Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg
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kidneyhealth.ca manitoba renal program

MANITOBA RENAL PROGRAM

SUBJECT ▪ Setting up NxStage Cycler for Home Hemodialysis treatment.	**SECTION** **50.20 Home Hemodialysis**
	CODE 50.20.08
AUTHORIZATION ▪ Professional Advisory Committee, Manitoba Renal Program	**EFFECTIVE DATE** January 2018
	REVISION DATE

PURPOSE:

1. To ensure the proper setup of the NxStage cycler for the use of home hemodialysis.

POLICY:

1. Registered Nurses in the Home Hemodialysis program who have received instruction and have demonstrated competency to the renal educator or delegate may instruct patient's on the Home Hemodialysis program on the proper technique in setting up the Nxstage cycler for the propose of Home Hemodialysis.

EQUIPMENT:

- NxStage System One cycler
- Two 10 mL sterile empty syringes
- Two 1 litre Normal Saline 0.9% sterile bags
- NxStage Cycler Cartridge (CAR-172-C)
- NxStage PureFlow SL® and cabinet
- Medical tape
- Dry towel
- Wet towel
- Glass lens cleaner cloth

PROCEDURE:

1. Perform hand hygiene.

2. Gather and inspect supplies.

3. Open the cycler door.

4. Turn on the power switch at the back of the cycler.

5. Wait until the yellow caution bars flash on the cycler display area.

KEY POINT:

- Verify expiry dates, sterility and ensure accurate priming solution.
- Lift the cycler door until it clicks and pull the handle to open the door fully. Ensure the handle remains up.
- Dust the blood leak detector sensor weekly using a glass-lens cleaning cloth.

PROCEDURE:	**KEY POINT:**
6. Remove the cartridge from the packaging. Make sure the happy face ☺ is facing up.	
7. Tape the packaging/bag to the end of the table.	• Use the packaging/ bag for all waste pre, during, post treatment.
8. Remove the female connector (white plastic removable piece) from the cartridge and tape it to the top of the cycler.	
9. Remove the 2 connector tabs and seven pieces of tape.	• Do not remove the clear plastic tape on the dialyzer.
10. Secure the cap connections – there are seven: a. Arterial cap b. Venous cap c. Saline T line d. Dialyzer port e. Heparin port f. Green cap g. Yellow cap	
11. Grab and pull entire tubing loop to the right.	
12. Loosen tape and remove line organizer.	
13. Ensure the happy face ☺ is facing up.	
14. Take the cartridge and slide it into the cycler from the top, resting the cartridge on the two metal bars inside the cycler.	
15. Hook the tubing on the cycler IV pole.	
16. Secure tubing into the cycler air detectors. There are 3 air detectors a. Venous air detector –top left. b. Arterial air detector –lower right. c. Dialysate air detector – middle right.	• Remember the air detectors are square.
17. Close the cycler door.	• Before closing the cycler door ensure all tubing is clear on both sides of the cycler.
18. Check the fluid sensor with the wet towel. Sensor should alarm. Dry immediately.	
19. Remove one 1 litre saline bag from packaging. Keep the saline bag lying flat to spike.	
20. Spike the saline bag with cartridge spike connector; use a rotating-twisting motion right to left.	• Do not completely rotate in full circles this will tangle the lines. • Do not throw cap of spike away, tape it to the top of the Cycler. It is required later for disposing of the cartridge.

