PROVINCIAL STANDARDS & GUIDELINES

BCRenal
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Caring for the Home Hemodialysis Patient:
A Resource for Remote Health Care Facilities in British Columbia and the Yukon Territory

Updated July 2017

Developed by the BCPRA Home Hemodialysis Committee

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IMPORTANT INFORMATION

This BCPRA guideline/resource was developed to support equitable, best practice care for patients with chronic kidney disease living in BC. The guideline/resource promotes standardized practices and is intended to assist renal programs in providing care that is reflected in quality patient outcome measurements. Based on the best information available at the time of publication, this guideline/resource relies on evidence and avoids opinion-based statements where possible; refer to www.bcrenalagency.ca for the most recent version.

For information about the use and referencing of BCPRA provincial guidelines/resources, refer to http://bit.ly/28SFr4n.

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1.0 Introduction

British Columbia has a vibrant and growing home hemodialysis program. In 2014, approximately 5.5% of the dialysis being provided chronically was done at home. This is in addition to the Peritoneal Dialysis Program which accounts for about 27.5% of the dialysis in BC (2014 data, BC Renal Agency).

While there are many benefits for patients performing their dialysis independently, these patients will still have medical issues arising from time to time, either related directly to the dialysis treatment or unrelated to the dialysis management, which necessitates a coordinated plan with the local healthcare community and the 'parent' renal program.

This care plan will define the roles and responsibilities of each of the various care teams (i.e., the local healthcare community and the regional renal program) and provide tools to provide safe care for this high risk / high needs group of people. It will also provide details for timeliness of repatriation (temporary or permanent) to the parent renal program. We have included the patient document for emergency preparedness and included relevant sections in the document for your information.

In the event of a wider 'disaster' scenario, we refer you to the BC Renal Agency Emergency Management Plan on the BC renal agency website.

- http://www.bcrenalagency.ca/sites/default/files/documents/files/DRAFT%20Renal%20Emergency%20Mgmt%20Plan%20June%202015mkl.pdf

More information can be found in the "Individual & Neighbourhood All - Hazard Emergency Preparedness Workbook" from the BC Provincial Emergency Program.

- www.pep.gov.bc.ca/hazard_preparedness/AllHazards_Web.pdf
- www.getprepared.gc.ca

This site is available in English, French, Punjabi and Chinese. It is also available in audio, braille, large print and diskette.

2.0 Instructions provided to patients at the time of a widespread disaster event:

1. Stay at home, unless you are hurt.
2. Begin emergency diet plan. **(Example included later in this document)**
3. Wait at home for instructions and details about hemodialysis on TV, radio, messenger, or phone. **(For smaller communities, local Disaster Plan notification should be included here)**
4. If you must go to an emergency shelter, tell the person in charge about your special needs.
5. Patients must take as much responsibility as possible for getting where they have to go, keeping in contact with the renal

program and ***being available to come for hemodialysis at any time - day or night.*** You may have to stay at the hemodialysis centre if transportation is an issue. For patients in remote communities, movement to a community which can provide dialysis should be commenced as quickly as possible, in conjunction with local relief efforts.

6. You may have to be moved from your home. This may not be by ambulance or HandiDart but with military vehicles, volunteers, or by air. Bring your medications with you.
7. Keep an extra pair of glasses with your emergency supplies.
8. Please notify your hemodialysis facility of address and telephone changes.

3.0 Emergency pack for home hemodialysis patients

- Home hemodialysis patients have been instructed to create an emergency pack and maintain the supplies as current as possible. It may be desirable for the local care facility to maintain a similar emergency pack for dialysis patients in case they are admitted and there is a delay in transferring out to a regional dialysis centre.
- **Check this pack every six months for expiry date and replace as needed.**
- Select foods which can be replaced regularly to avoid perishing too quickly..
- You may not have electricity, water, or cooking equipment; plan meals which do not need to be cooked.
- Keep important equipment such as can openers and hand sanitizers in your backpack.
- Keep a copy of these guidelines with your 3-day food supply (in your pack) and at your work.

4.0 Emergency supplies for three days of survival (home hemodialysis patients)

1. Keep the following supplies in your "Emergency Diet" pack. (Check expiry dates every six months)
2. Line the pack with a plastic garbage bag to keep it dry. An orange bag could also be used as an emergency signal.
3. **For those with diabetes**: keep instant glucose tablets, sugar, hard candy, low potassium fruit juice, or sugared pop on hand to treat low blood sugar.

