

# Central Venous Catheter (CVC): Discontinuance of Dialysis

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This procedure is posted on the BC Renal website:  
Health Professionals ► Vascular Access ► Resources

Direct link: [www.bcrenalagency.ca/health-professionals/clinical-resources/vascular-access](http://www.bcrenalagency.ca/health-professionals/clinical-resources/vascular-access)

### IMPORTANT INFORMATION

This BC Renal guideline/resource was developed to support equitable, best practice care for patients with chronic kidney disease living in BC. The guideline/resource promotes standardized practices and is intended to assist renal programs in providing care that is reflected in quality patient outcome measurements. Based on the best information available at the time of publication, this guideline/resource relies on evidence and avoids opinion-based statements where possible; refer to [www.bcrenalagency.ca](http://www.bcrenalagency.ca) for the most recent version.

**For information about the use and referencing of BC Renal guidelines/resources, refer to**  
<http://bit.ly/28SFr4n>.

## 1.0 Practice Standard

### Skill Level (Nursing): Specialized

The following Registered Nurses (RNs) and Licensed Practical Nurses (LPNs) may perform this procedure:

1. Registered Nurses (RNs) and Licensed Practical Nurses (LPNs) who have completed the required hemodialysis (HD) specialty education and who provide nursing care in a BC In-Centre and/or Community Renal Program; &
2. RNs in Intensive Care Units who have received the appropriate training.

#### Notes:

1. This guideline does not apply to patients who are on home hemodialysis.
2. Unless the specialty requirements above apply, RNs and LPNs should not use HD catheters for blood drawing.

#### Need to Know:

1. Use routine (also known as “standard”) precautions.
  - Perform hand hygiene.
  - Wear gloves (*non-sterile* to remove the dressing and *sterile* for the rest of the procedure), *non-sterile* gown and *non-sterile* mask/face shield during disconnect procedures. If institution policy is for a clean “no touch” procedure, then may wear non-sterile gloves throughout the procedure and change gloves as indicated.
2. Use clean (also known as “medical”) aseptic technique, with additional precautions as follows:

- Use *sterile* equipment and supplies and a “no touch” technique when handling the catheter and catheter ports and caring for the exit site.
- Maintain a *sterile* drape under the catheter ports.
- Use an antiseptic wipe and vigorously apply mechanical friction to clean the hubs of the catheter ports (“hub scrubs”). If Tego connectors present, use antiseptic wipe and vigorously apply mechanical friction to clean the connectors.
- Use a separate antiseptic wipe for each clamp/limb/port/Tego connector.
- Allow antiseptic to dry for maximal effect.
- Leave hubs “open” (i.e., uncapped and disconnected”) for the shortest time possible.
- Use *sterile* normal saline in a syringe to flush the catheter lumens.

#### Notes re: antiseptics:

- a) The Center for Disease Control and Prevention guideline (CDC, 2011) suggests the use of the following antiseptic solutions: >0.5% chlorhexidine with alcohol, 70% alcohol or 10% povidone-iodine. They conclude there is not enough evidence to recommend one antiseptic over the others.
  - b) The Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (ISDA) joint guideline (Marschall, 2014) suggest that alcoholic chlorhexidine may have additional residual activity (up to 24 hours) compared with 70% alcohol for this purpose.
3. Each of the arterial and venous lumens is flushed with normal saline at the completion of dialysis.
  4. A locking solution is instilled into each of the

arterial and venous lumens at the completion of dialysis. The volume of each lumen is stamped on the port or port clamp (hemodialysis catheters are available in variable lengths and therefore the lumen volumes differ).

5. Sodium citrate 4% is the locking solution of choice. The amount that is required is equivalent to the internal volume of the lumen plus overfill as per unit policy.
6. Air embolus is a potential catastrophic complication of CVCs and the relative risk while accessing a CVC is high.

Ways to reduce the risk:

- **Never leave catheter ports unattended and open to the air; clamp ports when not being used.**
  - Place the patient supine in as flat a position as the patient can comfortably tolerate (e.g., Semi-Fowler's position).
7. Notes about Tego use:
    - Do not use needles to access the Tego.
    - Access the Tego straight on, not at an angle.
    - When using a slip vacutainer for blood draws, only insert half way with a slight turn clockwise into the Tego and then turn clockwise to come out.
    - When injecting normal saline through the Tego, leave a minimal amount of fluid in the tip of the syringe to avoid reflux or rebound effect.
    - Be sure to grasp the base of the Tego and fully unthread leurs when disconnecting from the Tego.

## 2.0 Equipment

- Non-sterile gloves
- Non-sterile gown
- Non-sterile mask(2)/eye protection
- Sterile gloves;
- Sterile dressing tray or equivalent
- Sterile drape/gauze (or sterile 4x4)
- 4 x 4 sterile gauzes (several)
- Antiseptic wipes (several)
- 4 x 10 mL sterile syringes or 2x 20 mL syringes filled with normal saline for flush
- 4 safety needles if syringes not pre-filled (2 if using 20 mL syringes)
- 2 caps (one per lumen)
- Locking solution labels
- Tape
- Garbage receptacle

## 3.0 Assessment & Interventions

### Preparation:

1. Place the patient supine in as flat a position as the patient can comfortably tolerate (e.g., Semi-Fowler's position).
2. Perform hand hygiene.
3. Gather supplies, including preparing 4x10 mL or 2x20 mL syringes filled with normal saline.
4. Perform hand hygiene.
5. Don *non-sterile* gown (staff).
6. Don *non-sterile* mask (staff and patient) and eye protection (staff).
7. Discontinue dialysis as per protocol. Clamp the arterial and venous blood lines and the arterial and venous limbs on the catheter.

