has an upper respiratory illness, allergic rhinitis or is a known staphylococcus aureus carrier.

6. Cuff pressure devices are not to be used to infuse blood components/fluids with PICC.

7. The turbulent injection technique should always be used when the intention is to thoroughly flush the PICC. Administering 0.9% sodium chloride via a gravity drip or infusion pump will not clear the catheter lumen effectively.

SECURING PICC LINES

1. Avoid placing tape on transparent dressings. This interferes with the product's ability to "breathe".

    - If loss of adherence is likely (e.g. diaphoresis, excessive hair), consider alternate methods of securement.

2. The proximal suture wing of the PICC is secured with a securement device such as "Statlock CV plus" at all times. If the exposed catheter is lengthy and the distal end suture wing/hub of the catheter needs securement, adhesive strips or a securement device such as "Statlock CV plus" can be used. The securement device is usually sent to the community with the client.

3. The securement device (e.g. StatLock CV Plus), if present, is replaced with each dressing change.

CLEANSING SOLUTION:

- Aqueous Chlorhexidine (CHG) gluconate 2%: Total contact time for cleansing solution will be 2 minutes, including the 30 seconds scrub.

- Cleansing solutions must be allowed to air dry prior to covering the site with the dressing. This ensures proper contact time. In addition, if the skin is covered while still moist, a reaction between cleansing solution and dressing adhesive can occur and may result in cutaneous reaction.

- In the event that the client is allergic to chlorhexidine (CHG), the following may be substituted: 10% providone iodine (PI) (contact time is 2 minutes).

- Do not use acetone or any solvent with PICC lines.

INTERLINK® INJECTION CAP:

- The injection cap is placed at the end of the PICC lumen. The caps are changed every 3 days, and whenever the cap has been removed or its integrity is suspect.

- Syringes and IV administration tubing may be connected directly to the cap/extension set. In these instances, the clamp on the extension set must be closed prior to removal of syringes and tubings. At the end of procedure, replace with new injection cap(s). The caps are changed every 3 days.

- A Groshong® PICC (the catheter itself) is not to be clamped, therefore, it is not necessary to keep a pair of clamp at the bedside.

INTRAVENOUS TUBING/ INTERLINK® THREADED LUER LOCK CANNULA:

- Extension tubings are not routinely changed unless defective or if direct catheter hub access is needed (i.e. use of restoring agent). If the original IV set is changed, extension tubing is then changed every 3 days and labelled with date.

- IV tubing and threaded luer lock cannula are changed routinely every 3 days and whenever the integrity of the tubing is in question.

- The Interlink® Threaded luer lock cannula is changed with each tubing change/disconnect.

- IV tubing is connected to the capped lumen of the PICC with an Interlink® Threaded luer lock cannula.

- Pre-priming of tubing is strongly discouraged: tubing is to be prepared as close as possible to the time required.

<table>
<tr><th colspan="2">EQUIPMENT</th></tr>
<tr><th>Changing Dressing and Interlink® injection caps:</th><th>Changing the Interlink® injection caps only:</th></tr>
<tr><td>✓ Non sterile gloves (as per routine practices)
✓ 2 pairs of sterile gloves
✓ Dressing tray
✓ 1” tape (regular or paper)
✓ Alcohol swab (if securement device such as Statlock CV Plus is in place)
✓ Disposable measuring tape</td><td rowspan="4">✓ For priming: 3mL syringe filled with 0.9% sodium chloride and Interlink ® blunt plastic cannula
✓ Interlink® injection cap
✓ Sterile gloves
✓ Alcohol free chlorhexidine (CHG) gluconate 2% swab sticks or swabs
✓ Dressing tray
✓ Prescribed IV solutions with new container, tubing , tubing and Interlink® threaded luer lock cannula if indicated
✓ If indicated: Extension set</td></tr>
<tr><td><u>Cleansing Solution:</u>

✓ Alcohol free chlorhexidine (CHG) gluconate 2% swab sticks OR
✓ Solution aqueous CHG gluconate 2% with 4% alcohol

If allergic to CHG:
10% Providone Iodine (PI) solution or swabsticks</td></tr>
<tr><td><u>Dressing:</u>