Foods:

Qty	Type of Food
12	4 ounce (125 ml) cans of fruit (applesauce, pears, peaches, and pineapple only)
1	Small box of shredded wheat biscuits, puffed rice, or puffed wheat
1	Box of low salt crackers
1	Box of low salt cookies
2	Bottles of jelly, jam, or honey
3	Bags of hard candy (barley sugar, humbugs, peppermints, and hard fruit candies)
3	85 - 213g cans of low salt tuna or salmon, or, 156g cans "33% less salt" of flaked chicken or turkey
1	Small jar of peanut butter (optional)
1	Container of Rice Dream or 100g package of skim milk powder or 1 can of evaporated milk.
1	2L bottle of water and/or water disinfection equipment

Substitution List:

(foods may be replaced if you have access to them)

Item	Substitution
85-170g can tuna or salmon, or, 156g can "33% Less Salt" flaked chicken or turkey	2-3 oz of low-salt meat, fish, or poultry **or** 2 eggs
5 unsalted crackers	1 slice bread **or** 4 slices of white melba toast **or** 2 graham wafers **or** ½ cup of plain rice or noodles
½ cup of canned fruit	½ cup of fruit juice – (apple or cran-berry) **and** Small apple or ½ cup of fresh or frozen berries
½ cup of reconstituted evaporated milk or powdered skim milk	½ cup of fresh milk or cream

5.0 Emergency diet plan for home hemodialysis patients

(For community health care facilities with an admitted home hemodialysis patient unable to access hemodialysis)

- **Fluid restrictions:**
  500 ml daily fluid intake
- **Sodium restriction:**
  - Use salt free foods when possible.
  - Avoid 'salt substitute' flavour enhancers as these are frequently high in potassium.
  - Restrict sodium intake to < 2g/day
- **Do not use high potassium foods:**
  - **Avoid** potatoes, vegetables, bananas, oranges, melons, dried fruit, and canned beans.
  - Eat only the type and amount of fruits listed on the "Emergency Diet Meal Plan".
  - Avoid high potassium fruit juices (i.e., orange juice)
- **Restrict protein foods** such as meat, fish, poultry, eggs, and peanut butter.
- **For those with diabetes:**
  - Use instant glucose tablets, sugar, hard candy, low potassium fruit juice or sugared pop to treat low blood sugar.

6.0 Healthcare facility care plan for home hemodialysis patients presenting with medical needs

A home hemodialysis patient is not attending healthcare facilities for hemodialysis care. Hemodialysis treatment is completed at home by the patient.

At times there is periodic need for local medical services.

Home-based patients are trained to manage all aspect of their dialysis care.

The expectation on the local care community is that all management issues related to the dialysis treatment are co-managed by the regional renal centre.

There will be times when patients will require local assistance.

Local assistance may be needed for:

- Non-dialysis related chronic medical conditions
- Acute complications related to the dialysis treatment
- This will require discussion between the local care-providers and the regional renal centre to determine:
  a) if this issue can be managed locally without an excessive demand on local healthcare infrastructure OR
  b) if it would necessitate a temporary

(or in certain situations, a permanent) transfer back to the regional renal care program.

Community nursing resources may be required for:

Non-dialysis associated chronic medical conditions, including (for example):

- Wound care
- Diabetes management
- Supervision of medical treatments prescribed by local healthcare team

Community nursing resources should **NOT** be accessed for aspects of dialysis management, unless agreed upon by the local healthcare team and the regional renal centre.

Community nursing should **not** participate in any of the following:

- Administration of intravenous or intraperitoneal antibiotics
- Assistance with cannulation of hemodialysis vascular access
- Assistance with supplies management for home hemodialysis treatments
- Trouble-shooting equipment issues

Regional Renal Programs have in place a process for clinical and technical complications and should a situation arise wherein the local healthcare community feels impressed upon to work out of scope, the patient MUST be redirected to the Regional Renal Program.

7.0 Home dialysis patients requiring admission to a local community healthcare facility

In the event a patient is admitted to the local healthcare facility, the care plan process would be dependent upon the reason for admission.

