

 <p style="text-align: center;">DIVISION OF ADULT INSTITUTIONS</p> <p style="text-align: center;">POLICY AND PROCEDURES</p>	DAI Policy #: 500.31.38	Page 1 of 10
	Original Effective Date: 05/29/24	New Effective Date: 12/23/24
	Supersedes: 500.31.38	Dated: 05/29/24
	Administrator's Approval: Sarah Cooper – Administrator – 11/08/24	
	Required Posting or Restricted: <input type="checkbox"/> PIOC <input checked="" type="checkbox"/> All Staff <input type="checkbox"/> Restricted	
Chapter: 500 Health Services		
Subject: Dodge Correctional Institution Dialysis Water Distribution System Disinfection		

POLICY

The Dodge Correctional Institution Dialysis Water Distribution System and Reverse Osmosis Unit disinfection shall be completed at the frequency recommended by the AAMI guidelines.

REFERENCES

ANNA (2020). C. Counts (Ed.), Core Curriculum for Nephrology Nursing, (Seventh Edition pp. 997-1001, 1352-1362). Pitman, New Jersey: Anthony J, Jannetti, Inc.

ANNA, (2022). S. Bodin (Ed), Contemporary Nephrology Nursing: 4th edition (pp. 233-246). Pitman, New Jersey: Anthony J. Jannetti, Inc.

Association for the Advancement of Medical Instrumentation, 2023, AAMI Standards Program: Policies and Procedures.

Medicare & Medicaid Programs Conditions for Coverage for End Stage Renal Disease Facilities, Federal Register, 2008.

Total Water Treatment Consultants Inc. (policy review), 2024

DEFINITIONS, ACRONYMS, AND FORMS

AAMI – Association for the Advancement of Medical Instrumentation

Actuate – To put into motion or action

CMS – Centers for Medicare Services

DCI – Dodge Correctional Institution

DI – Deionizer

DOC - 3649 – Dodge Correctional Sanitization Points of Use on High Purity Water System Form

PAA – Peracetic Acid

PIOC – Persons in Our Care

RO – Reverse Osmosis

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UV – Ultraviolet Light

PROCEDURE

I. Guidelines

- A. Disinfection of the water distribution system shall be performed at a minimum of once each month.
 1. Reverse osmosis unit disinfection shall be completed at a minimum of quarterly every year per the contracted water treatment provider.
 2. Frequency of disinfection for both the distribution system and the RO may be more frequently as necessitated by water culture and endotoxin test results.
- B. The water line between the outlet from the water distribution system and the back of the dialysis machines shall be disinfected monthly during the water distribution disinfection process.
- C. AAMI Standards, as accepted by CMS, for colony counts and endotoxin results shall be adhered to.
- D. Disinfection of the RO and water distribution system shall be performed by either trained dialysis staff or the contracted water treatment provider.

II. Preparation Steps

- A. Obtain necessary supplies:
 1. Designated disinfectant which can be either PAA or household bleach.
 2. Step ladder, channel lock pliers, towels, 2000 ml graduated cylinder.
 3. Designated disinfectant test strips.
 4. DOC 3649 – Dodge Correctional Sanitization Points of use on High Purity Water System Form.
 5. Face shield, protective lab jacket and gloves.
- B. In Water Room:
 1. Turn off the nurse's Station Audible Alarm.
 2. Unplug UV light. Confirm UV light is off.
 3. Unplug Blocking Valve. Confirm the green light is off.
 4. Unplug Worker Quality Alarm Light for DI tank three. Confirm worker light is off.
 5. Place the RO Unit in standby by pressing the "Power" button on the RO unit.
 6. Attach the shorter drain tubing to the Tank Drain Valve on the storage vessel.
 7. Open Tank Drain Valve to drain the storage vessel.
 8. Attach longer drain tubing to the Loop Return to Drain Valve.

