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	Document Title:	WATER TREATMENT FOR HEMODIALYSIS UNIT

B.S. Aquino Drive,
Bacolod City,
Negros Occidental,
6100

PURPOSE:

1. To ensure that the Reverse Osmosis System's Membrane is free from contamination of pollutants such colloids, biofilms and biological matter and to prevent serious damage to the system.
2. To ensure the optimum performance of the system is maintained.
3. To ensure a safe, reliable, and efficient system.
4. To ensure safe water to be used for hemodialysis.

LEVEL:

Hemodialysis Technicians, Maintenance and Engineering Personnel, Safety and Pollution Control Officer, Infection Prevention and Control Unit, Dialysis Unit Head, Hemodialysis Supervisors

DEFINITION OF TERMS:


Reverse osmosis- is a filtration method that removes many types of large molecules and ions from solutions by applying pressure to the solution when it is on one side of a selective membrane. The result is that the solute is retained on the pressurized side of the membrane and the pure solvent is allowed to pass to the other side.

Purified water- water free from contaminants such as chemicals, organic matter, bacteria or bacterial fragments and is ready to use in a hemodialysis machine.

Raw Water- water that has not been treated in any way.

Product water- purified water that underwent reverse osmosis treatment.

Point-of-use water- water that is close proximity to or approaching the dialysis equipment.


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UVC (ultraviolet-C radiation) - used as a disinfectant in a water system that eliminates microbiological contaminants (germs, bacteria, and viruses)

DOH A.O. 2013-0003- discusses the Implementing Guidelines in the Analysis, Monitoring and Maintenance of Water used in Dialysis Facilities Pursuant to Administrative Order No. 2012-0001 Known as "New Rules and Regulations Governing the Licensure and Regulation of Dialysis Facilities in the Philippines"

POLICY:

1. Approved water treatment and cleaning procedure shall always be followed.
2. The Hemodialysis Unit shall use the Product Water from four (4) reverse osmosis water treatment systems (RO1, RO2, RO3, and RO4) and two (2) water distribution systems (Line A [Red] and Line B [Yellow]).
3. Only authorized maintenance and hemodialysis personnel shall be allowed to clean and operate the water treatment system and the water distribution system.
4. Maintenance and Engineering Personnel shall disinfect the reverse osmosis system once a week, preferably every Saturday night. Adjustment in the schedule shall be communicated accordingly.
5. Maintenance and Engineering Personnel shall change the membrane for the reverse osmosis system every three (3) months or earlier as determined by a consistent TDS reading of greater than 10PPM.
6. Hemodialysis Technicians shall change both filters for the Red Riser Tank and the Yellow Riser Tank every month, these are located in the Hemodialysis Unit.

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7. Bacteriological Test of the **raw water, product water**, and the **point-of-use water** shall be done every month. Failed water result parameters based on DOH AO 2013-0003 and Association for the Advancement of Medical Instrumentation (AAMI) standards shall require the water treatment system and/or the water distribution system involved to cease operation until the issue is identified and resolved.
8. Physical and Chemical Test of the **point-of-use water** shall be done every six (6) months. Failed water result parameters based on DOH AO 2013-0003 and AAMI standards shall require the water treatment system and/or the water distribution system involved to cease operation until the issue is identified and resolved.
9. The Dialysis Unit Head, together with the Hemodialysis Supervisors, Safety and Pollution Control Officer, Infection Prevention and Control Unit, shall ensure that the Bacteriological Test and the Physical and Chemical Test are compliant to the DOH AO 2013-0003 and AAMI standards.

DOCUMENTATION:

Revised Policy

DISSEMINATION:

Policies and Procedures Manual
Hospital Communicator
Memoranda


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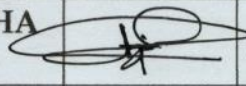
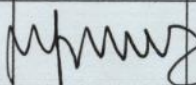

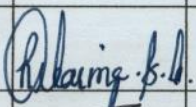

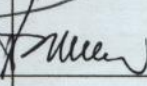
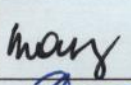

DOH Administrative Order 2012-0001: New Rules and Regulations Governing the Licensure and Regulation of Dialysis Facilities in the Philippines


