

Staff Guide:

Prevention of Vascular Access Disconnection/Needle Dislodgement

Vascular Access (VA) disconnection/needle dislodgement

- Dislodgement = Fistula/graft needle or catheter falls out.
- Disconnection = Separation of vascular access line(s).
- Dislodgement and/or disconnection could result in blood loss and potentially an air embolus.
- At typical hemodialysis (HD) blood flow rates, it can take only minutes for a patient to lose over 40% of his or her blood volume (the point at which hemorrhagic shock occurs).¹

Factors which increase the risk for disconnection/dislodgement²

- Poorly secured access:
 - Improper taping of access tubing to skin
 - Loose luer lock tubing connection
 - Blood lines not looped loosely enough
 - Needle length <2.5 cm (<1 in)
- Patient factors:
 - Confused, restless, agitated, cognitive impairment &/or sedated
 - Frequent manipulation of lines and connection
 - Excessive movement of arm or body
 - Hypotension or muscle cramps during treatment
 - Diaphoresis or pruritus
 - Non adherent skin (e.g., excess body hair, waxy skin)
 - Unwilling to keep access areas and bloodlines uncovered
 - On nocturnal and/or home hemodialysis

Prevention^{2,3}

1. Before cannulating, clean a sufficiently large area around the access to allow space for securing the access. Ensure the space is thoroughly dry before attempting cannulation.
2. Secure the needles in the vessel. See Appendix 1 for photos.

Most secure method:

- a) Apply a transparent dressing over the needles (e.g., Tegaderm).
- b) Secure the lines with tape (paper or silk tape preferred).

If allergic to transparent dressing:

Option #1: Tape only

- a) Secure the needles with tape (paper or silk tape preferred).
- b) Secure the lines with tape. Place a piece of tape over the needle insertion sites.

Option #2: Gauze plus tape

- a) Secure the needles with tape (paper or silk tape preferred).
- b) Secure the lines with tape.
- c) Place a piece of sterile gauze over the needle insertion sites.
- d) Place a piece of tape over the gauze.

3. Loop the tubing from the access and secure the blood lines to the patient with a spring clamp. The clamps on the hemodialysis bloodlines should be on the patient side of the spring clamp that is

attached to the patients clothing.

Allow for adequate range of motion. Ensure luer lock connections are tight

DO NOT secure the blood lines to an object such as the dialysis chair, blankets or bed rail.

4. If it is necessary to reposition a needle, replace with a NEW dressing and tape.
5. Ensure patients are aware to keep their access area and bloodlines visible at all times.
6. Visibly check the access, needle sites, blood line positions and all luer connections as part of routine monitoring and each time an alarm is activated. Document checks on the HD run log.
7. Set the lower limit of the venous pressure alarm as close as possible to the current venous pressure, as allowed by the dialysis equipment.
8. For patients at higher risk for needle disconnection/ dislodgement, consider using a device intended to detect moisture (blood loss).

BE AWARE: Pressure alarms are not always reliable and may not provide an alert.



Adapted from the *Nephrology Nursing Journal*, 2012, Volume 39, Number 6, pp. 435-445. Reprinted with permission of the American Nephrology Nurses Association, East Holly Avenue, Box 56, Pitman, NJ 08071-0056; Phone: 856-256-2300; Fax: 856-589-7463; Email: nephrologynursing@ajj.com; Website: <https://www.annanurse.org/>

References

1. Gutierrez G, Reines HD, WulfGutierrez M. Clinical review: Hemorrhagic shock. <https://Ccforum.biomedcentral.com/articles/10.1186/cc2851>. 2004;8(5):373-381.
2. Axley B, Speranza-Reid J, Williams H. Venous needle dislodgement in patients on hemodialysis. <https://www.annanurse.org/download/reference/journal/vndArticle.pdf>. *Nephrology Nursing Journal*. 2012;39(6):435-445.
3. British Vascular Access Society of Britain and Ireland & British Renal Society. Clinical practice recommendations for needling of arteriovenous fistulae and grafts for haemodialysis; <http://recommendationsforneedlingfistulas>. 2018:1-93.

Appendix 1: Securing Needles in the Vessels (Fistulas and Grafts)

★ Most secure method: Transparent dressing

Option #1: Steel Needles



Steel needles, 2x2 lift (optional), tegaderm over the exit site, tape in the chevron fashion, tape to secure the needles, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.

Option #2: Steel Needles



Steel needles, 2x2 lift (optional), tegaderm over the exit site, tape to secure the needles, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.

Option #3: Steel Needles



Steel needles, 2x2 lift (optional), tegaderm over the exit site, tape to secure the needles, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.

Option #4: Angiocath Needles



Angiocaths, 2x2 lift (optional), tape to secure the needles (straight or chevron fashion), tegaderm over the exit site, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.

Option #5: Angiocath Needles



Angiocaths, 2x2 lift (optional), tape in the chevron fashion, tape to secure the needles, tegaderm over the exit site, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.

If allergic to transparent dressing:

Option #1: Steel Needles & Tape (Gauze x1)



Steel needles, 2x2 lift (optional), tape in the chevron fashion, tape to secure the needles, tape over exit site to secure the chevron, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.

Option #2: Steel Needles & Tape (Gauze x2)



Steel needles, 2x2 lift (optional), tape in the chevron fashion, tape with a 2x2 gauze over the insertion to secure the chevron, tape to secure the needle, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.

Option #3: Angiocath Needles & Tape



Angio catheters, 2x2 lift (optional), tape in the chevron fashion, tape with a 2x2 gauze over the insertion to secure the chevron, tape to secure the needles, tape to secure the lines, spring clamp attached to patient clothing on machine side of line clamps.