8. Perform hand hygiene.

#### **Cleanse ports/Tegos, clamps and limbs:**

9. Don *sterile* gloves or, if using no-touch technique, clean gloves.
10. Ensure clamps are closed. Disconnect arterial blood line from arterial port/Tego.
11. Using an antiseptic wipe, cleanse each port/Tego, clamp and limb using friction scrub for 30 seconds. Un-clamp, move clamp, clean under clamp segment, and re-clamp. Use new wipes for each port/Tego.
12. Place catheter limbs on a fresh, dry, *sterile* 4x4 drape/gauze. Air-dry.

#### **Flush lumens with normal saline:**

13. Attach a 20 mL (or 10 mL) prefilled normal saline syringe to the arterial port/Tego. Flush lumen using a forceful flush method. Repeat if using 10 mL syringe, with a hub-scrub between each syringe. Clamp lumen. (total: 20 mL per lumen).
14. Repeat step 13 for venous lumen.

#### **Instill locking solution:**

15. Hub-scrub the arterial port/Tego with an antiseptic wipe.<sup>1</sup> Scrub the sides (threads) and end of the hub thoroughly with friction, making sure to remove any residue (e.g., blood) for 30 seconds. Discard wipe.
16. Attach 3 mL syringe with locking solution to arterial port/Tego.
17. Instill locking solution (amount is determined by the volume printed on the catheter ports or clamp + overfill, as per nephrologists orders). Immediately close the clamp while continuing to exert pressure

on syringe plunger. Remove syringe from arterial port/Tego and discard. If Tego connector not used, attach cap to lumen.

18. Repeat steps 15 to 17 using the venous lumen.

#### **Label, wrap and connect blood lines to ports/Tegos**

19. Wrap lumen together with a 4x4 gauze and secure with tape to outside of the dressing.
20. Attach a label with the locking solution and lumen volume to the gauze wrap.
21. Connect arterial and venous blood lines to female ports on the HD machine circuit (to prevent blood/fluids from leaking out of the open ends of the lines when removed from the equipment).

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<sup>1</sup>If Tego connector is used, simply wipe with an antiseptic wipe. Hub-scrub is not necessary.

## 4.0 Patient Education and Resources

- Try not to touch the catheter (can lead to infection).
- Keep dressing clean and dry – a tub bath is the best way to wash.
- 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 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 on self-dressing changes.
- Do not use sharp objects like scissors or a razor near the catheter tubing.
- If the catheter develops a hole or leak or the cap falls off, make sure that the catheter is clamped off between the problem area/catheter tip and the body (move the catheter clamp up the catheter towards the body; if no clamp, kink the catheter with fingers to close the catheter off). Call 911.
- If the HD catheter falls out or slips partially out, apply firm pressure with a clean piece of gauze and go to the hospital Emergency Department immediately.
- Do not open your catheter (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.
- Notify kidney doctor (nephrologist) or dialysis unit for any of the following:
  - Redness, warmth, or pain along the catheter.
  - Oozing or drainage from catheter exit site.
  - Noticeable swelling or itching around catheter or neck.
  - Feverish and any of the above symptoms.
  - Part of the catheter that is outside the skin seems to be getting longer.
  - Catheter is accidentally pulled and there is bleeding around the exit site.

### *Patient Handout: Care of Your Catheter:*

[www.bcrenalagency.ca/resource-gallery/Documents/Your%20hemodialysis%20catheter.pdf](http://www.bcrenalagency.ca/resource-gallery/Documents/Your%20hemodialysis%20catheter.pdf)

## 5.0 Documentation

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

## 6.0 References

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11. National Kidney Foundation (2006). KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for 2006 Updates: Hemodialysis Adequacy, Peritoneal Dialysis Adequacy and Vascular Access. *Am J Kidney Dis* 48:S1-S322, 2006 (suppl 1).
12. Registered Nurses Association of Ontario, Care and Maintenance to Reduce VA Complications. (2005). <http://rnao.ca/bpg/guidelines/care-and-maintenance-reduce-vascular-access-complications>. Accessed Dec 20, 2016.
13. Institute for Healthcare Improvement. (2012). How-to-Guide: Prevent Central Line-Associated Bloodstream Infections. <https://bit.ly/1RRjhzw>; Accessed Dec 20, 2016.

## 7.0 Developed & Approved by:

Developed by:

- BC Vascular Access Educators Group (VAEG)
- Renal Educators Group (REG)

Approved by:

- BC Renal Hemodialysis Committee (reviewed 2011 version; only minor changes in 2017 version)
- BC Renal Medical Advisory Committee (reviewed 2011 version; only minor changes in 2017 version)

For information about the use and referencing of BC Renal provincial guidelines/resources, refer to the Table of Contents.