PROCEDURE:	**KEY POINT:**
21. Hang the saline bag on the cycler IV pole.	
22. Insert access pressure pod line into the access pressure pod port.	• Turn entire slip tip of the access pressure pod line to the left until tight then secure with the locking collar by turning to the right.
23. Press "**ADD FLUID** button, this will initiate 23 minutes of cycler priming.	
24. After 23 minutes of priming, the cycler will chime; the cycler will display "**8's**" in the status bar and will provide an audible alarm. Press "**MUTE**".	• Perform patient assessment, vital signs, and calculate weight loss.
• The machine will show "**1234 AbCd eFgH**" in the status bar • The machine will show "**987 654 321**" in the volume rate windows.	• The code verifies delivery system visually and audibly working. • Confirms that Nxstage software is operating correctly.
25. Press "**MUTE**".	
26. The status bar will display: "**23.0 and 000**"	• Do not press **STOP**. • If **STOP** is pressed, the machine will require a re-prime for an additional 23 minutes.
27. Attempt to "flick (use the posterior aspect of the fingers)" to remove excess air bubbles within the system. • Start at the **"arterial red line"** (Starting at the priming spike at the saline bag) to the access pressure pod. Make sure to flick the access pressure pod too. • Remove the dialyzer from the cartridge tray by pulling and removing the plastic ribbon tape. • Flip the dialyzer over (blue clamp up) and gently rotate the dialyzer until there is a decrease in air bubbles. • Put the dialyzer in its holder with the "**blue clamp**" up. Make sure lines are not kinked. • Prime the post dialyzer port, then clamp **blue clamp** on the post dialyzer port. • Prime and clamp the heparin line as close to the blood lines as possible. • Flick (use the posterior aspect of the fingers) the venous patient line starting from the cartridge (top right corner) – this will chase the air back towards the saline bag. • Flick the saline line.	• Flicking of dialysis lines ensures air removal. • Setup may have to be flicked 2 -3 times to ensure air removal. • Flick:  
28. Press **"STOP".**	

PROCEDURE:	**KEY POINT:**
29. Prime and close the white clamp on the saline (T) on the **red arterial line**.	
30. Drape the saline (T) onto the cycler IV pole.	
31. Find the thin line with green clamp and white clamp attached to the saline line spike.	
32. Close the white clamp and the small green clamp on the line.	
33. Loosen the cap from the SAK® chicken toe (keep sterile).	
34. Disconnect the white and green lines from each other.	• Keep lines sterile.
35. Attach the green line to green chicken toe line.	• Keep connections sterile.
36. Attach the saline line to the saline (T) – White to White	• Keep connections sterile.
37. Ensure that the green clamps (3) on the dialysate line are unclamped.	
38. Ensure that the saline lines are clamped (small white clamps)	
39. Close the two yellow clamps on the waste line – hanging on the cycler IV pole.	
40. Disconnect the yellow clamped waste line from the saline bag priming spike and connect to the yellow waste line on the PureFlow SL®.	
41. Open the two yellow clamps.	
42. Enter dialysate rate/hour (cycler green bar display)	• Dialysate rate is a maximum 12 litres/hour. Total SAK® volume is 60 litres. Patient will need to change dialysate flow rate if dialyzing longer than 5 hours.
43. Enter UF rate/hour (cycler yellow bar display)	
44. Press the cycler Volume toggle button. This will change the screen to the VOLUME screen. The cycler red bar display will say "**VOL**".	
45. Enter the amount of dialysate that will be used for the entire treatment in the cycler green bar display.	
46. Enter the amount of fluid removal expected over the course of the dialysis treatment in the cycler yellow bar display.	
47. Press the cycler volume toggle button to return to the main screen or wait for approximately one minute and system will revert to the main screen.	

PROCEDURE:	**KEY POINT:**
48. Establish vascular access as per MRP policy #: 30.20.01 *Venipuncture of Arteriovenous Fistula/Graft* or 30.20.02 *Accessing and Locking Dialysis Central Venous Catheter (Anticoagulant/Thrombolytyic/Antibiotic Locking)* or 30.20.03 *Establishing and Maintaining Buttonhole Venipuncture Sites*. 30.20.04 *Use of Closed Needleless Access Device with Hemodialysis Central Venous Catheters (CVC).*	• Do not drop. Maintain sterility on all line connections.
49. Clamp arterial and venous blood lines on priming spike.	
50. Perform hand hygiene. Change the half-filled normal saline bag to a full 1 litre normal saline bag if site determines necessary.	• Changeover of saline bag ensures sufficient normal saline for rinseback and flushes during treatment.

DOCUMENTATION:

- Document cartridge serial number on treatment sheet.

REFERENCES:

Nxstage PureFlow SL® User Guide. Software version 1.13, 1.14, and 1.15. NC5342 Rev. D 2015-09-09

RESOURCES:

Occupational and Environmental Safety & Health – WRHA (HSC Unit). October 2017 Ergonomic Assessment