High permeable transparent dressing:
✓ 10x14 cm (e.g. IV3000) OR
✓ Sterile adhesive gauze dressing (e.g. Mepore®/ Primapore®) (15 cm x 8 cm), (25 cm x 10 cm)</td></tr>
<tr><td><u>Securement device:</u>

Securement device system (e.g. StatLock CV Plus)

If catheter lengthy may need 2nd securement device or Sterile adhesive strips (½” or ¼”)

Add the additional equipment if changing the injection caps in conjunction with the dressing.</td></tr>
</table>

PROCEDURE 1: DRESSING CHANGE / CHANGING THE INJECTION CAP

1. Position client comfortably.

2. Cleanse hands with alcohol gel or antimicrobial soap.

3. Aseptically prepare equipment.

4. If changing the caps in conjunction with the dressing:

    a. If indicated, assemble the IV solution and tubing as per Potter & Perry (2010).

    b. Attach the threaded luer lock cannula to the end of the IV tubing.

    c. Prime the tubing.

    d. If there is a continuous infusion, stop the infusion, clamp the catheter (if PICC with Groshong® valve, no clamping is necessary), disconnect IV tubing and flush lumens as per Potter & Perry (2010).

    e. Open the injection cap package(s) and prime the cap(s) using the syringe filled with 0.9% sodium chloride and the attached blunt plastic cannula without removing them from the package (to maintain sterility). Prime the extension set if indicated. Put items on sterile tray.

5. Measure and document the length of the catheter in centimetres. Measure from the insertion site down to where the hub begins (do not include the hub or extension set in the measurement). Measurement can be taken before the dressing is removed (if catheter is not curved or looped under the dressing), or after dressing removal. In this case, lay the measuring tape down on the skin beyond where the dressing edge will be.

6. Put on non sterile gloves to remove the old dressing:

    a. Remove the dressing from the bottom-up lifting each side and then stretching it in opposite directions to lift the dressing off, taking care not to dislodge the catheter and without disrupting the securement device (eg “Statlock CV Plus) if in place.

    b. Observe alignment of the catheter, condition of the insertion site, the surrounding skin and sutures (if applicable). Obtain swab for culture and sensitivity if there are signs of infection and/or drainage.

7. If securement such as “Statlock CV Plus”/adhesive strips in place, change to sterile gloves:

    a. Removal of adhesive strips:

        i. Secure catheter by applying gentle pressure at the insertion site with a sterile gauze, then carefully remove the sterile adhesive strips and suture wing (if present) using sterile forceps or directly with sterile gloved hands. Place the suture wing on the tray away from the other sterile supplies.

    b. Removal of securement device “Statlock CV Plus”:

        i. Apply one securement device sterile adhesive strip at or near the insertion site to secure the catheter. Disengage the catheter from the securement device by first opening the side doors, one at a time from the bottom corner, and then gently pulling the catheter off the posts.

        ii. Dissolve the pad by applying an alcohol swab to a corner of the pad. Wait a few seconds, lift the corner and gently rub the under surface while continuing to lift the pad. Discard the old pad.

        iii. Remove adhesive strip located at the insertion site, by lifting each end and stretching them in opposite directions, being careful not to pull the catheter out.

8. Change sterile gloves.

9. Sterile drapes:

    a. Place one sterile drape on top of the arm, just distal to the hub/extension set junction. Then if applicable, pick up the suture wing with gauze. Cleanse the suture wing with a swab stick. Allow to air dry.

10. Starting at the insertion site, scrub the skin and catheter with the antiseptic. Use a circular scrubbing motion and move from the insertion site, outwards. Ensure that the entire area that will be under the dressing is cleansed. Include the catheter in the cleansing process. Repeat as required, using a fresh swab stick/gauze each time. Allow the area to air dry.

    a. For a PICC catheter, when present, reposition the suture wing 1-2 cm away from the PICC insertion site. Ensure that the catheter is well positioned within the groove of the suture wing.

