

Hemodialysis Central Venous (CVC): Discontinuance of Dialysis

Updated September 15, 2024

Vascular Access Guideline



Table of Contents

1.0	Practice Standard	1
2.0	Equipment	3
3.0	Assessment & Interventions.....	4
4.0	Patient Education & Resources	5
5.0	Documentation.....	5
6.0	References	6
7.0	Sponsors	7

This procedure is posted on the BC Renal website – Health Professionals - Vascular Access - Resources – Central Venous Catheter Guidelines: www.bcrenal.ca/health-professionals/clinical-resources/vascular-access.

1.0 Practice Standard

This guideline applies to In-centre and Community Dialysis Units (CDUs) in the majority of situations. If a site-specific protocol differs from this guideline, the site-specific protocol will take precedent.

This guideline does not apply to patients who are dialyzing at home.

Skill Level (Nursing): Specialized

Nurses who have completed the required hemodialysis (HD) specialty education and who provide nursing care in a BC In-Centre and/or Community Dialysis Unit.

Need to Know:

1. Air embolus is a potential catastrophic complication of central venous catheters (CVCs) and the relative risk while accessing a CVC is high. Ways to reduce the risk:
 - a) Use needle-less HD connectors at all times for all patients dialyzing with a CVC.
 - b) Clamp CVC limbs prior to flushing/connect/disconnect procedures (rationale: in case connector becomes loose or damaged).

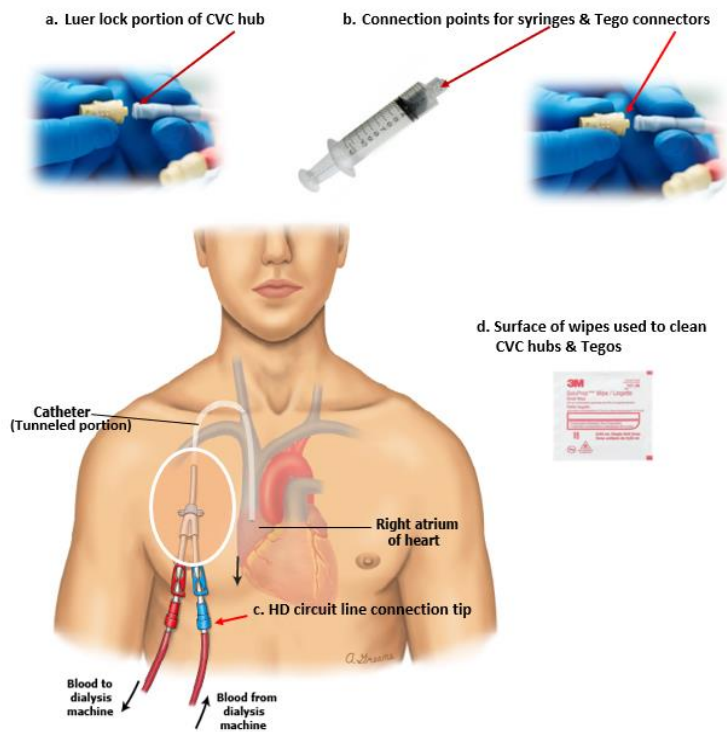
2. Tips for needle-less HD connectors:
 - a) Do not use needles to access connectors.
 - b) Access the connector straight on, not at an angle.
 - c) When injecting normal saline through the connector, leave a minimal amount of fluid in the tip of the syringe to avoid reflux or rebound effect.
 - d) Grasp the base of the connector and fully unthread the luer lock when disconnecting from the connector.

3. Prior to patient contact, perform hand hygiene. Don appropriate PPE based on the patient’s need for isolation precautions or the risk of exposure to body fluids. Refer to BCR guideline [Prevention of Disease Transmission in HD Units](#).

4. Sterility of “key parts” must be maintained when discontinuing dialysis.

4.1 “Key parts include:

- a) Luer lock portion of CVC hubs
- b) Sterile connection points for syringes and connectors
- c) HD circuit arterial & venous line connection tips
- d) Surface of antiseptic wipes used to clean CVC hubs and connectors



4.2 Aseptic non-touch technique may be used IF sterility of “key parts” can be maintained.

4.3 Sterile supplies are used as needed to maintain sterility of “key parts.” Do not open supplies in advance of the procedure.

4.4 Aside from handwashing, the single most important way to prevent infection is to scrub the hub/connector (connection surface and sides), clamp and limb using a friction scrub for a full 30 seconds. Allow the antiseptic to air dry completely.

After the initial 30 second scrub and prior to each connection, wipe the connector with an antiseptic wipe to lubricate and prevent damage to the connector. Use a new antiseptic wipe each time.

