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NEPHROLOGY PROGRAM
DEPARTMENT POLICIES AND PROCEDURES

Hemodialysis - Section 14 - Unit Specific - HGH Neph 14-20
Water Treatment Room Daily Checks: Nurse

No.: 01680 (TOH Standardized Policy Number)

ISSUED BY:
Hemodialysis Clinical Practice Committee

DATE OF APPROVAL:
2018/01

APPROVED BY:
Program Clinical Director & Division Head

LAST REVIEW/REVISION DATE:
N/A

CATEGORY:
Unit Specific – Satellite Unit (HGH)

IMPLEMENTATION DATE:
2018/01

POLICY STATEMENT:

- To guide the nurse assigned to do the daily checks for the water treatment room. To verify the water used for hemodialysis meets CSA/ISO water quality standards

DEFINITION(S):

Labels and Valves:

- Green labels: indicate valve numbers normally open
- Red labels: indicate valve numbers normally closed (valve have lock on them)
- Black labels: indicate pressure valve numbers
- Gray labels: indicate sample valves

ALERTS: N/A

SUPPLIES:

- 1 bottle Hi Sense Chloramines Test Strips
- 1 bottle Reagent Solution
- Test strip holder
- Clean sample container and syringe
- Water Treatment Room Daily Checks Sheet

BACKGROUND STATEMENT:

- The Hawkesbury Hemodialysis Satellite Unit Nursing staff is responsible for completing the daily checks on the main water treatment system and therefore ensuring the water is safe for hemodialysis treatments and this before initiating hemodialysis treatments
- The Nephrology Biomedical Technical Services team oversees all water treatment operations

PROCEDURE:

Section A: Document on water treatment room daily checks sheet

1. Verify that both RO1 and RO2 units have a solid green light on the RO screens
    a. If an alarm condition exists and the lights are not solid green, refer to HGH Neph 14-23 Troubleshooting Gambro Water Equipment
    b. If no alarm condition exists, but RO's are not running, refer to water log sheet and see if system had been running in manual mode. You may need to start system using HGH Neph 14-24. Start-up of Reverse Osmosis Unit not following Chemical Disinfect
2. Note the final conductivity on RO1 and on RO2
3. Ensure safety valves (valves with red tags) V4, V6, V13, V16, V19, V22, V25 and V28 have the red tag and are closed
    a. If a tag is removed please see documentation on the Water Treatment Room Daily Checks sheet for the cause of this change
4. Take note of the reading on the pre-sediment filter gauge (P5). This pressure should be > 50 psi
5. Take note of the reading on the post-sediment filter gauge (P6). The difference between the pre and post sediment filter should be < 10 psi, if above contact technologist

Section B: Testing for chloramines

1. HiSense Test Strips & Reagent Solution
    a. If this procedure is being performed following a manual start-up of the RO units ensure the RO water has been circulating for **10 minutes** before testing for Chloramines to ensure the carbon cylinders have had time to achieve standard of 10 minutes Empty Bed Contact Time (EBCT)
    b. Do not allow the test strip to come in contact with liquids or with work surfaces which may be contaminated with interfering substances
    c. Do not touch the reagent-containing Paper Flap on the test strip
    d. Write the "date opened" on the space provided on the test strip bottle label and on the reagent bottle label. Use test strips and reagent solution within 3 months after first opening the bottles
    e. Keep the test strips in the original container
    f. Replace the cap on the test strip bottle immediately and tightly after removing a strip. The strips must be protected from humidity and heat

2. Sampling Procedure (both sets of carbon cylinders needs to be tested)

    a. Turn on the flow for the appropriate sample valve by turning the knob to the left. Allow the water to flow for 5 to 10 seconds. Collect water in clean sample container
    b. Insert the test strip in the strip holder, with paper side facing up, until it meets the PEG stop. Snap the strip holder closed

Important to know:

There are 2 sets of carbon cylinders each with a worker and a polisher. These sets of cylinders run parallel to each other. Therefore, if the sample from the polisher of the first OR the second set of carbon cylinders is positive for Chlorine/Chloramines

