The Ottawa Hospital | L'Hôpital d'Ottawa

NEPHROLOGY PROGRAM
DEPARTMENT POLICIES AND PROCEDURES

Biomed Neph - Section 04 - Home Dialysis Unit Specific - Neph Tech 4-01
New Home Hemodialysis Patient Installation
No.: 01072 (TOH Standardized Policy Number)

ISSUED BY:
Nephrology Technical Practice Committee

DATE OF APPROVAL:
N/A

APPROVED BY:
Program Clinical Director and Division Head

LAST REVIEW/REVISION DATE:
2016/07

CATEGORY:
Home Dialysis Unit Specific

IMPLEMENTATION DATE:
2008/04

POLICY STATEMENT:

- It is the responsibility of the Home Dialysis Unit and Biomedical Nephrology Technical Services to conduct initial home assessments, coordinate plumbing/electrical work and equipment installations in order to ensure patient and staff safety

PURPOSE:

- To specify all the steps required for new patient installations for home Hemodialysis

DEFINITION(S): N/A

ALERTS: N/A

TOOLS & SUPPLIES:

- Measuring tape
- Conductivity/pH meter capable of reading raw water values (IBP meter)
- Environmental water test kit (Caduceon contract # CSERREMS23131)
- Hach Hardness, Total and Calcium test kit model # HA-4P
- LaMotte Iron test kit model # P-61
- Checklist "Pre-Assessment for Home Hemodialysis Equipment Installation" revised July 11, 2016

PROCEDURE:

Initial Home Visit

1. The Home Dialysis Clinical Leader will inform the Biomedical Nephrology Technical Services of new potential patients (referrals) for home Hemodialysis and the scheduled dates for the pre-assessment visits
2. The assigned technologist will open a "*Pre-Assessment for Home Hemodialysis Equipment Installation"* checklist
3. The Home Dialysis Clinical Leader and the assigned Technologist will conduct the pre-assessment home visit
4. The Technologist will enter all required information in the checklist and perform the following water test on the feed water:
    - Hardness test using the Hach Hardness, Total and Calcium test kit model # HA-4P
    - Iron test using the LaMotte Iron test kit model # P-61 (on water well only)
    - pH and conductivity using the IBP meter
    - Full water analysis test kit using the Caduceon environmental water test kit
5. The Technologist will review the completed checklist with the Technical Manager for final approval
6. Official documentation on water well and septic system (where applicable) shall be requested during the pre-assessment visit to be submitted to the Technical Manager

Water treatment system design and set-up

1. The Technical Manager will review the checklist and feed water results with the Technologist in order to confirm the type of installation required
2. The installation specifications listed in this policy shall be followed
3. The Technologist will contact the plumbing and electrical contractors (on contract at TOH) and arrange for a home visit based on the specifications agreed in step # 1 in order to get cost estimates (in writing)
4. Once the Home Dialysis Unit confirms that the patient will go on home Hemodialysis and the cost estimates are approved by the Technical Manager, the Technologist will arrange for the plumbing and electrical work to be done. The Technologist shall be present while the contractors are completing the modification in order to ensure our standards are met

Equipment installation

1. The Technologist initially assigned to this project shall be responsible for the equipment installation once confirmed by the Technical Manager
2. The Technologist shall take a product water test using the environmental water test kit as well as conduct microbiology and endotoxins following established policies
3. The Technologist shall conduct electrical safety testing on the equipment following established policies (Hemodialysis machine and portable RO system)
4. The Technical Manager shall be responsible for creating and maintaining installation files in his office
5. The contractor shall produce a certificate of inspection following every electrical installation

INSTALLATION SPECIFICATIONS:

1. Electrical:

- Dedicated GFI 20 amps 120 volts hospital grade outlet for the Hemodialysis machine
- GFI 15 amps 120 volts hospital grade outlet for the water treatment system (this outlet may be used for the centrifuge as well)
- GFI 15 amps 120 volts hospital grade outlet for the DI cylinders (2 maximum per outlet)
- All GFI circuit shall comply with the requirements specified in *CAN/CSA-C22.2 No.144* and under section 24 of the *Canadian Electrical Code, Part 1*
- All conductor shall be a minimum of # 12AWG copper
- The receptacles shall be mounted not less than 300 mm from the floor
- The outlets shall be cleary marked as to its intended purpose
- At least one other "existing" receptacle shall be available in the room for use with housekeeping equipment
- Extension cords, power bars, three-pin to two-pin adaptors and 15 to 20 A adaptors shall not be used
- Patients require hydro and the hydro grid as their primary access to electricity Patients may have a generator as a back-up system but it cannot be their primary source of electrical power

