



MANITOBA RENAL PROGRAM

SUBJECT <ul style="list-style-type: none"> Local Centres: Antibiotic Lock Preparation Procedures for Hemodialysis Central Venous Catheters 	SECTION 30.20 Vascular Access
	CODE 30.20.11
AUTHORIZATION <ul style="list-style-type: none"> Professional Advisory Committee, Manitoba Renal Program 	EFFECTIVE DATE June 2010
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PURPOSE:

- Antibiotic locks may be ordered in hemodialysis patients with a central venous catheter (CVC) - related infection. Studies have indicated that antibiotic locks in combination with intravenous antibiotic therapy can improve the cure rates of hemodialysis catheter-related bacteremia (approximately 70% cure) versus intravenous antibiotic therapy alone (approximately 25-30% cure). However, this cure rate is highly dependent on the infecting organism. Antibiotic locks may be used to treat *Staphylococcus epidermidis*, *Enterococcus*, and gram negative infections. Locks should not be used to treat *Staphylococcus aureus* or *Candida* infections due to high rates of failure, CVC should be changed or removed.

POLICY:

- Pharmacy will prepare the antibiotic lock upon a physician's order. At Local Centre hemodialysis units which do not have a pharmacy available, Registered Nurses (RN)/Licensed Practical Nurse (LPN) in hemodialysis may prepare the antibiotic lock upon a physician's order.

A. Preparation of Gentamicin 2.5 mg/mL in 4% Sodium Citrate Procedure:

EQUIPMENT:

- 1 mL syringe
- 1 vial 40 mg/mL gentamicin (2 mL)
- 2 syringes sodium citrate 4% (3 mL each, Citraflow™)
- Alcohol swab
- Disposable gloves

KEY POINTS:

PROCEDURE:

- Wipe top of gentamicin vial with an alcohol swab.
- Withdraw 0.2 mL of gentamicin 40 mg/mL using the 1mL syringe.

KEY POINTS:

3. Add the 0.2 mL gentamicin to one of the sodium citrate 4% 3 mL syringes.
 - Expiry of the mixed syringes is 1 hour at room temperature if prepared by a nurse in the dialysis unit. If prepared by a pharmacy in an IV hood, expiry is 9 days refrigerated or 24 hours room temperature.
 - Final volume/syringe = 3.2 mL
4. Agitate the syringe to mix.
5. Repeat steps 2 and 3 for the second sodium citrate syringe.
6. Label the 2 syringes as “gentamicin 2.5 mg/mL in 4% sodium citrate lock”.

B. Preparation of Gentamicin 1 mg/mL & Heparin 2,500 units/mL Procedure:

EQUIPMENT:

- 10 mL syringe
- 1 mL syringe
- 3 x 3 mL syringes
- 1 vial 40 mg/mL gentamicin (2 mL)
- 1 vial heparin 10,000 u/mL (5mL)
- 1 amp 0.9% NaCl (normal saline) (10 mL)
- Alcohol swab
- Disposable gloves

KEY POINTS:

- Obtain from pharmacy (heparin 10,000 u/mL no longer hemodialysis wardstock).

PROCEDURE:

1. Wipe top of gentamicin vial with an alcohol swab.
2. Withdraw 0.13 mL of gentamicin 40 mg/mL using the 1mL syringe.
3. Withdraw 1.25 mL heparin 10,000 u/mL using the 3mL syringe.
4. Add the 0.13 mL gentamicin and 1.25 mL heparin to the 10 mL syringe. Then draw up to 5mL with normal saline (final syringe volume = 5 mL). Agitate well.
5. Draw up 2.5 mL into 2 separate 3 mL syringes to access both lumens of the catheter (i.e. one syringe per lumen).
6. Label the 2 syringes with “gentamicin 1 mg/mL in heparin 2,500 units/mL lock”

KEY POINTS:

- Expiry of the mixed solution is 1 hour at room temperature if prepared by a nurse in the dialysis unit. If prepared by pharmacy in an IV hood, expiry is 24 hours at room temperature.
- Solution may initially appear cloudy. Once shaken, the solution should become clear.

C. Preparation of Vancomycin 5 mg/mL & 4% Citrate Procedure

EQUIPMENT:

- 10 mL syringe
- 1 mL syringe
- 1 vial vancomycin 1 gram
- 2 syringes sodium citrate 4% (3 mL each, CitraFlow™)
- Alcohol swab
- 1 amp Sterile Water for Injection (10 mL)
- Disposable gloves

KEY POINTS:

PROCEDURE:

1. Wipe top of vancomycin 1 gram vial with an alcohol swab.
2. Reconstitute the vancomycin 1 gram vial with 10 mL sterile water for injection using the 10 mL syringe (final concentration = 100 mg/mL). Shake vial to dissolve.
3. Withdraw 0.16 mL vancomycin (100 mg/mL).
4. Add the 0.16 mL to one of the sodium citrate 4% 3 mL syringes.
5. Agitate the syringes.
6. Repeat steps 3 and 4 for the second 4% sodium citrate syringe.
7. Label the 2 syringes as “vancomycin 5 mg/mL in 4% sodium citrate lock”.