DOH Administrative Order 2013-0003: Implementing Guidelines in the Analysis, Monitoring and Maintenance of Water used in Dialysis Facilities Pursuant to Administrative Order No. 2012-0001

ANSI/AAMI/ISO 23500-1:2019: Preparation and quality management of fluids for hemodialysis and related therapies,

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	Name/Title	Signature	Date
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Verified by:	MANUEL G. JONELAS II, RN, MBA-HA, FPCHA Kidney Center Manager		4/6/22
	MARIA REMEDIOS R. TOMAS, MD, FPCP, FPSN Dialysis Unit Head		4/18/22
Reviewed:	DENNIS C. ESCALONA, MN, FPCHA, FPSQua Quality Assurance Supervisor		04/07/2022
Recommending Approval:	ROSARIO D. ABARING, MN, MBA-HA, PhD, FPCHA Ancillary Services Division Officer		04.07.2022
	ENGR. NOEL P. GARBO, FPCHA Engineering and General Services Division Officer		4/7/22
	HENRY F. ALAVAREN, MD, FPSMID, FPSQua Total Quality Division Officer		4/19/2022
	MA. ANTONIA S. GENSOLI, MD, FPPS, FPCHA Vice President – Chief Medical Officer		4-13-22
Approved:	GENESIS GOLDI D. GOLINGAN President and CEO		4/22/22

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	Document Title:	WATER TREATMENT FOR HEMODIALYSIS UNIT

PURPOSE:

To discuss the processes involved in the water treatment for Hemodialysis Unit.

SCOPE:


Applies to all Hemodialysis Unit staff of Dr. Pablo O. Torre Memorial Hospital

PERSON RESPONSIBLE:


Hemodialysis Technicians, Maintenance and Engineering Personnel, Safety and Pollution Control Officer, Infection Prevention and Control Unit, Hemodialysis Supervisors

PROCEDURE:

1. Hemodialysis Technician ensures the integrity of the water system in the unit.
2. Raw water undergoes the following process:
 - 2.1. Raw water(chlorinated deep-well water) is stored in Raw Water Tanks: A, B, and C will undergo reverse osmosis procedure that makes the underground water into **product water** (purified water) ready for use in Hemodialysis Unit.
 - 2.2. The raw water will then enter the pre-treatment stage of the process.
 - a) Suspended solids will be eliminated through the multimedia tank.
 - b) Activated carbon tank will filter out the chlorine present in the water.
 - c) Water softener tank removes any contaminants that makes the water hard.
 - d) A 5 micron fiber filter is used to remove sediments as small as 5 microns.
 - e) Particles smaller than 5 microns will be filtered out through the 1 micron fiber filter.
 - f) After this stage the water is stored in a soft water tank.

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- 2.3. To purify unwanted molecules and microorganisms the water will enter the primary purification stage which is the reverse osmosis that will yield the **product water**.
 - 2.4. After undergoing UVC treatment and 0.2 micron filtration, the **product water** is stored in holding tanks (Riser A and Riser B) in the Hemodialysis Unit. Water Distribution Lines A (Red) and B (Yellow) shall source the product water from Riser A and Riser B, respectively. Water Distribution Lines A (Red) and B (Yellow) shall be independent from each other.
 - 2.5. Upon distribution the product water from the holding tanks (Riser A and Riser B) shall undergo another UVC treatment and 0.2 micron filtration prior to entering the Water Distribution Lines A (Red) and B (Yellow) until extraction at individual point-of-use outlets.
 - 2.6. Purified water leaving the Water Distribution Lines and entering the individual hemodialysis machines is identified as a **point-of-use water** to be used as a component of the dialysate solution used in the hemodialysis procedure.
3. Maintenance and Engineering Personnel disinfects the reverse osmosis system once a week, preferably every Saturday night. Write in the log book the details of the disinfection (name of performing personnel, date and time performed).
 4. Hemodialysis Technicians changes both filters for the Red Riser Tank and the Yellow Riser Tank located in the Hemodialysis Unit every month. Document the details of the filter change.
 5. Maintenance and Engineering Personnel changes the membrane for the reverse osmosis system every three (3) months or earlier as determined by a consistent TDS reading of greater than 10PPM. Document the performed procedure.
 6. Hemodialysis Supervisor ensures that all parameters are checked and procedures are consistently followed according to the set schedule.


