SANAMED
2026; 21(1): 11–13
ISSN-1452-662X

DOI: 10.5937/sanamed0-65908
UDK: 616.61-78
ID: 194673929
Letter to editor

TREND IN THE PLACEMENT OF PERMANENT AND TEMPORARY CENTRAL VENOUS CATHETERS FOR HEMODIALYSIS

Pelicic Damir,[1, 2] Mucic Elvir[1]

[1] Clinical Center of Montenegro, Clinic of Nephrology, Podgorica, Montenegro
[2] University of Montenegro, Faculty of Medicine, Podgorica, Montenegro

Primljen/Received: 20. 03. 2026. Prihvaćen/Accepted: 05. 05. 2026. Published Online First: 07. 05. 2026

Dear Editor

Chronic kidney disease (CKD) is one of the fastest-growing diseases worldwide (1). As the world population ages, the incidence of renal failure is increasing globally, along with the prevalence of people receiving chronic dialysis. There are three renal replacement modalities: peritoneal dialysis (PD), transplantation (Tx), and hemodialysis (HD), HD being the most common form of dialysis, with a worldwide prevalence of 89%, with PD accounting for the remaining 11%. The standard approach for HD is the arteriovenous fistula (AVF), while an alternative vascular access device for HD, still the tunneled central venous catheter (CVC) (1,2), is a salvage vascular access option for HD, but it is still used in approximately one-quarter of prevalent patients worldwide, although it is associated with poor performance and higher risks (2).

The literature suggests that CVC remains the most commonly used vascular access option for HD, despite guidelines advising that AVFs should be used whenever possible. The risk of CVC has mostly focused on catheter-related bacteremia and/or has only evaluated tunneled CVCs (TCVKs) (3). CVCs were first used in a patient in 1969. Over time, indications for their use have become more numerous, such as parenteral nutrition, chemotherapy, and situations where peripheral venous access is not possible in patients in intensive care units. CVC placement involves the placement of a catheter in a large-lumen venous system, most commonly the internal jugular, subclavian, or femoral vein. Complications associated with CVC placement occur in 2–26% of cases, so its use is rare and is most often in acute renal failure (4).

Globally, almost three-quarters of patients on HD require a CVC (5, 6). CVCs provide immediate access to hemodialysis in cases where high nitrogenous wastes, hyperkalemia, and anuria require urgent HD, but the use of a catheter is thought to increase the risk of complications associated with placement and long-term use (7).

In patients on HD, CVCs are used when other vascular access options are not available (8–11). Since the introduction of CVCs, catheters have been coated with heparin or antibiotics, and catheter-related complications are less common (12, 13).

The literature suggests that CVC-associated bloodstream infections in patients on HD are an important cause of hospitalization, morbidity, and mortality. Eliminating bloodstream infections in the hemodialysis setting has been a focus of the Centers for Disease Control and Prevention (CDC) Coalition (14, 15 ,16).

General preventive measures, including the use of asepsis and antisepsis, play a key role in the prevention and early detection of CVC-associated infections in patients on HD. Infection control surveillance, together with a team approach to care (doctor–nurse), significantly contributes to the reduction of CVC-related morbidity and mortality (4).

Our data from the Nephrology Clinic show that in 2025, out of approximately eighty patients on HD, 14 had a temporary or permanent CVC. Our HD center does not differ significantly from other centers in terms of the trend of CVC placement and the occurrence of complications, which can be explained by the correct placement and monitoring of therapeutic guidelines by anesthesiologists and nephrologists, and the correct maintenance and hygiene of CVCs by educated nurses in the dialysis center, Nephrology Clinic, Clinical Center of Montenegro, and the application of asepsis and antisepsis measures. Continuous evaluation, proper care and hygiene of dialysis catheters, and early detection of patients with end-stage renal disease are recommended in order to initiate HD on time and

thereby prevent complications and reduce morbidity and mortality rates, with the aim of extending life expectancy and improving the quality of life of patients on HD.

Abbreviations

AVF – arteriovenous fistula
CDC – Centers for Disease Control and Prevention
CVC – central venous catheter
CKD – chronic kidney disease
HD – hemodialysis
PD – peritoneal dialysis
TCVC – tunneled central venous catheter
Tx – transplantation

Funding: No funding was available.

Author Contribution & Responsibilities: The authors take full responsibility for the accuracy and integrity of the content, as well as the validity of institutional affiliations. The publisher remains neutral regarding jurisdictional claims in institutional affiliations. All authors have read and agreed to the published version of the manuscript. Authors' contributions: PD: Methodology, Validation, Formal analysis, Writing - original draft, Writing -review and editing; ME: Supervision, Investigation, Data curation.

Conflicts of Interest: None declared.

Note: Artificial intelligence was not utilized as a tool in this study.

REFERENCES

1. Kovesdy CP. Epidemiology of chronic kidney disease: an update 2022. Kidney Int Suppl (2011). 2022; 12(1): 7-11. doi: 10.1016/j.kisu.2021.11.003.