Do not start dialysis!

    c. Remove a water sample from the clean sample container using a clean syringe. Add the water sample drop into the reservoir on the top of the test strip in the holder until the reservoir is just full (do not overfill)
    d. Immediately add **1 drop** of Reagent Solution to the sample in the reservoir

Note: The addtition of more than 2 drops of Reagent Solution will adversely affect the sensitivity of the test

    e. When the water sample has drained from the reservoirs (approximately 5 minutes), remove the strips from the holders and interpret the results

**** Interpret results within 5 minutes as false positives may arise from letting the sample sit too long. ****

Interpretation of sample:

- If the circular Reaction Zone displays a blue colour, darker than the surrounding Paper Flap, then it is recorded as positive. Notify the technologist immediately and proceed with testing after the 2nd carbon cylinder
- If the circular Reaction Zone is no darker than the rest of the Paper Flap (not even a tinge of colour) then record as negative and the water is safe for dialysis

3. **First set of carbon cylinders:** Sample for presence of Chlorine/Chloramines from sample valve S5. If the result is negative proceed with step **4** in this policy

    a. **If the result is positive sample valve S6 MUST be tested**. This is the sample valve for the polisher on the first set of carbon cylinders
    b. If S6 is negative move on to step 4 but report immediately to Nephrology Program Technical Services team in Ottawa so that they can plan to replace the first cylinder as soon as possible and start documenting on 'Carbon cylinder flowsheet' found in appendix A
    c. **If S6 is positive do NOT proceed with dialysis treatments** as it would be unsafe for the patients. Report immediately to Nephrology Program Technical Services team in Ottawa as well as Clinical Manager

4. **Second set of carbon cylinders:** Sample for presence of Chlorine/Chloramines from sample valve S7. If the result is negative no further action is necessary

a. **If the result is positive sample valve S8 MUST be tested**. This is the sample valve for the polisher on the first set of carbon cylinders
b. If S8 is negative report immediately to Nephrology Program Technical Services team in Ottawa so that they can plan to replace the first cylinder as soon as possible and start documenting on 'Carbon cylinder flowsheet' found in appendix A
c. **If S8 is positive do NOT proceed with dialysis treatments** as it would be unsafe for the patients. Report immediately to Nephrology Program Technical Services team in Ottawa as well as Clinical Manager

Section C: Shut down of water system

1. If system is running in Biosmosis mode in 'Auto', no action is required
2. If system is running in Manual, it is necessary to shut down the RO's
    a. Turn RO 1 key(S2) to '0'
    b. Turn RO 2 key(S3) to '0'
3. Document on Water room daily log sheet which RO was running in manual and why

DOCUMENTATION:

1. All results are recorded on the Water Treatment Room Daily Checks Sheet

RELATED POLICIES/LEGISLATION:

1. Nephrology Policies and Procedures - Hemodialysis - Section 14 - Unit Specific - HGH Neph 14-23 Troubleshooting Gambro Water Treatment
2. Nephrology Policies and Procedures - Hemodialysis - Section 14 - Unit Specific – HGH Neph 14-24 – Start-up of RO Unit not following Chemical Disinfect

REFERENCES:

1. Gambro Osmosis Operator procedures (June 21, 2011)
2. Gambro Operator's Manual for CWP 100, model WRO H/H DP (Rev 06.2012)
3. Nephrology Biomed Technical Services team
4. CSA-ISO 13959-15 *Water for haemodiaysis and related therapies*
5. CSA-ISO 26722-16 *Water treatment equipment for haemodialysis applications and related therapies*

Appendix A – Carbon Cylinder Flowsheet (next page)

Appendix A - Carbon Cylinder Flowsheet

Complete daily as per procedure HGH Neph 14-20

Place your signature in the correct box

Note: Verify for the presence fo Chlorine/Chloramines after the 2nd carbon cylinder a minimum of every hour.

TIME	2ND CARBON CYLINDER	
	NEGATIVE	POSITIVE

Technologist notified when 1st carbon cylinder tested positive:

* If 2nd carbon cylinder tests positive, stops dialyzing patients immediately.