5. Recommended antiseptics for cleansing CVC clamps and limbs, connectors and CVC hubs:

2% chlorhexidine (CHG) with 70% alcohol

- Application time: 30 seconds

OR

70% alcohol

- Application time: 30 seconds

NOTES:

1. *Application time (contact time) is important to ensure the antiseptic contact time is long enough to achieve the desired “kill” time).*
2. *After applying the antiseptic, allow to air dry completely.*
 - *Adequate dry time allows the antiseptic to work AND, if using CHG, reduces the risk of CHG sensitivity and sensitization.*
 - *Amount of dry time depends on amount used, presence or absence of hair, humidity, body site, etc.*
 - *Dry time for preparations without alcohol is longer.*
3. *If skin is sensitive to chlorhexidine, utilize an alternative antiseptic until the sensitivity resolves. Assuming no previous anaphylactic reaction to chlorhexidine, consider a second trial after sensitivity resolves, ensuring adequate dry time after application.*
4. *DO NOT use normal saline:*
 - *As the primary cleaning solution as it does not have antimicrobial properties.*
 - *To rinse off the skin/CVC after applying an antiseptic. Antiseptics have residual antimicrobial action which lasts beyond the initial application.*
5. *Use single-use antiseptic preparations when available.*

2.0 Equipment

- Personal protective equipment (gloves, gown, mask/eye protection)
- Clean gloves
- Sterile drape/gauze (or sterile 4x4)
- Antiseptic wipes (several)
- 4 x 10 mL or 2x 20 mL sterile syringes prefilled with normal saline (for flushing)
- 2 syringes filled with prescribed locking solution
- Locking solution labels
- Tape

Note: To prevent contamination, do not open supplies until needed.

3.0 Assessment & Interventions

Preparation:

1. Gather supplies. Perform hand hygiene.
2. Place patient in a comfortable position and expose the CVC access site. Perform hand hygiene.
3. Don clean gloves.
4. Place pad under CVC limbs.
5. Discontinue dialysis and return patient's blood as per protocol.

Flush lumens with normal saline:

6. Starting with the arterial port side (or venous port side, if indicated):
 - Ensure air is purged out of prefilled syringes.
 - Cleanse needle-less HD connector with an antiseptic wipe. Discard wipe.
 - Attach a sterile 10 or 20 mL pre-filled NS syringe to connector.
 - Open clamp on the CVC limb and flush lumen with a turbulent flushing technique. Repeat if using 10 mL syringe (total: 20 mL per lumen). Clamp lumen.
 - If unable to flush lumen, contact MD.
7. Repeat step 6 on the opposite port side.

Instill locking solution:

8. Starting with the arterial port side (or venous port side, if indicated):
 - Ensure air is purged out of prefilled syringes.
 - Cleanse connector with an antiseptic wipe. Discard wipe.
 - Attach a sterile syringe with prescribed locking solution to connector. Open clamp.
 - Instill locking solution. The amount of locking solution is determined by the volume printed on the CVC + overfill (0.3 mL overfill includes 0.1 mL for connector).
 - Immediately close the clamp while continuing to exert pressure on syringe plunger. Remove syringe from connector and discard.
9. Repeat step 8 on the opposite port side.

Label and wrap:

10. Wrap CVC limbs together with a 4x4 gauze and secure with tape to outside of dressing.
11. Attach a label with the locking solution and lumen volume to the gauze wrap.

4.0 Patient Education & Resources

1. Try not to touch the CVC (can lead to infection).
2. Keep dressing clean and dry – a tub bath is the best way to wash.
3. If the dressing peels off or gets wet, wash hands well and remove what is left of the dressing. Put on a clean, dry 4x4 gauze and tape in place or put on a new dressing if instruction has been provided. Come to the dialysis unit to have a new dressing applied if instruction has not been provided.
4. Do not use sharp objects like scissors or a razor near the CVC tubing.
5. If the CVC develops a hole or leak or the cap falls off, make sure that the CVC is clamped off between the problem area/CVC tip and the body (move the CVC clamp up the CVC towards the body; if no clamp, kink the CVC with fingers to close the CVC off). Call 911.
6. If the HD CVC falls out or slips partially out, apply firm pressure with a clean piece of gauze and go to the hospital Emergency Department immediately.
7. Do not open the CVC (if part of the home HD program, doctor or nurse will provide specific instructions). Only a dialysis nurse or physician should remove the caps or clamps.
8. Notify kidney doctor (nephrologist) or dialysis unit for any of the following:
 - Redness, warmth, or pain along the CVC.
 - Oozing or drainage from CVC exit site.
 - Noticeable swelling or itching around CVC or neck.
 - Feverish and any of the above symptoms.
 - Part of the CVC that is outside the skin seems to be getting longer.
 - Shortness of breath, coughing, chest pain, low blood pressure, wheezing.
 - CVC is accidentally pulled and there is bleeding around the exit site.
 - Sutures fall out of a recently inserted CVC.

Patient Resources (BCR Website):

- [Your CVC](#)
- [What to do for HD CVC emergencies](#)
- [Help us keep you SAFE \(needle dislodgement\)](#)
- [Changing your own CVC dressing](#)
- [Showering with a HD CVC](#)

5.0 Documentation

- Document CVC take-down, exit site dressing status, locking solution used and concerns noted as per site-specific protocol.

6.0 References

The following references were considered in the development of this guideline.

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7.0 Sponsors

Developed by:

- BC Vascular Access Educators Group (VAEG) – 2011; 2017 (minor changes); 2024
- Renal Educators Group (REG) – 2011; 2017 (minor changes); 2024

Approved by:

- BCR Hemodialysis Committee – 2011; 2024
- BCR Medical Advisory Group - 2011; 2024

For information about the use and referencing of BCR provincial guidelines/resources, refer to www.bcrenal.ca.