



MANITOBA RENAL PROGRAM

SUBJECT <ul style="list-style-type: none"> Alteplase for Clearing Hemodialysis Central Venous Catheter(CVC) Thrombosis using the Dwell method 	SECTION 30.20 Vascular Access
	CODE 30.20.10
AUTHORIZATION <ul style="list-style-type: none"> Professional Advisory Committee, Manitoba Renal Program Nursing Leadership Council, St. Boniface General Hospital 	EFFECTIVE DATE July 2017
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PURPOSE:

- To describe the procedure for safe administration of a thrombolytic agent to treat thrombosis of non-tunneled or tunneled central venous catheter (CVC) for Hemodialysis.

POLICY:

- Alteplase is a thrombolytic agent used for the treatment of CVC-related thrombosis. CVC thrombosis should be suspected if there is a decrease in blood flow rate or an inability to withdraw blood or infuse fluid through the CVC. Once mechanical obstruction has been ruled out through visual inspection, patient re-positioning and manual irrigation of lumens, alteplase will be instilled as outlined in this procedure. The maximum dose used is 2 mg per lumen. There are minimal side effects at this dose but the patient should be monitored for signs of bleeding.
- Hemodialysis Nurses who have received instruction and have demonstrated competency to the renal educator or delegate may instill alteplase for CVC instillation instead of usual instillation (e.g. heparin, Na+ Citrate) when ordered by the nephrologist.
- Registered nurses in ICU at St Boniface Hospital who have received instruction and have demonstrated competency to their educator or delegate may instill alteplase into the CVC when ordered by a physician.
- A Home Hemodialysis patient educator or delegate will teach Home Hemodialysis patients the procedure. The patient must demonstrate an understanding of the protocol.

EQUIPMENT:

- 2- 10mL syringes containing 0.9%NaCl
- 2 - 10 mL syringes for withdrawal (if needed)
- 2 – 3 mL syringe
- 2 - vials alteplase (2 mg each)
- Sterile water for injection (without bacteriostat)
- Alcohol swabs
- Clean disposable gloves
- 2--Blunt fill needle

KEY POINTS:

PROCEDURE:

1. Check if patient has a history of active bleeding or platelets less than 135×10^9 /Litre. If patient has a history of active bleeding, notify physician prior to instillation of Alteplase.
2. Check if patient has received Alteplase in the past 2 weeks.
3. Attach the blunt fill needle onto 3 mL syringe withdraw 2.2 mL of sterile water for injection and inject into a 2 mg alteplase vial.
4. Swirl vial until contents are completely dissolved. Do not shake.
5. Repeat Steps 3 and 4 for the second vial of alteplase.
6. Attach the blunt fill needle and withdraw 2 mL (2 mg) of reconstituted solution from each vial into 2 separate 3 mL syringes.
7. Access CVC lumen following Procedure 30.20.02 *Accessing and Locking Dialysis Central Venous Catheter (Anticoagulant/ Thrombolytic/Antibiotic Locking)* or 30.20.04 *Use of Closed Needleless Access device with Hemodialysis Central Venous Catheters (CVC)*.
8. Flush each CVC lumen with 10 mL 0.9% NaCl.
9. Slowly instill sufficient volume of alteplase solution to fill volume of CVC lumen plus 0.1 mL.
 - a. **For CVC with lumen volumes <2 mL:**
If the lumen volume is <2 mL, only alteplase is instilled (to a volume equal to the CVC lumen volume + 0.1 mL). See example under "Key Point".
 - b. **For CVC with lumen volume ≥ 2 mL:**
If the lumen volume is ≥ 2 mL, a mixture of alteplase and **sterile water** for injection is instilled. This is because the maximum dose of alteplase is 2 mL (2 mg) per lumen. See example under "Key Point".

KEY POINTS:

- If patient has received Alteplase (x1) in the past 2 weeks, notify physician/Vascular Access Nurse prior to next dialysis treatment.
- Final concentration = 1 mg/mL (vial contains 2.2 mg alteplase).
- Reconstituted solution should be colorless or pale yellow and transparent.
- Inspect vial. Discard if particulates are present.
- Expiry of the solution is 24 hours after reconstitution when stored at 2 to 30 ° C
- Alteplase dwell is typically instilled post hemodialysis treatment.
- The extra 0.1 mL alteplase beyond the lumen volume will ensure alteplase gets to the tip of the CVC.

Example:

- For a 1.7 mL arterial lumen and a 1.8 mL venous lumen:
 - Instill 1.8 mL (1.7 mL + 0.1 mL) alteplase into the arterial lumen.
 - Instill 1.9 mL (1.8 mL + 0.1 mL) alteplase into the venous lumen.

Example:

- For a 2.1 mL arterial lumen and a 2.2 mL venous lumen:
 - Total volume needed for arterial lumen: 2.1 mL + 0.1 mL = 2.2 mL.
 - Instill 2 mL (2 mg) of alteplase + 0.2 mL sterile water for injection.
 - Total volume needed for the venous lumen: 2.2 mL + 0.1 mL = 2.3 mL.
 - Instill 2 mL (2 mg) alteplase + 0.3 mL sterile water for injection.

10. Attach CVC cap to each lumen. Ensure catheter clamps are closed.
11. Document administration of alteplase
12. Assess effectiveness next HD treatment.

DOCUMENTATION:

- PRN Medication Administration Record (MAR)
- Integrated Progress Notes:
 - Time of administration
 - Blood flow rate prior to alteplase administration (if applicable)
 - Blood flow rate after alteplase administration
- Hemodialysis treatment record

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POLICY & PROCEDURE DEVELOPERS

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