2. Plumbing:

- The distance between the water treatment system and the dialysis equipment shall not exceed 12 feet in order to keep the water loop as short as possible
- A minimum of two (2) carbon cylinders in series shall be installed with a total empty bed contact time (EBCT) of 10 minutes (or carbon block filters if approved by the Technical Manager)
- Where DI cylinders are used post portable R.O. system, a check valve shall be installed post-R.O. to prevent resins from the DI cylinders to travel back into the portable water treatment system
- All *"worker"* DI cylinders shall include a 200 K Ohm resistivity monitor with visual alarm and final *"polisher"* DI cylinder include a 1 Meg Ohm resistivity monitor with visual and audible alarm
- All portable R.O. systems shall be equipped with a 5 u sediment filter at the input
- The water and drain connections shall only be used for the dialysis equipment
- It is compulsory to have a separate air gap on each of the drain connection including vent lines
- All lines must be connected directly to the drain and "Y" type connections are not permitted
- The drain shall be equipped with a cap secured in place with one screw
- All D.I. cylinders installations must be equipped with an additional ultrafilter post DI cylinders (aside form the one installed in the Hemodialysis equipment)
- Patients who have a drilled well can safely use this water for home Hemodialysis. Drilled wells obtain water from deep groundwater aquifers and are less likely to have contamination. Dug (or surface) wells are at higher risk of contamination because they obtain water from shallow aquafers and contaminants are more likely to be found closer to the surface. Therefore dug (or surface) water sources cannot be used for home Hemodialysis

3. **Wireless communication devices:**
   - Wireless communication devices are only to be used when not within 0.5 meters from the dialysis delivery equipment. The use of such devices shall be discontinued immediately should any interference be noted
4. **Water detectors:**
   - Two (2) water detectors shall be provided for each installation with one located under the water treatment system cart and one under the Hemodialysis machine

RELATED POLICIES / LEGISLATION:

1. Nephrology Policies and Procedures – Policy # 01065 - Water Quality Management - Biomed Neph - Section 03 - Water Quality Management - Neph Tech 3-01 Microbiology Monitoring Procedure

2. Nephrology Policies and Procedures – Policy # 01066 - Water Quality Management - Biomed Neph - Section 03 - Water Quality Management - Neph Tech 3-02 Endotoxins Testing Procedure

3. Nephrology Policies and Procedures – Policy # 01061 - Equipment Maintenance - Biomed Neph - Section 01 - Equipment Maintenance - Neph Tech 1-08 Electrical Safety Testing Procedure

REFERENCES:

1. C.S.A. Standard Z32-09 June 2010 *Electrical Safety and Essential Electrical Systems in Health Care Facilities*
2. CAN/CSA-C22.2 No. 60601 2009 *Medical Electrical Equipment*
3. *CAN/CSA-C22.2 No.144*
4. *Canadian Electrical Code,* Part 1 section 24
5. *Ontario Electrical Safety Code,* Bulletin 24-7-4, Rule 24-106
6. CSA-ISO 13959-11 *Water for haemodilaysis and related therapies*
7. CSA-ISO 26722-11 *Water treatment equipment for haemodialysis applications and related therapies*
8. CSA Standard Z364.5-10 (R2015) *Safe Installation and Operation of Hemodialysis and Peritoneal Dialysis in a Home Setting*
9. Fresenius 2008K Preventive Maintenance Procedures part # 507297 Rev F or later
10. Bellco Formula Domus Technical Manual # IB5331212ENG REV.01 or later
11. Fresenius 5008s Operating Instructions # M519001 Edition 10/08.13 Software Version 4.50 or later
12. Gambro WRO300 Technical Training Manual, revision August 2009 or later

COMMENTS / SIGNIFICANT REVISIONS: N/A

Pre-Assessment for Home Hemodialysis Equipment Installation

Date of visit: _____

Technologist: _____ **Nurse:** _____

Patient's name: _____ **Phone #:** _____

Address: _____

Owner: _____

Treatment

Modality and frequency	**Conventional**	
	Short daily	
	Nocturnal	

Dialysis Area

Room location	
Room size (sq.ft.)	
Type of flooring	
Type of wall material	
Type of ceiling material	
Is ceiling below accessible ?	
Is there a bathroom adjacent ?	
Is basement finished ?	
If crawl space only, is it heated ?	

Water Feed Supply

Municipal or well ?	
If municipal, which municipality ?	
If well, ownership ?	
Well specifications	
Well specifications paper available ?	
Feed water quantity available	
Odour ?	
Hardness test result	
pH test result (IBP meter)	

Conductivity test result (IBP meter)	
Full environmental water analysis done ?	
Water pump ? Details ?	

Any pre-treatment system ? Water softener? Details ?	

Sewage System

Municipal or private ?	
Sump pump ? Details ?	
Sewage pump ? Details ?	
Septic tank ? Details ?	

