

# Hemodialysis Central Venous (CVC): Replacement of Dysfunctional Clamp

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## Vascular Access Guideline

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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](http://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 CVCs and the relative risk while replacing a clamp is high. Ways to reduce the risk:
  - a) If the dysfunctional clamp must be cut to remove, apply an external clamp proximal to the dysfunctional clamp prior to removal.
  - b) Use Tego connectors at all times for all patients dialyzing with a CVC.

2. 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](#).

3. Recommended antiseptic for cleansing CVC limbs:

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 (2 pairs)
- Antiseptic wipes/swabs (several)
- Sterile replacement clamp

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

## 3.0 Assessment & Interventions

This procedure applies to replacement of a dysfunctional clamp on a tunnelled or non-tunnelled CVC. CVC may be in the neck (jugular vein) or femoral vein (leg).

### Preparation:

1. Gather supplies. Perform hand hygiene.
2. Place patient in a comfortable position and expose the CVC clamp area. Perform hand hygiene.
3. Don clean gloves.
4. Place pad under CVC limbs.
5. Unwrap the gauze covering the CVC limbs and discard. Doff gloves.

### Identify location and repair crack:

6. Perform hand hygiene, don clean gloves.
7. Taking care not to damage the CVC limb, remove the dysfunctional clamp. If the clamp must be cut to remove, apply an external clamp proximal to the dysfunctional clamp prior to removal. Discard dysfunctional clamp.
8. Cleanse CVC limb with an antiseptic wipe/swab.
9. Slide a new clamp onto the lumen. Close clamp unless currently dialyzing.
10. Reapply wrap dressing to CVC limbs unless currently dialyzing.

## 4.0 Patient Education & Resources

1. Do not use sharp objects like scissors or a razor near the CVC tubing.
2. 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.
3. What to do for hemodialysis CVC emergencies (refer to handout).

Patient Resources (BCR Website):

- [Your CVC](#)
- [What to do for hemodialysis emergencies](#)

## 5.0 Documentation

- Document actions taken to change the clamp as per site-specific protocol.

## 6.0 References

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

1. BC Renal. “VA Prevention, Treatment and Monitoring of VA-Related Infection in HD Patients,” 2021. [http://www.bcrenal.ca/resource-gallery/Documents/VA-Prevention\\_Treatment\\_Monitoring\\_of\\_VA-related\\_Infection\\_in\\_HD%20Patients.pdf](http://www.bcrenal.ca/resource-gallery/Documents/VA-Prevention_Treatment_Monitoring_of_VA-related_Infection_in_HD%20Patients.pdf).
2. Buchanan, Christine, Amy Burt, Nancy Moureau, Darlene Murray, and Nafsin Nizum. “Registered Nurses’ Association of Ontario (RNAO) Best Practice Guideline on the Assessment and Management of Vascular Access Devices.” *The Journal of Vascular Access*, 2023, 11297298231169468.
3. Buetti, Niccolò, Jonas Marschall, Marci Drees, Mohamad G. Fakh, Lynn Hadaway, Lisa L. Maragakis, Elizabeth Monsees, Shannon Novosad, Naomi P. O’Grady, and Mark E. Rupp. “Strategies to Prevent Central Line-Associated Bloodstream Infections in Acute-Care Hospitals: 2022 Update.” *Infection Control & Hospital Epidemiology* 43, no. 5 (2022): 553–69.
4. “CANNT\_VA\_guidelines\_2023.Pdf.” Accessed July 4, 2024. [https://cannt-acitn.ca/wp-content/uploads/2024/02/CANNT\\_VA\\_guidelines\\_2023.pdf](https://cannt-acitn.ca/wp-content/uploads/2024/02/CANNT_VA_guidelines_2023.pdf).
5. “DIG\_Dialysis\_Catheter\_Care\_Practice\_Recomendations-2016.Pdf.” Accessed July 15, 2023. [https://ipac-canada.org/photos/custom/OldSite/pdf/DIG\\_Dialysis\\_Catheter\\_Care\\_Practice\\_Recomendations-2016.pdf](https://ipac-canada.org/photos/custom/OldSite/pdf/DIG_Dialysis_Catheter_Care_Practice_Recomendations-2016.pdf).
6. Elsevier. “Elsevier Clinical Skills: Central Venous Catheters.” Elsevier, April 2023. <https://beta.elsevier.com/products/clinical-skills?trial=true>.
7. Goossens, Godelieve Alice. “Flushing and Locking of Venous Catheters: Available Evidence and Evidence Deficit.” *Nursing Research and Practice* 2015, no. 1 (2015): 985686. <https://doi.org/10.1155/2015/985686>.
8. icumedical. “Tego Needlefree Hemodialysis Connector.” Accessed July 15, 2023. <http://www.icumed.com/products/specialty/renal/tego-connector>.

9. IPAC Canada. “Practice Recommendations for Intravascular Dialysis Catheter Care to Prevent Central Line-Associated Blood Stream Infections in Adults.” Infection Prevention and Control Canada, 2016. [https://ipac-canada.org/photos/custom/Members/pdf/Prevention\\_of\\_Transmission\\_of\\_Hepatitis\\_B\\_Practice%20Recommendations\\_Feb20-FINAL\\_d.pdf](https://ipac-canada.org/photos/custom/Members/pdf/Prevention_of_Transmission_of_Hepatitis_B_Practice%20Recommendations_Feb20-FINAL_d.pdf).
10. Lok, Charmaine E., Thomas S. Huber, Timmy Lee, Surendra Shenoy, Alexander S. Yevzlin, Kenneth Abreo, Michael Allon, Arif Asif, Brad C. Astor, and Marc H. Glickman. “KDOQI Clinical Practice Guideline for Vascular Access: 2019 Update.” *American Journal of Kidney Diseases* 75, no. 4 (2020): S1–164.
11. Lok, Charmaine E., and Louise Moist. “KDOQI 2019 Vascular Access Guidelines: What Is New?” *Advances in Chronic Kidney Disease* 27, no. 3 (2020): 171–76.
12. O’Grady, Naomi P., Mary Alexander, Lillian A. Burns, E. Patchen Dellinger, Jeffrey Garland, Stephen O. Heard, Pamela A. Lipsett, Henry Masur, Leonard A. Mermel, and Michele L. Pearson. “Guidelines for the Prevention of Intravascular Catheter-Related Infections.” *Clinical Infectious Diseases* 52, no. 9 (2011): e162–93.
13. “VA-Prevention\_Treatment\_Monitoring\_of\_VA-related\_Infection\_in\_HD Patients.Pdf.” Accessed July 15, 2023. [http://www.bcrenal.ca/resource-gallery/Documents/VA-Prevention\\_Treatment\\_Monitoring\\_of\\_VA-related\\_Infection\\_in\\_HD%20Patients.pdf](http://www.bcrenal.ca/resource-gallery/Documents/VA-Prevention_Treatment_Monitoring_of_VA-related_Infection_in_HD%20Patients.pdf).
14. “Vascular\_Access\_June\_2021.Pdf.” Accessed July 15, 2023. [https://rnao.ca/sites/rnao-ca/files/bpg/Vascular\\_Access\\_June\\_2021.pdf](https://rnao.ca/sites/rnao-ca/files/bpg/Vascular_Access_June_2021.pdf).

## 7.0 Sponsors

Developed by:

- BC Vascular Access Educators Group (VAEG) – 2011; 2017 (minor changes); 2024
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Approved by:

- BCR Hemodialysis Committee – 2011; 2024
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For information about the use and referencing of BCR provincial guidelines/resources, refer to [www.bcrenal.ca](http://www.bcrenal.ca).