



MANITOBA RENAL PROGRAM

SUBJECT <ul style="list-style-type: none"> ▪ Fresenius 5008 Recirculation of Extracorporeal Circuit with Normal Saline and with Blood 	SECTION 30.10 Hemodialysis Equipment and Procedures
	CODE 30.10.10
AUTHORIZATION <ul style="list-style-type: none"> ▪ Professional Advisory Committee, Manitoba Renal Program ▪ Nursing Practice Council, St. Boniface Hospital 	EFFECTIVE DATE November 2012
	REVISION DATE September 2013 January 2016 March 2017

PURPOSE:

1. To preserve the patient's extracorporeal circuit during hemodialysis treatment interruption.
2. To maintain a pathogen-free extracorporeal circuit.

POLICY:

1. Registered Nurses and Licensed Practical Nurses working in Hemodialysis who have received instruction from the renal educator or delegate and have demonstrated competency may perform this procedure.
2. If hemodialysis interruption is anticipated to be **20 minutes or less**, the blood can be recirculated in the extracorporeal circuit.
3. If hemodialysis interruption is anticipated to be **greater than 20 minutes but less than 90 minutes**, 0.9 % NaCl can be recirculated through the dialyzer until the problem has been corrected.
4. If hemodialysis interruption is anticipated to be **greater than 90 minutes**, perform reinfusion and discard bloodlines and dialyzer.
5. Patients should not leave dialysis station during recirculation of circuit with blood.

EQUIPMENT:

- 2- 10 ml syringes with 0.9%NaCl
- 1- 3ml syringe or sterile CVC cap (for recirculation with 0.9% NaCl)
- 1- circulating connector
- Clean gloves
- Supplies as needed for accessing CVC as per MRP procedure 30.20.02 *Accessing and Locking Central Venous Catheter*

KEY POINTS:

PROCEDURE:

KEY POINTS:

I. RECIRCULATION OF CIRCUIT WITH 0.9 % NaCl Option A

A. Perform reinfusion:

1. Perform reinfusion as per MRP procedure 30.10.01 *Use of the Fresenius 5008 delivery System*.
 - If using CVC, perform cleaning procedure as per MRP policy 30.20.02 *Accessing and Locking Central Venous Catheter*.
2. When the system no longer senses blood in line, prompts will appear:

Blood reinfused

Reinfusion Continue or ***Remove Bloodlines***

Select ***Reinfusion Continue***

3. When the blood lines are clear, press Reinfusion I/O button to stop pump:
 - a. Prompt will appear:

Reinfusion Interrupted

Continue Reinfusion or ***Treatment*** or ***Bloodlines Remove***

Select ***Treatment***

- b. Warning will appear:

No blood detected

Treatment Continue or ***Reinfusion*** or ***Bloodlines Remove***

Select ***Continue Treatment***

B. Start Circulation:

1. Press **OPTION** button (lower right hand corner of screen):
 - a. Select and press **CIRCULATION**
 - b. Then press soft key **Circulation**.
 - Located at the top left hand corner of the screen.
 - c. The blood pump will stop.
 - d. Fresenius 5008 reads:

Use a recirculating adapter to join the arterial and venous connectors

- e. Close clamps on 0.9 %NaCl, arterial and venous access and blood line clamps.

PROCEDURE:

KEY POINTS:

2. Disconnect venous bloodline line from access and attach 10 ml syringe containing 0.9%NaCl to venous access. Irrigate and clamp.
3. Attach venous blood line to one end of the circulation adapter.
4. Remove arterial blood line from the Y-line. Attach a sterile CVC cap or 3 ml syringe on the Y- line in order to maintain sterility.
5. Connect the arterial blood line to the other end of the circulation adapter.
6. Open venous and arterial blood line clamps.
 - 0.9 %NaCl and T line remain clamped.
7. Press the **HEPARIN SCREEN** and press the I/O button to turn heparin pump **OFF**.
8. BP (blood pump) stopped alarm may appear.
 - a. Press **Start**.
 - b. Press **Circulation Start** soft key (top left hand corner of screen).
 - The blood pump will start at 150 ml/min.
9. Fresenius 5008 reads:

**Stop Circulation?
OK**

10. Flip the dialyzer blue end up to facilitate removal of air bubble that may occur.
11. Circulate until issues are addressed. After approximately every 10 minutes a prompt will appear:
 - The treatment is essentially paused.