Anticipated requirement for admission:

- Acute management of a short-term issue unrelated to dialysis treatment (for example, assessment from a fall; outpatient management of community-acquired pneumonia)
- Admission anticipated to require greater than 48-hours to resolve issue unrelated to dialysis treatment (for example, admission with exacerbation of COPD or more severe infection requiring hospital-based intravenous antibiotics)
- Admission for acute issue related to dialysis (for example, vascular access or peritoneal dialysis catheter dysfunction, dialysis associated infection, or equipment failure)

7.1 Acute management of a short-term issues (non-dialysis related)

Typically this type of issue would be managed within the comfort of local care providers.

Consideration should be given to contact the regional renal program to discuss issues of proposed treatment plans (i.e., dosing of medications in renal failure).

Provided patient is able to return to usual dialysis management, no further action would be required.

7.2 Hospital admissions greater than 48 hrs. (non-dialysis related medical issues)

In this situation, it can be reasonably anticipated that dialysis provision will be impacted due to the hospitalization and **early notification of the regional renal program would be required**. As soon as it is recognized these patients will require a more prolonged hospitalization, preparation for transfer to a facility with dialysis capability should be commenced (Please refer Renal Program Telephone Numbers on page 9).

Many patients requiring 48 to 72-hour dialysis hiatus can be safely managed; therefore if the anticipated stay in hospital is within this 48- to 72-hour range, discussion between local healthcare team and regional renal program is encouraged to avoid unnecessary patient transfers from their home community.

Patients performing Home Hemodialysis SHOULD NOT continue with their hemodialysis if admitted to hospital. Included here, home hemodialysis patients should not return home 'on passes' to complete hemodialysis treatments.

If dialysis cannot be offered (i.e., ALL home hemodialysis patients are not able to continue with self-management), **emergency dialysis diet plan** should be implemented (example provided within this document).

In particular:

- Fluid restrictions: 500 ml daily fluid intake
- Sodium restriction: Use salt free foods when possible. Avoid 'salt substitute' flavour enhancers as these are frequently high in potassium. Restrict sodium intake to < 2g/day
- Avoid high potassium foods such as potatoes, vegetables, bananas, oranges, melons, dried fruit and canned beans. Eat only the kind and amounts of fruits listed on the "Emergency Diet Meal Plan". Avoid high potassium fruit juices (i.e., orange juice)
- Restrict protein rich foods such as meat, fish, poultry, eggs and peanut butter.
- For patients with diabetes, use instant glucose tablets, sugar, hard candy, low potassium fruit juice, or sugared pop to treat low blood sugar.

Daily laboratory monitoring for potassium and bicarbonate levels should be implemented.

- For patients with clinically significant hyperkalemia (K+ greater than or equal to 5.5 mmol/L), initiate **CALCIUM RESONIUM, 30 G PO DAILY**. **If Calcium Resonium is not available, substitute KAYEXALATE, 30 G PO DAILY.**
- For patients with potassium level greater than or equal to 6 mmol/l:
  - Obtain ECG to look for evidence of electrical abnormalities of hyperkalemia (peaked T waves; prolonged QRS Complex) If ECG

abnormalities present, initiate urgent treatment:

- Continuous cardiac monitoring
- **CALCIUM GLUCONATE, 1-2 grams IV push over 2 minutes** (avoid if on digoxin)
- **INSULIN REGULAR, 10 unit intravenously with 1 amp of D50W**
- **D5W infusion at 50 cc/hr**
- Monitor blood glucose
- Consider NaHCO3 infusion if serum bicarbonate level is below 18 mmol/L
- **CALCIUM RESONIUM OR KAYEXALATE** as noted on page 6.

If HCO3- level is less than 15 mmol/L, initiate **SODIUM BICARBONATE, 500 MG PO TID**.

In the event of clinical volume overload, discussion of specific management should occur to stabilize the situation. Measures may include:

- **trial of FUROSEMIDE, 120 MG IV;**
- **NITROGLYCERIN PATCH;**
- **NITROGLYCERIN INFUSION;**
- **MORPHINE SULFATE;**
- **INVASIVE VENTILATION IF SEVERE;**
- **NON-INVASIVE VENTILATION (BIPAP) IF AVAILABLE**

Other uremic complications can be managed through dialogue with the regional renal program as needed.