2. Arasu R, Jegatheesan D, Sivakumaran Y. Overview of hemodialysis access and assessment. Can Fam Physician. 2022 Aug; 68(8): 577-82. doi: 10.46747/cfp.6808577.

3. van Oevelen M, Heggen BD, Abrahams AC, Rotmans JI, Snoeijs MG, Vernooij RW, et al. Central venous catheter-related complications in older haemodialysis patients: a multicentre observational cohort study. J Vasc Access. 2023; 24(6): 1322-31. doi: 10.1177/11297298221085225.

4. Peličić D, Đukić V, Maraš B, Konatar R, Musić K. Complications related to central venous catheters: A special focus on infections. Annals of Nursing. 2025; 3(1): 17-27. doi: 10.5937/annnur3-57964.

5. Timsit J, Baleine J, Bernard L, Calvino-Gunther S, Darmon M, Dellamonica J, et al. Expert consensus-based clinical practice guidelines management of intravascular catheters in the intensive care unit. Ann Intensive Care. 2020; 10(1): 118. doi: 10.1186/s13613-020-00713-4.

6. Boulet N, Pensier J, Occean BV, Peray PF, Mimoz O, Rickard CM, et al. Central venous catheter-related infections: a systematic review, meta-analysis, trial sequential analysis and meta-regression comparing ultrasound guidance and landmark technique for insertion. Crit Care. 2024; 28(1): 378. doi: 10.1186/s13054-024-05162-0.

7. Buckenmayer A, Möller B, Ostermaier C, Hoyer J, Haas CS. Tunneled central venous catheters for hemodialysis-unfairly condemned? Catheter-related complications in a university hospital setting. J Vasc Access. 2024; 25(4): 1212-8. doi: 10.1177/11297298221150479.

8. Vanholder R, Canaud B, Fluck R, adoul M, Labriola L, Marti-Monros A, et al. Diagnosis, prevention and treatment of haemodialysis catheter-related blood stream infections (CRBSI): a position statement of European Renal Best Practice (ERBP). NDT Plus. 2010; 3(3): 234-46. doi: 10.1093/ndtplus/sfq041.

9. Schmidli J, Widmer MK, Basile C, de Donato G, Gallieni M, Gibbons CP, et al. Editor's choice – vascular access: 2018 clinical practice guidelines of the European Society for Vascular Surgery (ESVS). Eur J Vasc Endovasc Surg. 2018; 55(6): 757–818. doi: 10.1016/j.ejvs.2018.02.001.

10. Lok CE, Huber TS, Lee T, Shenoy S, Yevzlin AS, Abreo K, et al. KDOQI clinical practice guideline for vascular access: 2019 update. Am J Kidney Dis 2020; 75(4 suppl 2): S1–S164. doi: 10.1053/j.ajkd.2019.12.001.

11. Murea M, Geary RL, Davis RP, Moossavi S. Vascular access for hemodialysis: a perpetual challenge. Semin Dial. 2019 Nov; 32(6): 527-34. doi: 10.1111/sdi.12828.

12. Ash SR. Advances in tunneled central venous catheters for dialysis: design and performance. Semin Dial. 2008; 21(6): 504–15. doi: 10.1111/j.1525-139X.2008.00494.x.

13. Niyyar VD, Chan MR. Interventional nephrology: catheter dysfunction prevention and troubleshooting. Clin J Am SocNephrol. 2013; 8(7): 1234–43. doi: 10.2215/CJN.00960113.

14. Fisher M, Golestaneh L, Allon M, Abreo K, Mokrzycki MH. Prevention of bloodstream infections in patients undergoing hemodialysis. Clin J Am Soc Nephrol. 2020; 15(1): 132-51. doi: 10.2215/CJN.06820619.

15. Reindl-Schwaighofer R, Matoussevitch V, Winnicki W, Kalmykov E, Gilbert J, Matzek W, et al. A novel inside-out access approach for hemodialysis catheter placement in patients with thoracic central venous occlusion. Am J Kidney Dis. 2020; 75(4): 480-7. doi: 10.1053/j.ajkd.2019.08.024.

16. Davis JS. Central venous catheter versus permanent access: a hemodialysis patient focus group. Kidney360. 2022; 3(6): 1111. doi: 10.34067/KID.0002692022.

Correspondence to/Autor za korespondenciju
Damir Pelicic, PhD
Clinical Centre of Montenegro,
Ljubljanska bb, 81000 Podgorica, Montenegro
E-mail: damir.pelicic@t-com.me

ORCID numbers:
Damir Pelicic 0000-0002-0544-9638
Elvir Mucic 0009-0002-2712-3329

***How to cite this article**:* Pelicic D, Mucic E. Trend in the placement of permanent and temporary central venous catheters for hemodialysis. Sanamed. 2026; 21(1): 11-13. doi: 10.5937/sanamed0-65908.