Department of Health Government of Nunavut	NURSING POLICY, PROCEDURE AND PROTOCOLS		
	Community Health Nursing		
TITLE:		**SECTION:**	**POLICY NUMBER:**
Central Venous Access Device: Blood Procurement		Clinical Procedures	11-004-00
EFFECTIVE DATE:	**REVIEW DUE:**	**REPLACES NUMBER:**	**NUMBER OF PAGES:**
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APPLIES TO:			
Community Health Nurses			

POLICY:

A Registered Nurse may procure blood samples from a central venous access device (CVAD). Only nurses who have received additional training with the Nurse Educator or delegate will assume this responsibility. A physician order is necessary for a heparin flush.

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 (eg. Leonard®, Hickman®**)**, implanted ports, peripherally inserted central catheters (PICC) and Hemodialysis/Plasmapheresis catheters (percutaneous or tunelled/cuffed). These devices may have single or multiple lumens.

The **turbulent injection technique** is injecting fluid using a "push/stop/push/stop" motion on the syringe plunger. This technique ensures both laminar and turbulent flows through the CVAD thereby optimizing the cleansing of the catheter lumen.

Withdrawal occlusion: Ability to flush a CVAD and infuse fluids and medications but an inability to withdraw blood.

RELATED POLICIES, GUIDELINES AND LEGISLATION:

Policy 11-001-00 Central Venous Access Device: Care & Maintenance
Procedure 11-004-01 Central Venous Access Device: Blood Procurement

REFERENCES:

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

Sims Medical Systems. (1998). Port-a-cath and Port-a-Cath II. St. Paul, MN: Deltec Sims Deltec, Inc.

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

PROCEDURE 11-004-01

NURSING CONSIDERATIONS:

1. An injection cap is placed at the end of each lumen of a CVAD. It is not to be removed for blood procurement.

2. All infusions into the CVAD must be clamped off before withdrawing blood; this includes those infusing through multiple lumens.

3. The first tube of 5 to 7mL of blood withdrawn is always used as a discard sample.

4. Recommended lumen to use for blood procurement in multi-lumen catheters:

    a. Tunnelled and cuffed catheters – red lumen
    b. Triple lumen catheter – proximal lumen
    c. PICC catheters – 4 and 5 French dual (red lumen).

5. The ability to infuse through a CVAD but an absence of blood return may indicate a withdrawal occlusion. If unable to obtain a blood return/blood sample, perform one or more of the following:

    a. Ensure that the catheter clamp is open

    b. Ask the client to cough

    c. Change the client's position; raise / lower the head of the bed, shift the shoulders, raise the arms and/or have the client perform the Valsalva manoeuvre.

    d. Flush gently with saline and then use the same syringe to aspirate the discard sample.

    e. Chest x-ray may be indicated to verify that the catheter tip is still in correct position.

    f. The instillation of catheter restoring agent may be necessary (not currently available in Nunavut health centres).

6. Avoid applying excessive negative pressure when aspirating samples. It may cause hemolysis of the blood; traumatize the vein wall and/or promote thrombosis.

7. Procuring blood through the Interlink® injection cap on a CVAD eliminates the need to clamp and unclamp the catheter; it is a closed system.

8. Use only 10 mL and larger syringes to flush CVAD. Smaller syringes generate excessive pressure and may burst the catheter.

9. For implanted ports, the injection cap located on the "Y" of the Huber point needle extension set, may be used for blood procurement (change this "Y" injection cap to an Interlink® injection cap on insertion and with each Huber point needle change).

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

<table>
<tr><th colspan="3">Equipment</th></tr>
<tr><td colspan="3">✓ Non-sterile gloves
OR
✓ Personal Protective Equipment (PPE): under pad, double pair of nitrile gloves, impervious gown and sharps container (use if body fluid is considered cytotoxic following administration of cytotoxic agent)
✓ 20 mL syringe filled with 0.9% sodium chloride and an interlink® blunt plastic cannula
✓ Alcohol swabs</td></tr>
<tr><th>Additional Equipment for Vacutainer Method</th><th colspan="2">Additional Equipment for Syringe Method</th></tr>
<tr><td>✓ Multiple sample luer adaptor
✓ Blood tube holder
✓ Collection tube identified for discard
✓ Collection tube (s) as needed
✓ Blunt plastic cannula</td><td><u>PICC</u>
✓ 10 mL syringe filled with 0.9% sodium chloride & Interlink® blunt plastic cannula (N.B. saline used to open valve)
✓ 18 gauge needle(s)
✓ Syringe(s) large enough to hold blood volume required for sampling</td><td><u>Other CVAD</u>
✓ 10mL syringe and Interlink® blunt plastic cannula (N.B. used for waste)
✓ 18 gauge needle(s)
✓ Syringe(s) large enough to hold blood volume required for sampling</td></tr>
<tr><th colspan="3">Additional Equipment for Heparin Flush (if indicated)</th></tr>
<tr><td colspan="3">✓ 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</td></tr>
</table>

PROCEDURE 1: VACUTAINER METHOD TO OBTAIN BLOOD SAMPLE

1. Pick up the catheter end and scrub the Interlink® injection cap with an alcohol swab for 30 seconds. Allow to air dry.

2. Place sterile 4x4 gauze appropriately and lay the cleansed injection cap on it.

3. Clamp all other infusions.

4. Ensure the catheter clamp is open and pierce the injection port with the assembled blood tube holder. Push the blood collecting tube identified for discard onto the holder. Allow the tube to fill and discard OR pierce the injection port with a saline filled syringe, inject the saline and then use the same syringe to aspirate 5-7 mL of blood for discard.

5. Fill each required blood collecting tube following the order of draw specified on each requisition. When all specimens have been obtained, remove the blood tube holder.

PROCEDURE 2: SYRINGE METHOD TO OBTAIN BLOOD SAMPLE

1. Pick up the catheter end and scrub the Interlink® injection cap with an alcohol swab for 30 seconds. Allow to air dry.

2. Place sterile 4x4 gauze appropriately and lay the cleansed injection cap on it.

3. Clamp all other infusions.

4. Ensure the clamp on the catheter is open. Flush with 10 mL 0.9% sodium chloride briskly. At this point, if a PICC, pull back on the empty syringe plunger to the 1 mL mark and stop (but maintain suction). This allows the Groshong® valve to open.

5. When blood return is visible, continue to aspirate 5-7 mL as the “discard” sample.

6. Draw blood sample into a fresh syringe using the same aspiration technique.

7. Remove Interlink® blunt plastic cannula from syringe and attach an 18 gauge needle. Transfer the blood into the blood collecting tubes according to the order of draw as outlined in the *Laboratory Manual*.

DOCUMENTATION:

- Document laboratory tests ordered and the Heparin Flush Solution in the progress notes.
- Nursing flow sheet or chronic disease sheet if available.

CLIENT TEACHING:

- Follow up appointment required for maintenance flushing.

REFERENCES:

Arrow International. *Arrow Multi-Lumen Central Venous Catheter-Nursing Care Guidelines*.

Farr, B.M. (200). Preventing vascular catheter-related infections: current controversies. *Clinical Infectious Disease, 33*(10), 1733-8.

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: Blood procurement*

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

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

Approved by:	Effective Date:
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