As soon as it is recognized these patients will require a more prolonged hospitalization, preparation for transfer to a facility with dialysis capability should be commenced:

Notification of Regional Renal Program responsible for the dialysis supervision of the patient to agree upon initial treatment plan and to determine urgency of transportation.

- Notification of Patient Transfer Services to assist with preparation for patient transfer
- If Patient Transfer Services cannot provide air ambulance support in a timely manner due to adverse weather, connection with Canadian Forces Search and Rescue services may be necessary.

Following initiation of care transfer, ongoing communication between local healthcare team and regional renal program (and additional specialty services if needed) to continue optimizing patient care non-dialytically.

7.3 Hospital admissions (for acute dialysis-related issues)

For issues related to acute dialysis complications, often the regional renal program will hear about these issues prior to the patient coming to the attention of the local healthcare team.

If the situation can be resolved via telehealth, there will be no impact on the local healthcare services.

In the event the patient needs to be assessed clinically, the regional renal program will contact the relevant 'on-call' physician or other local healthcare provider and apprise them of the situation and notify them of any impact locally.

Certain situations will arise which will necessitate the patient returning to the regional renal program for management initiation. These situations may require initial stabilization to ensure safe transfer of patients from their home community. Situations which commonly arise and may require assistance for stabilization:

* Low risk of transfer needed for machine malfunction as remote home hemodialysis patients return home with 2 home hemodialysis machines to minimize risk of missed runs.

If the patient presents to the local healthcare facility with issues related to dialysis, early initiation of discussion should be commenced with the regional renal program to either agree upon local care plan (if acceptable to local care team) or to arrange for transfer to regional renal program for ongoing management.

Note also that 'usual' dialysis care will be provided by planned face-to-face clinic visits or via telehealth care; care plan changes will be reported back to local Most Responsible Physician via formal consultation note.

THE LOCAL HEALTHCARE TEAM SHOULD NOT BE INVOLVED IN ASPECTS OF DIALYSIS PROVISION FOR HOME HEMODIALYSIS PATIENTS; IF THERE ARE QUESTIONS ABOUT SCOPE OF PRACTICE, PLEASE INITIATE EARLY DISCUSSION WITH REGIONAL RENAL PROGRAM.

Renal Program Telephone and Fax Numbers

Renal Program	
Fax Number	
Phone Number	

Home Hemodialysis Program	
Home Hemodialysis Educator	
Fax Number	
Phone Number	

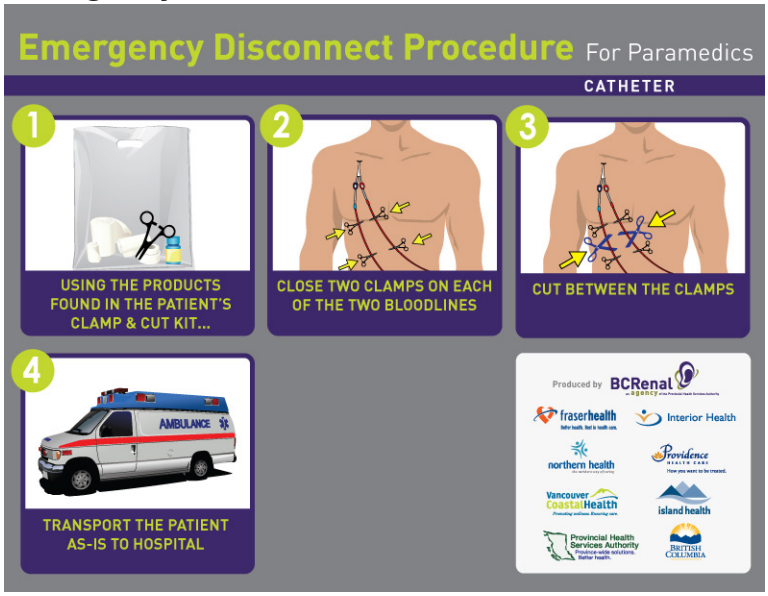
Renal Program Nephrologist	

Switchboard (After Hours On-Call Nephrologist)	

