PURPOSE:

1. To access non-tunnelled or tunnelled central venous catheter (CVC) for renal replacement therapy in the management of acute or chronic renal failure.

POLICY:

1. Registered Nurses and Licensed Practical Nurses in the Manitoba Renal Program who have received instruction and have demonstrated competency to the renal educator or delegate may utilize a CVC.

2. A physician’s order must be obtained prior to initial use of a CVC to ensure proper placement.

EQUIPMENT:

**For Initiating Dialysis**
- Clean towel or sterile drape
- Disposable gloves
- 2 pkg 2% chlorhexidine (CHG) with 70% Alcohol swabs
- 2 – 10 mL syringes containing 5 mL of 0.9% NaCl
- 2 – 10 mL syringes for heparin/saline prime as ordered by a physician
- 1 package of sterile gauze 10 X 10 cm
- 2 procedure masks

**For Discontinuing Dialysis**
- Clean towel or sterile drape
- Disposable gloves
- 2 pkg 2% chlorhexidine (CHG) with 70% Alcohol swabs
- 1 package of sterile 10 X 10 cm gauze
- 1 package of unsterile 10x10cm gauze for wrapping (optional)
- 2 procedure masks
- 2 sterile luer-lock caps
- 2 – 3 mL syringes for instillation of heparin/alteplase/4% sodium citrate (5mL prefilled syringes)/antibiotic solution
- 2 syringes containing 10 – 20 mL of 0.9% NaCl
- Label with appropriate instillation information
PROTOCOL:

A. INITIATING DIALYSIS:

1. Perform hand hygiene.


3. Glove.

4. Change the dressing as per Procedure 30.30.06 Hemodialysis Central Line Dressing Change.

5. Open drape and place under catheter.

6. Confirm that cannula clamps on catheter are closed.

7. Using 2% CHG with 70% Alcohol swab, scrub connection sites for 30 seconds.

8. Place on sterile gauze and allow to dry for 2 minutes.

9. Ensure cannula clamp remains closed. Remove one luer-lock cap from the catheter and attach the syringe with 5 mL 0.9% NaCl to the catheter.

10. Open cannula clamp and aspirate 3 mL of blood to confirm patency and withdraw previously instilled locking solution. Close clamp. Discard syringe.

11. Connect the syringe containing 10 mL 0.9% NaCl. Open clamp and instill into the catheter port. Close clamp.

12. Repeat Steps 9 – 11 for the other lumen of the catheter. If patent, give heparin prime as per physician’s order.

13. Initiate dialysis as per Procedure 30.20.07 Use of Fresenius 5008 Delivery System.

B. CARE OF CLOTTED/SLUGGISH HEMODIALYSIS CATHETER:

1. If unable to aspirate, attempt to flush. ▪ Do not use a syringe less than 10 mL. The patient will receive the lock as a bolus.

2. If flush is unsuccessful, clamp line, disconnect syringe and instill alteplase per physician’s order and Procedure 30.30.12 Alteplase for Clearing Hemodialysis Catheter Thrombosis Using the Push (30 min) Method.

3. If the flush is successful.
   a. If a heparin lock is instilled, hold heparin bolus/prime and flush line with 10 – 20 mL 0.9% NaCl.
   b. If a 4% sodium citrate lock or an alteplase lock is instilled, administer heparin bolus/prime.

4. Attach bloodlines.

C. DISCONTINUING DIALYSIS:

1. Perform hand hygiene.


3. Glove.

4. Open the drape and place under the catheter and bloodlines.

5. Using 2% CHG with 70% Alcohol swab, scrub connection sites for 30 seconds.

6. Place on sterile gauze and allow to dry for 2 minutes.

7. Return blood as per Procedure 30.20.07, Use of Fresenius 5008 Delivery System.

8. Proceed with lock procedure I, II, or III

I. Procedure for Heparin Lock:

1. Push 10 –20 mL 0.9% NaCl into the port used for supply. (Could be either arterial or venous port if lines have been switched). Close clamp.