KEY POINTS:

- Expiry of the mixed syringes is 1 hour at room temperature if prepared by a nurse in the dialysis unit. If prepared by a pharmacy in an IV hood, expiry is 7 days refrigerated or 24 hours room temperature.
- Final volume/syringe = 3.16 mL

D. Preparation of Vancomycin 5 mg/mL & Heparin 2,500 units/mL Procedure:

EQUIPMENT:

- 10 mL syringe
- 1 mL syringe
- 3 mL syringe
- 1 vial vancomycin 1 gram
- 1 vial heparin 10,000 u/mL (5mL)
- 2 amps sterile water for injection (10 mL)
- Alcohol swab
- Disposable gloves

KEY POINTS:

- Obtain from pharmacy (heparin 10,000 u/mL no longer hemodialysis wardstock).

PROCEDURE:

KEY POINTS:

1. Wipe top of vancomycin 1 gram vial with an alcohol swab.
2. Reconstitute the vancomycin 1 gram vial with 10 mL sterile water for injection using the 10 mL syringe (final concentration = 100 mg/mL). Shake vial to dissolve.
3. Withdraw 0.25 mL of vancomycin (100 mg/mL) using the 1 mL syringe.
4. Withdraw 1.25 mL heparin 10,000 u/mL using the 3 mL syringe.
5. Add the 0.25 mL vancomycin and 1.25 mL heparin to the 10 mL syringe. Then draw up to 5mL with sterile water for injection (final syringe volume = 5 mL). Agitate well.
 - Expiry of the mixed solution is 1 hour at room temperature if prepared by a nurse in the dialysis unit. If prepared by pharmacy in an IV hood, expiry is 24 hours at room temperature.
 - Solution is initially cloudy. Once shaken well, solution will become clear.
6. Draw up 2.5 mL into 2 separate 3 mL syringes to access both lumens of the central venous catheter (i.e. one syringe per lumen).
7. Label the 2 syringes as "vancomycin 5 mg/mL in heparin 2,500 units/mL lock".

E. Preparation of Cefazolin 5 mg/mL & Heparin 2,500 units/mL Procedure:

EQUIPMENT:

- 2 x 10 mL syringes
- 1 mL syringe
- 3 x 3 mL syringes
- 1 vial cefazolin 1 gram
- 1 vial heparin 10,000 u/mL (5mL)
- 2 amps sterile water for injection (10 mL)
- Alcohol swab
- Disposable gloves

KEY POINTS:

- Obtain from pharmacy (heparin 10,000 u/mL no longer hemodialysis wardstock).

PROCEDURE:

1. Wipe top of cefazolin 1 gram vial with an alcohol swab.
2. Reconstitute the cefazolin 1 gram vial with 10 mL sterile water for injection using the 10 mL syringe (final concentration = 100 mg/mL). Shake vial to dissolve.
3. Withdraw 0.25 mL of cefazolin (100 mg/mL) using the 1 mL syringe.
4. Withdraw 1.25 mL heparin 10,000 u/mL using the 3mL syringe.

KEY POINTS:

5. Add the 0.25 mL cefazolin and 1.25 mL heparin to the 10 mL syringe. Then draw up to 5mL with sterile water for injection (final syringe volume = 5 mL). Agitate well.
 - Expiry of the mixed solution is 1 hour at room temperature if prepared by a nurse in the dialysis unit. If prepared by pharmacy in an IV hood, expiry is 24 hours at room temperature.
6. Draw up 2.5 mL into 2 separate 3 mL syringes to access both lumens of the central venous catheter (i.e. one syringe per lumen).
7. Label the 2 syringes as “cefazolin 5 mg/mL in heparin 2,500 units/mL lock”.

ADMINISTRATION:

Registered Nurses (RN)/Licensed Practical Nurse (LPN) in hemodialysis refer to Manitoba Renal Program Procedure 30.20.02 *Accessing and Locking Dialysis Central Venous Catheter (Anticoagulant/Thrombolytic/Antibiotic Locking)*.

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PROCEDURE DEVELOPERS:

Lori Wazny, Pharm.D., Clinical Pharmacist, Manitoba Renal Program