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9. Open Loop Return to Drain valve to assist in draining the storage vessel.
- C. As the level on the Control Panel approaches 19 inches for bleach or 24 inches for PAA, close the Tank Drain Valve, turn the Recirculation Pump power to "OFF", and close the Loop to Drain Valve.
- D. Locate all 15 points
 1. 6 dialysis machine drain hoses (or the 6 water spigots in treatment room if machines are not present).
 2. 3 RO water spigots in the water treatment room.
 3. 2 RO water spigots in the bicarbonate mixing room.
 4. 1 RO water spigots in the Nurse's Station, Room Q1151.
 5. 3 RO water spigots in the Lab Room.
- E. Bicarbonate Room: Place the hose to the bicarbonate mixer in the sink after disconnecting from the back of the unit. Confirm O-Ring still in place on the tubing. (2 POV Total in Bicarb Room).
- F. Water Room: locate SVA, Valve – 7, Final Filters 1 and 2, Velocity Gauge Valve and Quality Flush Drain Valve.

III. Initiating the Disinfection Process

- A. Apply clean gloves and a personal protective jacket.
- B. Begin to disconnect the DI System by:
 1. Confirm the Recirculation Pump is "OFF".
 2. Open Valve – 12, Close Valve – 11 and Valve – 13. Start disconnecting the DI tanks working from right to left. Disconnect the hose from all DI tanks using a channel lock pliers.
 3. Confirm all O-rings present on the male hoses. Connect all the hoses together without the DI Tanks attached.
 4. Cover connections on the DI Tanks with clean gloves.
 5. Open Valve – 11 and Valve – 13, Close Valve – 12.
 6. Test the bypass hook-ups by turning the recirculation pump to "Auto" and confirm that there are no water leaks at the DI hose connections. Observe gauges 15 and 16 for positive pressure water movement. The Recirculation Pump should remain on.
 7. If leaks are observed in the bypass hook-ups:
 - a. Turn "off" Recirculation Pump.
 - b. Open valve – 12, close valves – 11 and 13. Tighten any hook-ups which were leaking.
 - c. Test the bypass hook-ups once all connections are secure by following above steps F and G.
 8. Apply a face shield.

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- C. Measure 1500 ml of household bleach or 4000 ml of PAA into the graduated cylinder.
1. Open the disinfection port on top of the storage vessel and slowly add the disinfectant using a funnel.
 2. Open the Tank Drain Valve at the base of the Storage Vessel. Open it wide and close it, then leave open at a slow flow of water.
- D. Test the water at the end of the drain hose with a test strip. Result shall be positive. Document the time and result on form DOC – 3649 (>0.5 ppm) for household bleach or 1% for PAA. Close the Tank Drain Valve once positive result is obtained.
1. Close valve – 21 and – 21A. Open Loop Return To Drain Valve. Turn on pump to Auto. Open – 21 and – 21A and close the Loop to Drain Valve once a positive result is received. Document result.
 2. Open Valve – 12 to bypass the DI. Close Valve – 13, close Valve – 11.
 3. Open Valve – 15 to bypass the UV. Close valve – 16 and valve – 14.
 4. Actuate Valve – 17, Valve – 18, Valve – 19 and Valve – 20 and leave open.
 5. Open and close both sets of Final Filter inlet and outlet spigots. Open again and test both outlet spigots for disinfectant. Result shall be positive. Document result.
 6. Test Final Filters for disinfectant. Result shall be positive. Document.
 7. On DI Tank, open Valve – 11 & Valve – 13. Close Valve – 12.
 8. On UV light, open Valve – 14 and Valve – 16. Close Valve – 15.
 9. By Storage Vessel, open and close SVA and Valve – 7, Open again and test for disinfectant. Result shall be positive. Document result.
- E. Test Quality Flush Valve and Velocity Gauge Valve for disinfectant. Results shall be positive. Document result.
- F. Machine Disinfection in the Water Treatment Room
1. Proceed to turn on dialysis machines in the water room, if present, and put into rinse mode.
 2. Allow the machines to rinse for at least two minutes, but no more than five minutes.
 3. Test the machine drain tubing with a test strip. When the dialysis machines test positive, interrupt the rinse cycle. Document result.
 4. Test any other RO inlet water hose spigots where machines are not present for disinfectant. Document result.
- G. Disinfection in the Bicarbonate Room
1. Open and close the sink hose valve. Open again and test for disinfectant. Document result.