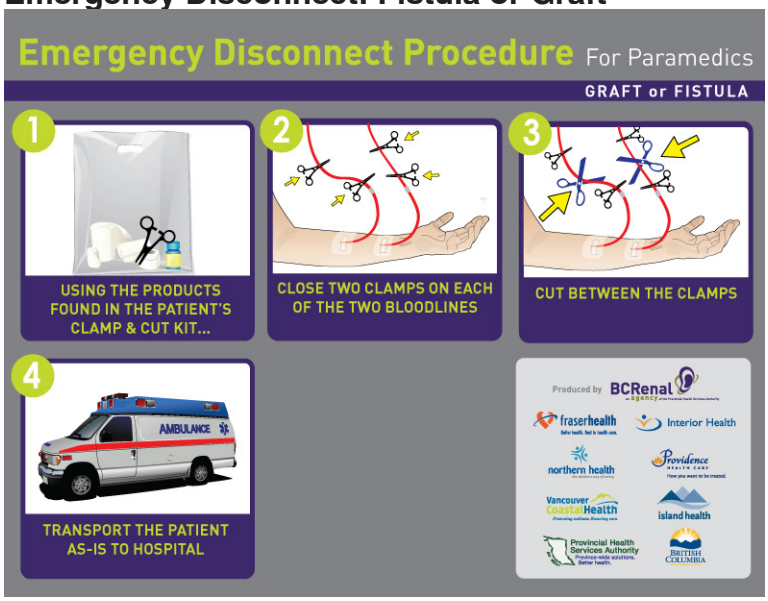
Emergency Document Resources

All patients have been instructed to have an emergency disconnect card attached to their hemodialysis machine. In the event that this is not visible, please follow the below emergency disconnect procedures. Please note there are two versions of this procedure: catheter and fistula/ graft. Please be aware of the vascular access your patient is using for dialysis. This document is also available for download at bcrenalagency.ca > Health Professionals> Home Hemodialysis > Emergency Disconnect Procedures.

Emergency Disconnect: Catheter



Emergency Disconnect: Fistula or Graft



Bleeding Fistula or Graft

All patients have been instructed to have a bleeding fistula or graft document in their emergency kit. This document is also available for download at bcrenalagency.ca > Health Info > Vascular Access > Pamphlets.

VASCULAR ACCESS PATIENT TEACHING TOOL

BLEEDING FISTULA OR GRAFT: WHAT TO DO

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It is very rare for your fistula or graft to bleed after you leave the dialysis unit. This brochure tells you what to do if it does happen.

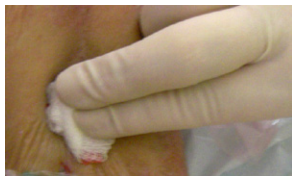
What supplies do I need in case my needle sites bleed at home?

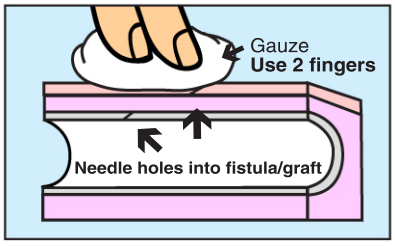
- Gauze pads
- Tape
- Gloves
- Tourniquet (e.g., belt, tie, blood pressure cuff – required only if bleeding profusely or squirting).

Keep these supplies in your emergency kit.

What do I do if my fistula or graft starts to bleed after I leave the dialysis unit?

1. Call for help! Let your family member(s), friend(s) or neighbor(s) know.
2. Get emergency kit, put on gloves and open gauze. If you do not have gauze handy, use an absorbent cloth, tissues or paper towel.
3. Press firmly for 10-15 minutes, and refrain from peeking under your fingers.
4. Make sure you press the bleeding needle hole with two fingers to put pressure on both the site where the needle enters the skin and the site where it enters the fistula/graft.
5. If the bleeding stops, apply a band aid (and let your nurse know on your next run).
6. If the bleeding doesn't stop after 15 minutes, call 911.
7. Elevate the fistula/graft arm.
8. If bleeding a lot or squirting, apply a tourniquet (belt, tie, BP cuff etc) tightly around your upper arm while waiting for the ambulance.





How to hold pressure over the needle hole

The information in this pamphlet is provided for educational/information purposes, and to support discussion with your health care team about your medical condition and treatment. It does not constitute medical advice and should not substitute for advice given by your physician or other qualified health care professional. This brochure can be downloaded from the BC Renal Agency website: www.bcrenalagency.ca

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