



**NEPHROLOGY PROGRAM  
DEPARTMENT POLICIES AND PROCEDURES**

**Hemodialysis - Section 14 - Unit Specific - AKU Neph 14-01  
Water Treatment System Start Up and Shutdown**

**No.: 01378** (TOH Standardized Policy Number)

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**ISSUED BY:**

Hemodialysis Clinical Practice Committee

**DATE OF APPROVAL:**

N/A

**APPROVED BY:**

Program Clinical Director & Division head

**LAST REVIEW/REVISION DATE:**

2018/02

**CATEGORY:**

Unit Specific – General Campus (AKU)

**IMPLEMENTATION DATE:**

2009/01

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**POLICY STATEMENT:**

- To start up the Main AmeriWater MR05 Reverse Osmosis Units

**BACKGROUND STATEMENT:**

- The General Campus Hemodialysis Unit Nursing staff is responsible for turning on and shutting down the main water treatment systems and completing the required chloramines test and visual checks unless a Technologist is scheduled to work at the time
- Hemodialysis treatments can NOT be started until the above tests have been performed
- The Nephrology Biomedical Technical Services team oversee all water treatment operations
- R.O. # 1 is always on
- R.O. # 2 operates on Mondays, Wednesdays and Fridays
- R.O. # 3 operates on Tuesdays, Thursdays, Saturdays and Sundays
- All gauges are lettered and need to be read in *psi* (pounds per square inch)
- Temperature is to be read in degrees Fahrenheit
- All valves are numbered
- Water flows as indicated by directional arrows
- Variances greater than 10 *psi* on filters is to be reported to the Nephrology Biomedical Technical Services team

## **SUPPLIES:**

- Bottle Hi Sense Chloramine test strips
- Bottle Reagent Solution
- Sample cup
- Pipette or clean syringe

## **DEFINITION(S):** N/A

## **ALERTS:**

- HiSense Test Strips/Reagent Solution
  - Do not allow the test strips to come into contact with liquids or with work surfaces which may be contaminated with interfering substances
  - Do not use the test materials in areas where vapors from containers of bleach or other oxidizing solutions may be present
  - Do not touch the reagent-containing paper flap on the test strip
  - Do not use the test strips reagent solution after their expiry dates
  - Keep the test strips in their original bottle
  - Replace the cap on the test strip bottle immediately and tightly after removing a strip; the strips must be protected from humidity and heat
  - Write the date opened on the space provided on the test strip bottle label. Use test strips within 3 months after opening the bottle for the first time

## **DOCUMENTATION:**

- Record the result of the chloramines test on the General Campus Reverse Osmosis Daily Log located in the water room (version October 16, 2008).

## **START-UP PROCEDURE:**

1. Open red water valve #7, located above heater next to the door. Open valve to vertical position.
2. Check Pre-filter (blue filter on wall beside R.O. Units). Pressure should read minimum of 40 psi at this point (~30 psi when both RO Units are ON).
3. Turn on R.O. #1 by pressing the green power button.
4. Turn on R.O. # 2 or # 3 depending on the day (Monday, Wednesday and Friday R.O. # 2 should be used and on Tuesday, Thursday, Saturday and Sunday R.O. # 3 should be used) by pressing the green power button.
5. Turn on the main pump switch located next to the water holding tank.
6. To test for the presence of chloramines obtain a water sample from the sample port labeled chloramines test port located on the front panel of each R.O.