Electrical

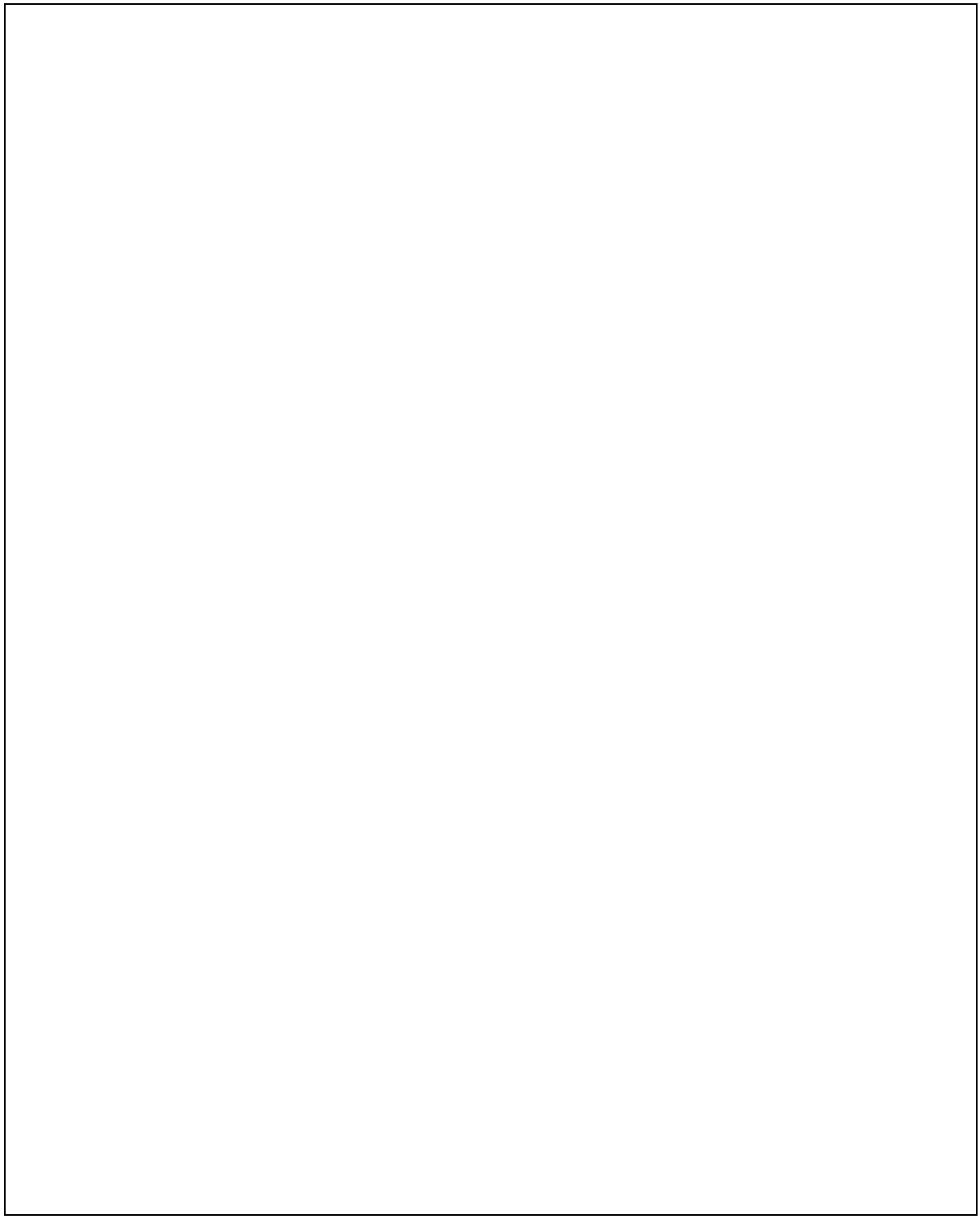
Panel type (fuse or breaker)	
Panel total amps	
Available room for extra plugs	
Type of wiring (copper vs aluminium)	

Supplies Storage

Location to treatment room	

Additional comments

Floor Plan



Project checklist

Assigned technologist: _____

Patient's name: _____

Date of pre-assessment visit: _____

Water well and septic system documentation: _____

Feed water analysis tests: _____

Water system configuration: _____

Cost estimate for plumbing work: _____

Cost estimate for electrical work: _____

Scheduled date for plumbing/electrical install: _____

Scheduled date for equipment install: _____

Hemodialysis machine #: _____

Portable R.O. system #: _____

Product water analysis test:_____

Microbiology and endotoxins test: _____

Electrical safety testing:_____

Revised July 11, 2016
Policy Neph Tech 4-01