No blood detected

**Continue Treatment or Start Reinfusion or
Remove Bloodlines**

Select **Continue treatment**

12. If the following prompt appears:
 -

**Circulation in progress for 10 minutes.
Stop circulating?
No Yes**

Select **No** if circulation has been running less than 90 minutes.

PROCEDURE:

KEY POINTS:

C. Resume Hemodialysis:

1. Once issues are addressed and HD is to be resumed, press **OK**.

2. Fresenius 5008 reads:

Has patient been reconnected?

3. Prepare access as per policy ensuring access lines are clamped.

30.20.02 Accessing and Locking Central Venous catheter or 30.20.01 Venipuncture of Arteriovenous fistula/graft.

4. Clamp arterial venous and arterial blood lines.

5. Attach blood lines to access lines maintaining aseptic technique.

6. Unclamp arterial and venous access lines and blood lines.

7. Press ***Treatment Continue***

8. Adjust UF goal to include extra reinfusion volume.

9. Reprogram Na⁺ and Fluid profiles if necessary. Verify that the UF timer light is lit. Flip dialyzer to red side up.

▪ Confirm time left in treatment and reprogram if time allows (≥2 hours).

10. Press the **HEPARIN SCREEN** and press the **I/O** button to resume heparin if ordered.

11. Increase Qb as per policy.

II. RECIRCULATION OF CIRCUIT WITH 0.9% NaCl OPTION B

A. RETURN BLOOD TO PATIENT

1. Stop blood pump. Clamp arterial blood line and access.

▪ If using CVC, perform cleaning procedure as per MRP policy *30.20.02 Accessing and Locking Central Venous Catheter*

2. Disconnect arterial blood line from access, Attach syringe with 10 mL 0.9% NaCl to access and irrigate.

3. Attach arterial blood line to Y port on the 0.9 % NaCl administration line.

4. Set blood pump speed to 200mL/min.

5. Open IV roller clamp and arterial blood line clamp. Start the blood pump.

PROCEDURE:

KEY POINTS:

- When the system no longer sense blood in the circuit prompt will appear:
No blood detected

**Treatment Continue or Reinfusion or
Bloodlines Remove**

Select **Continue Treatment**

6. Continue to run pump until blood lines are clear and then stop the pump.
 7. Clamp the venous bloodline and venous access and the roller clamp on IV line.
 8. Disconnect venous blood line from access. Attach syringe with 10 mL 0.9% NaCl to access and irrigate.
 9. Using aseptic technique, attach the venous blood line to one end of the blue circulation adaptor.
 10. Clamp and then disconnect the arterial blood line from the Y-line. Attach a sterile cap or syringe to the Y-line. Connect the arterial blood line to the other end of the blue circulation adaptor.
- If using CVC, perform cleaning procedure as per MRP policy 30.20.02 Accessing and Locking Central Venous Catheter

B. START CIRCULATION:

1. Press **OPTION** button (lower right hand corner of screen):
 - a. Select and press **CIRCULATION**
 - b. Then press soft key **Circulation**
 - c. Fresenius 5008 reads:

Use a recirculating adapter to join the arterial and venous connectors.

 - Open venous and arterial blood line clamps.
 - 0.9 %NaCl and T line remain clamped
- Select option **CIRCULATION**
2. Flip dialyzer blue end up to facilitate removal of air bubbles.
 3. Press the HEPARIN SCREEN and press the I/O button to turn heparin pump OFF.
- Blood pump speed for circulation is programmed at 150 mL/min

PROCEDURE:

KEY POINTS:

- 4. BP (blood pump) stopped alarm may appear.
 - a. Press **Start**.
 - b. Press **Circulation Start** soft key (top left hand corner of screen).