11. Securement device:

    a. Apply the remaining adhesive strip near the insertion site to secure the catheter during the new securement device application. Prepare the area of skin that will be covered by the securement device with the skin protectant prep pad. Allow to dry thoroughly.

    b. Secure the catheter by inserting the suture wings onto the securement device posts one at a time. Insert the first suture wing into the securement device post and close the side door, and then repeat for the other one. Peel off the paper backing from the adhesive pad and place on the prepared skin.

    c. If PICC in situ and the external catheter is lengthy (presence of a suture wing at the distal hub/bifurcation of the catheter) use adhesive strips or second securement device such as "Statlock CV Plus". If adhesive strips are used, fold over the ends of the adhesive strips before applying them to facilitate future removal. Place one adhesive strip horizontally over the suture wing, and one vertically on each side of the suture wing (in an "H"). Avoid placing adhesive strips on the catheter itself. Ensure that the adhesive strips do not extend beyond the edges of the dressing.

    d. Remove adhesive strip located at the insertion site, by lifting each end and stretching them in opposite directions, being careful not to pull the catheter out.

12. Apply the high permeable transparent (or sterile adhesive gauze) dressing, placing the upper edge at least 2.5 cm (1") above the insertion/exit site. The catheter and the catheter hub will be included in the dressing. Pinch the dressing around the catheter to expel as much air as possible, and then smooth it out over the skin.

    a. If a securement device is used, extend the dressing a minimum of 1 cm distal to the device. A second transparent dressing may be required to achieve this.

    b. Ensure that the catheter lies loosely on the arm, in the shape of an "S" or "C". Avoid coiling or twisting the catheter. Ensure that the hub of the lumen catheter is included under the dressing. PICC's inserted above the antecubital fossa may be looped up ("U"-shaped) the lateral side of the upper arm.

13. If changing the caps (if not go to step 14):

    a. Lift the catheter hub/cap connection using a 4x4 gauze sponge. Using a swab stick or swab, scrub the connection.

        - If extension set in place and needs to be changed, scrub at the junction of the catheter and extension set.

b. Allow to air dry.

c. Remove the scrubbed injection cap (extension set if applicable) with sterile gauze and discard. Cleanse lumen threads with a new swab stick or swab only if visibly soiled. Allow to air dry.

d. Attach a new injection cap (or extension set with attached injection cap if indicated).

e. Wipe caps with an alcohol swab and flush as per Guideline 11-001-02: *Central Venous Access Device: Heparin Flush* if indicated.

f. If there is a continuous infusion, restart the IV infusion, using the new container, tubing and interlink® threaded luer lock cannula.

    i. Cleanse the injection cap with an alcohol swab and allow to air dry. Attach the new IV tubing by pushing and twisting the threaded lock cannula or the tubing luer lock onto the Interlink® injection cap.

    ii. Re-establish flow and secure the tubing to the client using a piece of tape or special attachment device.

14. Seal the base of the dressing by pinching it around the catheter lumen. Obtain a strip of tape that is approximately the same length as the base of the dressing. Slit the centre of the tape approximately half way through its width. Apply it to the lower edge of the dressing, underneath the catheter. Bring each slit side up and alongside the catheter lumen(s). Place another piece of tape on top of this slit tape OR place a cross-over sterile adhesive strip around the catheter where it exits the dressing. Place a second adhesive strip over that strip.

15. Loop the catheter lumen and attached IV or extension tubings that lie below the dressing and secure it to the arm by using a piece of tape or other type of attachment device (e.g. Burn net).

16. Date the dressing.

17. The pigtail retainer may be used with the device to organize and secure the tails on multiple lumen central venous lines. If it will be used, place it below the securement device (eg.“StatLock CV Plus) after the application of the dressing. The catheter lumens are secured into the pigtail retainer by gently stretching them into place. The skin that will rest under the retainer may also be prepared using the protectant skin pad and benzoin solution if available with the securement device.

PROCEDURE 2: CHANGING THE INTERLINK® INJECTION CAP(S) ONLY

1. Cleanse hands with alcohol gel or antimicrobial soap.

2. If indicated, assemble the IV solution and tubing in the usual fashion

    a. Attach Threaded® luer lock cannula to the end of the IV tubing.

    b. Prime tubing.

3. Clamp catheter (if PICC with Groshong® valve, no clampling necessary).

    a. If there is a continuous infusion, stop the infusion, remove the IV tubing by twisting the Interlink® threaded lock cannula off the lumen's injection cap (avoid removing the injection cap itself) and flush as per Guideline 11-001-02: *Central Venous Access Device: Heparin Flush*.