7. Fill the sample cup x 3 and discard. The third sample will be tested for chloramines.
8. Refer to Alerts Section for specific details regarding the test/reagent solution. Check for expiry date on the test strip bottle. Remove one test strip from the bottle. Replace the lid and promptly tighten.
9. Insert the test strip into the holder (with the paper facing up) until it meets the peg stop. Snap the strip holder closed.
10. Remove a water sample from the cup using the pipette or clean syringe. Add the water sample drop-wise into the reservoir on the top of the test strip holder until the reservoir is just full (do not over fill).
11. Immediately add 1 drop of Reagent Solution to the sample in the reservoir. Note: the addition of more than 2 drops of Reagent Solution will adversely affect the sensitivity of the test.
12. When the water sample has drained from the reservoir (approximately 8 minutes), remove the strip from the holder and interpret the results:
  - a) If the circular Reaction Zone displays a distinct blue colour, darker than the surrounding Paper Flap, record as positive. The water should not be used to prepare the dialysate. If the test is positive, it means that the water is over the C.S.A. standard of 0.1 ppm and therefore may cause hemolysis. Record as positive and notify a Technologist. Do not proceed.
  - b) If the circular Reaction Zone is no darker than the rest of the Paper Flap, record as negative- the water has less than 0.1 ppm total chloramines and is considered safe for dialysis.

#### **SHUTDOWN PROCEDURE:**

1. Turn off main pump switch located next to the water holding tank.
2. Turn off both R.O. Units by pressing the green power button located on the front console of each unit (R.O. Units will read Standby).
3. Close red water valve # 7, located above the heater. Close valve to horizontal position.

#### **RELATED POLICIES / LEGISLATION: N/A**


#### **REFERENCES:**

1. Nephrology Biomed Technical Services team
2. CSA-ISO 13959-15 *Water for haemodialysis and related therapies*
3. CSA-ISO 26722-16 *Water treatment equipment for haemodialysis applications and related therapies*
4. Serim, HiSense Test Strips, Product information insert

#### **COMMENTS / SIGNIFICANT REVISIONS: N/A**

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## APPENDIX A – General Campus Reverse Osmosis System Daily Log

		<b>GENERAL CAMPUS REVERSE OSMOSIS SYSTEM DAILY LOG</b> (to be filled out by the first Dialysis Technician on shift in the morning)					
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date							
Time of day							
Name							
Check brine tank level (below water line)							
Pre-water softener pressure (psi)							
Post-water softener pressure (psi)							
Water hardness test - post softener (ppm)							
Water softener power on ? (y/n)							
Water temperature (F)							
Pre-filter A pressure - pre (psi)							
Pre-filter A pressure - post (psi)							
Pre-filter B pressure - pre (psi)							
Pre-filter B pressure - post (psi)							
Chloramines test							
pH test							
Product flow R.O. # 1 (lpm)							
Reject flow R.O. # 1 (lpm)							
Recirculation flow R.O. # 1 (lpm)							
Incoming pressure R.O. # 1 (psi)							
Pump pressure R.O. # 1 (psi)							
Reject pressure R.O. # 1 (psi)							
Conductivity R.O. # 1 (uS)							
Product flow R.O. # 2 (lpm)							
Reject flow R.O. # 2 (lpm)							
Recirculation flow R.O. # 2 (lpm)							
Incoming pressure R.O. # 2 (psi)							
Pump pressure R.O. # 2 (psi)							
Reject pressure R.O. # 2 (psi)							
Conductivity R.O. # 2 (uS)							
Product flow R.O. # 3 (lpm)							
Reject flow R.O. # 3 (lpm)							
Recirculation flow R.O. # 3 (lpm)							
Incoming pressure R.O. # 3 (psi)							
Pump pressure R.O. # 3 (psi)							
Reject pressure R.O. # 3 (psi)							
Conductivity R.O. # 3 (uS)							
Thornton meter probe A conductivity (uS)							
Thornton meter probe B conductivity (uS)							
Distribution pump 1 on ?							
Distribution pump 2 on ?							
Distribution pump 3 on ?							
Main unit UV light on ? (y/n)							
Main unit UV light lamp life (days)							
Main unit ultrafilters input pressure (psi)							
Main unit ultrafilters output pressure (psi)							
Main unit return pressure (psi)							
Module H UV light on ?							
Module H UV light lamp life (days)							
Module H ultrafilters input pressure (psi)							
Module H ultrafilters output pressure (psi)							
Module H return pressure (psi)							

Updated on October 16, 2008.

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