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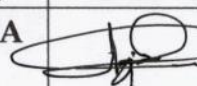
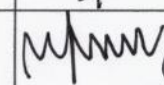

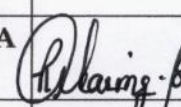

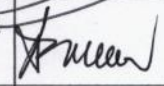
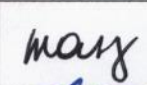

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APPROVAL:

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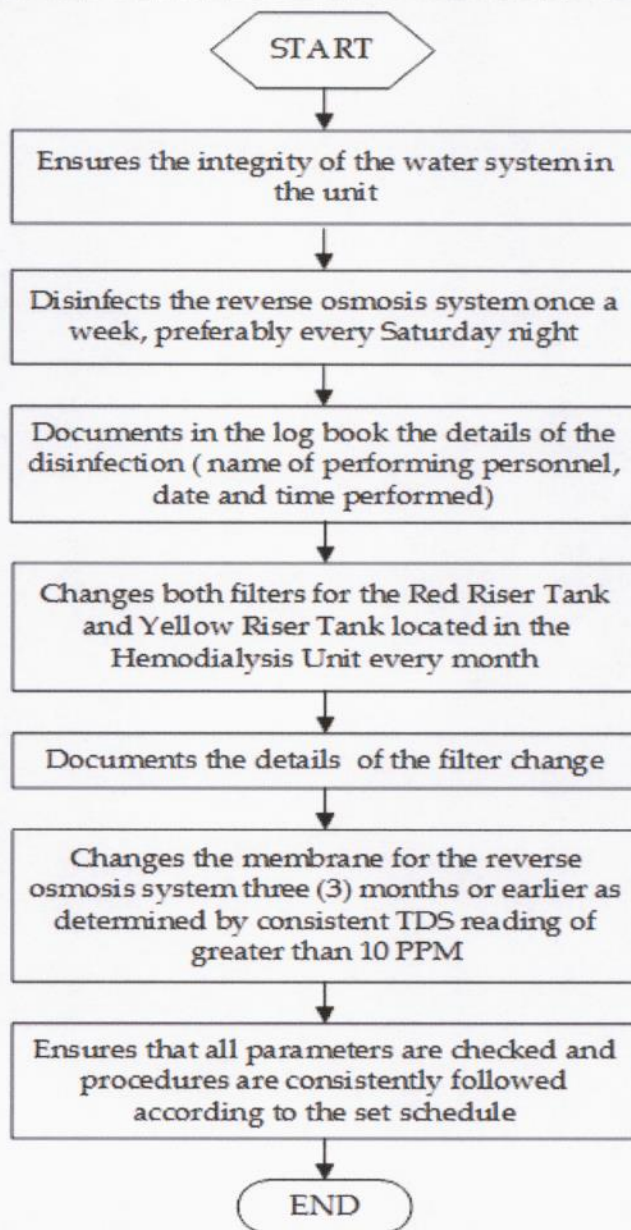



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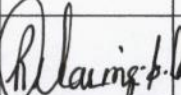


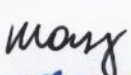

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FLOWCHART



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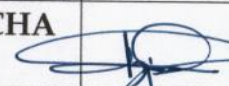
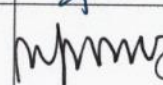

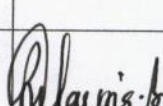
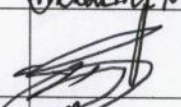
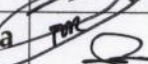
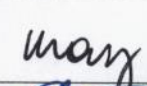

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KEY TASKS	PERSON RESPONSIBLE
1. Ensures the integrity of the water system in the unit.	Hemodialysis Technician
2. Disinfects the reverse osmosis system once a week, preferably every Saturday night.	Maintenance and Engineering Personnel
3. Documents in the log book the details of the disinfection (name of performing personnel, date and time performed).	
4. Changes both filters for the Red Riser Tank and the Yellow Riser Tank located in the Hemodialysis Unit every month.	Hemodialysis Technician
5. Documents the details of the filter change.	
6. Changes the membrane for the reverse osmosis system every three (3) months or earlier as determined by a consistent TDS reading of greater than 10PPM.	Maintenance and Engineering Personnel
7. Ensures that all parameters are checked and procedures are consistently followed according to the set schedule.	Hemodialysis Supervisor

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