2. On completion of blood return, push 10 –20 mL 0.9% NaCl into the port used for return. Close clamp.

3. Attach a 3 mL syringe containing the prescribed heparin concentration to each port of the CVC and instill in each port using Positive pressure is maintained if the port is clamped simultaneously with completion of instillation.
positive pressure to the volume of the lumen. Close and clamp.

4. Attach the sterile luer-lock caps.

5. Affix the appropriate label as per unit practice. Wrap ports with unsterile gauze and anchor for comfort as per patient request.

II. Procedure for Alteplase Lock:

1. Push 10 –20 mL 0.9% NaCl into the port used for supply. (Could be either arterial or venous port if lines have been switched). Close clamp.

2. On completion of blood return, push 10 –20 mL 0.9% NaCl into the port used for return. Close clamp.

3. Reconstitute alteplase as per the WRHA Adult Parenteral Drug Monograph for Alteplase (Arterial or Venous Catheter Occlusion).

4. Attach a 3 mL syringe to each port of the CVC and slowly inject sufficient volume of alteplase solution to fill the priming volume of each catheter port plus a 0.1 mL overfill and clamp.
   a. For catheters with a volume of <2 mL, instill alteplase solution only.
   b. For catheters with a volume of >2 mL (as the maximum dose of alteplase is 2 mg per lumen) use 2 mL alteplase and top up to the required volume in the syringe using sterile water for injection.

   ▪ The extra 0.1 mL of alteplase beyond the lumen volume will ensure alteplase gets to the tip of the catheter.
     o Example: For a 1.7 mL arterial lumen, draw up 1.8 mL alteplase and instill. For a 1.8 mL venous lumen draw up 1.9 mL alteplase and instill.
     o Example: For a 2.1 mL arterial lumen, draw up 2 mL alteplase and 0.2 mL sterile water for injection in the same syringe to provide a 0.1 mL overfill. For a 2.2 mL venous lumen, draw up 2 mL alteplase and 0.3 mL sterile water for injection in the same syringe to provide a 0.1 mL overfill.

   ▪ Advise the patient for signs of allergic reaction (i.e. pruritis, edema) and signs of bleeding.

5. Attach the sterile luer-lock caps.

6. Affix the appropriate label as per unit practice. Wrap ports with unsterile gauze and anchor for comfort as per patient request.
III. Procedure for Antibiotic Lock:

1. Push 10 –20 mL 0.9% NaCl into the port used for supply. (Could be either arterial or venous port if lines have been switched). Close clamp.

2. On completion of blood return, push 10 –20 mL 0.9% NaCl into the port used for return. Close clamp.

3. Attach a 3 mL syringe with prescribed antibiotic lock to each port of the CVC and instill using positive pressure to the volume of the catheter and clamp. Positive pressure is maintained if the port is clamped simultaneously with completion of instillation.

4. Attach sterile luer-lock caps.

5. Affix the appropriate label as per unit practice. Wrap ports with unsterile gauze and anchor for comfort as per patient request.

IV. Procedure for 4% Citrate Lock:

1. Push 10 –20 mL 0.9% NaCl into the port used for supply. (Could be either arterial or venous port if lines have been switched). Close clamp.

2. On completion of blood return, push 10 –20 mL 0.9% NaCl into the port used for return. Close clamp.

3. Attach a separate pre-filled syringe containing the volume of the lumen of 4% sodium citrate to each port of the CVC and instill using positive pressure. Close clamp. Positive pressure is maintained if the port is clamped simultaneously with completion of instillation.

4. Attach the sterile luer-lock caps.

5. Affix the appropriate label as per unit practice. Wrap ports with unsterile gauze and anchor for comfort as per patient request.

DOCUMENTATION:

- Manitoba Renal Program Health Record:
  - Medical Administration Record
  - Integrated Progress Notes if applicable

- In-hospital Unit/Ward Health Record:
  - Integrated Progress Notes
REFERENCES:


Personal communication (Janine Kemp, Vascular Access Nurse, SOGH and Adele Yan, Bard Canada Inc.) Cleansing solutions for BARD hemostar catheters, June 2010

REVIEWED BY:

WRHA, Dialysis Infection, Prevention, and Control Working Group. (May 2011)