

 BC Renal Agency	Title: Hemodialysis: Circle Protocol for Temporary Interruption of Dialysis	
Clinical Practice Standards and Procedures	Section: Number:	Origin Date: May 15, 2008 Revised Date:

1.0 PRACTICE STANDARD

Skill Level: Specialized

Registered Nurses who have completed the required hemodialysis specialty education and who provide nursing care in a British Columbia In-Centre and/or Community Renal Program perform this procedure.

Need to Know:

- This procedure is used to temporarily interrupt dialysis to allow the patient to attend the bathroom when a bedpan or commode is not tolerated. For patient safety, the nurse should accompany and monitor the patient when dialysis is temporarily interrupted to attend the bathroom.
- This procedure is also used to temporarily interrupt dialysis to troubleshoot access problems or air in the extracorporeal circuit.
- To prevent potential hypotensive episodes due to hypovolemia while attending the bathroom, the blood in the circuit must be returned to the patient before initiating this procedure.
- Hypotensive or vassal-vagal episodes frequently occur in the bathroom. Patients often feel the urge to void or move their bowel due to abdominal cramping related a hypovolemic state.
- Antimicrobial agents such as Chlorhexidine 2% with 4% alcohol/Sodium Hypochlorite 0.11% solution require a friction scrub and must be allowed to air dry completely for maximum effectiveness.
- Minimum ultrafiltration rate (UFR), is program and dialyzer specific and, therefore, while in 'circle' should be ≥ 0.1 kg/hour to prevent back filtration from dialysate into the blood compartment.

2.0 DEFINITIONS AND ABBREVIATIONS

'circle'-recirculation connector device
CVC – central venous catheter
AVF – arterio-venous fistula
AVG – arterio-venous graft
UFR – ultrafiltration rate

3.0 EQUIPMENT

AV fistula/graft (AVF/AVG)	Hemodialysis Central Venous Catheter (CVC)
1- sterile circle connector	1 – sterile circle connector
2- 10mL syringes filled with normal saline	2- 20mL or 4-10mL sterile syringes filled with normal saline
clean drape	Unit specific dressing tray
2 – 4x4 sterile gauze	2 – masks
Chlorhexidine 2% with 4% alcohol swabs / Sodium Hypochlorite 0.11 solution	Chlorhexidine 2% with 4% alcohol swabs/ Sodium Hypochlorite 0.11 solution
Face protection & gown	Face protection & gown
Non-sterile gloves	Sterile/non-sterile gloves (unit specific)

4.0 PROCEDURE

STEPS	RATIONALE
1. Check vital signs and record machine parameters.	Record base line data before initiating procedure.
2. Rinse back both arterial and venous sides of patient's bloodlines.	To decrease risk of hypotensive episode due to hypovolemia.
3. Turn off blood pump. Clamp arterial and venous bloodlines, and arterial and venous fistula needles or catheter lumens.	
4. Apply gloves appropriate for vascular access.	Reduce transmission of microorganisms.
5. Using aseptic technique for CVCs and clean technique for AVF/AVG, prepare access for temporary termination of dialysis.	
6. Disconnect arterial bloodline from fistula needle or CVC lumen and connect to sterile recirculation device.	Recirculation connector device connects bloodlines to allow bloodline circuit integrity while patient is temporarily disconnected.
7. Attach normal saline syringe to fistula needle or CVC lumen, flush and clamp.	Ensure patency of access.
8. Repeat Steps 6 & 7 using venous line.	
9. Secure syringes attached to fistula needles or CVC lumens.	To prevent access dislodgement while temporarily disconnected from hemodialysis machine.
10. Unclamp machine arterial and venous bloodlines.	
11. Open IV normal saline drip.	To replace fluid removed through ultrafiltration and prevent hemoconcentration.

12. Follow specific Hemodialysis machine sequence to temporarily halt dialysis process.	Follow program/vendor specific procedures.
13. Turn on blood pump at 100 mL/min and ensure minimum UFR \geq 0.1 kg/hour	Maintain circuit integrity and prevent back filtration of dialysate into the blood path. For maximum recirculation times see Special Considerations – 7.1 & 7.2.

TO RESUME HEMODIALYSIS	
14. Turn off machine blood pump. Clamp normal saline IV line and arterial and venous bloodlines.	
15. Apply gloves appropriate for vascular access, as above – see #4.4.	Reduce transmission of microorganisms.
16. Using aseptic technique for CVCs and clean technique for AVF/AVG, prepare access for resumption of dialysis.	
17. a CVC – Using aseptic technique open arterial access clamp, withdraw 3 mL of blood and observe for clot(s) or resistance, close clamp. Repeat for venous lumen. 17. b AVF/AVG – flush both fistula needles, to ensure patency, close clamps	To check patency of access and follow unit policy if access is not patent.
18. Detach arterial line from circle connector. Remove syringe from arterial side of access and connect arterial bloodline to arterial access.	
19. Connect used arterial syringe to arterial side of circle.	
20. Hold circle connector over gauze or drape and disconnect venous line from circle connector.	Gauze or drape will absorb any blood droplets.
21. Remove syringe from venous side of access and connect venous bloodline to venous fistula needle or CVC lumen access. Connect used venous syringe to venous side of circle and discard.	
22. Open clamps on arterial and venous access and bloodlines. Ensure N/S line is clamped.	Decrease risk of normal saline bolus.
23. Turn blood pump on at 100 mL/min and slowly increase blood pump	

speed while observing arterial and venous pressures.	
24. Resume dialysis as per hemodialysis machine specific sequence.	Follow program/vendor specific procedures.
25. Reprogram Total Weight Loss as necessary to include extra normal saline rinse back &/or fluid loss.	To accurately calculate fluid loss.
26. Disinfect contact area of hemodialysis machine with agency specific disinfectant post procedure.	Reduce cross contamination of micro-organisms and blood borne pathogens.
27. Record vital signs and patient's tolerance of procedure and machine parameters.	

5.0 DOCUMENTATION

- 5.1 Document reason for circle procedure and the approximate amount of time the patient was in 'circle' on the appropriate, program specific health record.
- 5.2 Document vital signs, machine parameters, patient response, access status, and interventions on program specific health record.

6.0 PATIENT EDUCATION AND RESOURCES

- 6.1 Hypotension is a common side effect of this procedure due to volume depletion and postural changes.
- 6.2 Report any symptoms of hypotension such as: dizziness, weakness, and visual disturbances to your nurse.
- 6.3 Ensure that your bladder or ostomy bag is emptied prior to the initiation of dialysis.

7.0 SPECIAL CONSIDERATIONS

- 7.1 To reduce excessive de-oxygenation of blood and risk of clotting when troubleshooting access problems, the maximum time that blood can be circulated in the dialysis system is **15 minutes**.
- 7.2 To reduce the risk of back filtration and blood circuit contamination, the maximum time that blood tinged normal saline can be circulated in the extracorporeal circuit is 30 minutes.
- 7.3 **If dialyzer, line(s) and/or entire system clots during temporary disconnect, replace as per guidelines and notify the Nephrologist for orders as required.**

8.0 REFERENCES

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