4. Prepare dressing tray.

    a. Open the injection cap package(s) and prime the cap(s) with the pre-filled 0.9% sodium chloride syringe without removing them from the package (to maintain sterility). If indicated, prime extension set and put on tray

    b. Open the chlorhexidine swab sticks or swabs and aseptically put them in the dressing tray.

5. Put on gloves.

6. Lift the catheter hub/cap connection using a 10 cm x 10 cm gauze sponge. Using a swab stick or swab, scrub the connection. If extension set in place, scrub at the junction of the catheter and extension set. Allow to air dry.

7. Remove the scrubbed injection cap (extension set if applicable) with sterile gauze and discard. Cleanse lumen threads with a new swab stick or swab only if visibly soiled

8. Attach a new injection cap (or extension set with attached injection cap if applicable).

9. Wipe caps with an alcohol swab, allow to air dry and flush as per Guideline 11-001-02: *Central Venous Access Device: Heparin Flush* if indicated.

10. If there is a continuous infusion, restart the IV infusion, using the new container, tubing and interlink® treaded luer lock cannula.

    a. Cleanse the injection cap with an alcohol swab and allow to air dry.

    b. Attach the new IV tubing by pushing and twisting the Interlink® threaded luer lock cannula or the tubing luer lock onto the injection cap.

    c. Re-establish flow and secure the tubing to the client using a piece of tape or special attachment device.

DOCUMENTATION:

Document procedure and findings in the progress notes.

CLIENT TEACHING:

1. Care schedule.

2. Signs of local complications: localised pain, swelling, redness, heat and drainage at site of insertion.

3. Protection of site during bathing.

REFERENCES

Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2002. MMWR Recommendations and Reports, Volume 51, Number RR-10

Infection Control Guidelines (1997). Preventing Infections Associated with Indwelling Intravascular Access Devices.

O'Neil, B., Schneider, J., Pederson, C. & Mirtallo, J. (2002). Compliance with Safe Practices for Preparing Parenteral Nutrition Formulations. *American Journal Health System Pharm*, 59.

The Ottawa Hospital Policy and Procedure. *Central Venous Access Device*

Potter, P.A. & Perry, A.G. (2010). Clinical Nursing Skills & Techniques, 7th edition, Mosby: Toronto.

Registered Nurse's Association of Ontario (2005). *Care and maintenance to reduce vascular access complications*. Toronto: Author.

Registered Nurse's Association of Ontario (2004). *Assessment and device selection for vascular access.* Toronto: Author.

Weinstein, S. (2001). *Plumer's Principles and Practice of Intravenous Therapy* (7th ed.). Philadelphia: Lippincott.

HEPARIN FLUSH TABLE		
Type of Catheter	**Amount & Type of Solution**	**Frequency**
Implanted Port	Intermittent access with Huber point needle left in situ: 20 mL 0.9% sodium chloride followed by 10 mL heparin flush solution (see procedure below to prepare heparin solution)	Every 24hrs and after each use
	Huber point needle is to be removed: 20 mL 0.9% sodium chloride followed by 5 mL heparin (100 units/mL)	Prior to removal then, Every 4 weeks when not in use
Close-Ended PICC (e.g. Groshong)	20 mL 0.9% sodium chloride	Every 6 days and after each use
Open-Ended PICC (e.g. Cook)	20 mL 0.9% sodium chloride followed by 10 mL heparin flush solution (see procedure below to prepare heparin solution)	Every 6 days and after each use

HEPARIN FLUSH SOLUTION, IF INDICATED:

- ✓ 10 mL syringe
- ✓ vial heparin (100 units/mL or 10 units/mL)
- ✓ vial 0.9% sodium chloride
- ✓ blunt plastic cannula
- ✓ Interlink® single dose plastic cannula
- ✓ Alcohol swabs

HOW TO PREPARE HEPARIN FLUSH SOLUTION:

The final concentration for the heparin flush solution should be 10 units/mL.

In a 10ml syringe, mix 1 mL of heparin 100 units/mL PLUS 9mL 0.9% sodium chloride
(final concentration will be 10 units/mL)

OR

Use Heparin 10 units/mL concentration if available.

Approved by:	Effective Date:
11 FEB 2011 **Chief Nursing Officer** **Date**	April 1, 2011
February 11, 2011 **Deputy Minister of Health and Social Services** **Date**	