- The blood pump will start at 150 ml/min.
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5. Fresenius 5008 reads:

***Stop Circulation?
OK***

6. Flip the dialyzer blue end up to facilitate removal of air bubble that may occur.

7. Circulate until issues are addressed. After approximately every 10 minutes a prompt will appear:

- The treatment is essentially paused.

No blood detected

***Continue Treatment or Start Reinfusion or
Remove Bloodlines***

Select ***Continue treatment***

8. If the following prompt appears:

***Circulation in progress for 10 minutes.
Stop circulating?
No Yes***

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Select **No** if circulation has been running less than 90 minutes.

C. RESUME HEMODIALYSIS:

1. Once issues are addressed and HD is to be resumed, press **OK**.

2. Fresenius 5008 reads:

Has patient been reconnected?

3. Prepare access as per policy ensuring access lines are clamped.

30.20.02 Accessing and Locking Central Venous catheter or 30.20.01 Venipuncture of Arteriovenous fistula/graft.

4. Clamp arterial venous and arterial blood lines.

5. Attach blood lines to access lines maintaining aseptic technique.

PROCEDURE:

6. Unclamp arterial and venous access lines and blood lines.
7. Press **Treatment Continue**
8. Adjust UF goal to include extra reinfusion volume.
9. Reprogram Na⁺ and Fluid profiles if necessary. Verify that the UF timer light is lit. Flip dialyzer to red side up.
10. Press the **HEPARIN SCREEN** and press the **I/O** button to resume heparin if ordered.
11. Increase Qb as per policy.

KEY POINTS:

- Confirm time left in treatment and reprogram if time allows (≥2 hours).

III. RECIRCULATION OF CIRCUIT WITH BLOOD

1. Apply O₂ at 3L per NP
2. Press **OPTIONS** menu.
3. Press **CIRCULATION** button.
4. Press **Start** in the circulation screen.
5. Fresenius 5008 reads:

- *30.10.01 Use of the Fresenius 5008 delivery System.*

Use a recirculating adapter to join the arterial and venous connectors

6. Clean vascular access as per policy.
7. Clamp bloodlines and arterial and venous access lines.
8. Disconnect arterial blood lines from the access and attach to recirculation adapter.
 - Flush with 10 ml 0.9% NaCl
9. Disconnect venous blood lines from access and attach to recirculation adapter.
 - Flush with 10 ml 0.9% NaCl

- To prevent oxygen desaturation.

30.20.02 Accessing and Locking Central Venous catheter or 30.20.01 Venipuncture of Arteriovenous fistula/graft.

- The blood pump will stop if not stopped previously.

Unclamp both blood lines.

- Press the **CIRCULATION** button.

10. Fresenius 5008 reads:
Stop Circulation?
OK

PROCEDURE:

KEY POINTS:

11. After 10 minutes Fresenius reads:

Circulation in progress for 10 minutes.

Stop Circulation

Yes No

12. Press **No**

Fresenius 5008 reads:

Stop Circulation?

OK

A. Resume Hemodialysis:

1. Once issues are addressed and HD is to be resumed, press **OK**.

2. To reconnect the patient press **OK**

3. Fresenius 5008 reads:

Has the patient been reconnected?

4. Clamp venous and arterial blood lines, remove circulation connector and attach bloodlines to access.

5. Unclamp arterial and venous access lines and blood lines.

6. Press the prompt to ***Continue Treatment.***

7. Increase Qb to 200 ml/minute for 5 minutes

8. Ensure that UF timer button is lit.

9. Increase Qb as per policy after 5 minutes if patient is stable.

- The heparin pump (if programmed) will continue to infuse.

- You may select Circulation for a **max 20 minutes** then the blood must be returned to the patient.

- To avoid potential issues resulting from infusion of deoxygenated blood.

DOCUMENTATION:

- Hemodialysis Treatment Record # 1592
- Integrated Progress Notes (PRN) Vascular Access Record (PRN)

REFERENCES:

Fresenius Medical Care 5008 Hemodialysis System Operating Instructions: Edition 10/08 2013_

Fresenius 5008 CorDia: Resource Nurse Training Binder. Revised 14 November.