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2. Open and close the valve for the bicarbonate mixer hose. Open again and test for disinfectant. Document result.
- H. Disinfection in the Lab Room.
1. Open and close each of the 3 points of use.
 2. Open again and test each point for disinfectant. Document result.
- I. Disinfection in the Dialysis Treatment Room
1. Proceed to turn on all machines and place into rinse mode.
 2. Allow machines to rinse at least two minutes, but now more than five minutes. Test each drain hose.
 3. When the dialysis machines test positive, interrupt the rinse cycle. Document result.
 4. If machines are not located at all points of use, turn on the RO water inlet spigot and test at the hose end. Document result.
 5. Open and close point of use in the Nurse's station, Q-1151. Open again and test for disinfectant. Document result.
- J. Allow system to dwell for 1 hour after first positive contact was confirmed with test strips. After 1-hour dwell, place the water room machines and the dialysis treatment room machines in rinse for 2 minutes the second time.
1. Complete second checks for disinfectant at all 15 points of use and document. Interrupt the rinse cycle of the dialysis machines as soon as they test positive.
 2. In Water Treatment Room: complete second checks to disinfectant at SVA, Valve-7, Velocity Gauge Valve, Quality Flush Valve and both Final Filters. Document Result.
- K. If household bleach is utilized, allow system to dwell and additional 1 – hour. After an additional 1 – hour:
1. Water room machines and dialysis treatment room machines in a 2 – minute rinse for the third time.
 2. Complete the third checks for disinfectant at all 15 points of use. Interrupt the rinse cycle of the dialysis machines after testing positive. Document result.
 3. In Water Treatment Room, test SVA, Valve – 7, Velocity Gauge Valve, Quality Flush Valve and both Final Filters for disinfectant. Document results.
- L. After 2 – hours of total contact time for household bleach or 1 – hour of contact time for PAA, rinsing of the water distribution loop shall begin.

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IV. Rinsing of Water Distribution Loop

- A. Open Valve – 12. Actuate valve – 11 and – 13, leave open. Close Valve – 12.
- B. Open valve – 15, actuate valve – 16 and valve – 14, leave both open. Close valve – 15.
- C. Actuate Valves 17, 18, 19, 20; leaving all valves open.
- D. Open and close both Final Filters, SVA and Valve – 7. Open again and test for disinfectant. Document results.
- E. Open the Loop Return Drain Valve on storage vessel to drain.
- F. Actuate Valve – 21 and 21A three times, leaving closed 21 and 21A closed.
- G. The Loop Return to Drain Valve should remain open. Open Tank Drain Valve to help with draining the storage vessel.
- H. When the recirculation pump turns off, turn the Recirculation Pump from auto to hand mode.
- I. When the water level on level control panel reaches – 3.00, turn RO Unit on to help with rinsing storage vessel.
- J. When the pressure drops on the Pressure Gauge, turn the Recirculation Pump to “Off”. Use caution not to run the pump dry.
- K. Continue to drain from Tank Drain Valve until storage vessel is empty.
- L. Allow the RO unit to operate to increase the rinsing of the bottom of the storage vessel.
- M. Test Tank Drain Valve for household bleach. The household bleach level should be decreased from the first test. Test until result is negative.
- N. Begin to refill the storage vessel. Fill to 40 inches on the level meter. The fill process will take approximately 2 hours.
- O. Once at 40 inches, open Tank Drain Valve. Test for disinfectant. The desired level is negative. Close valve.
- P. Verify that the Loop Return to Drain Valve hose is attached and opened. Double check that valves – 21 and 21A are closed.

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- Q. Turn Recirculation Pump to “Auto”. Visualize Gauge 16 for an increase in pressure to confirm that water is exiting the water treatment room and entering the distribution loop.
 - R. Actuate Valve – 12, then leave open. Actuate valve – 11 then valve – 13, then leave open. Actuate valve – 11, then leave open. Actuate valve – 12, and then close.
 - S. Actuate valve – 15, leave open. Actuate valve – 16, leave open. Actuate valve – 14, leave open. Actuate valve – 15, then close.
 - T. Open and close SVA and valve – 7 three times and test for disinfectant. Result shall be negative.
 - U. Open and close Velocity Gauge three times and test for disinfectant. Result shall be negative.
 - V. Open and close the Quality Flush Valve three times and test for disinfectant. Results shall be negative.
 - W. Actuate valve – 17 and 18 and leave open.
 - X. Drain 2000 ml of water from the upper and lower final filters and test for disinfectant. Results shall be negative.
 - Y. Open and close inlet and outlet spigots three times and test for disinfectant. Result shall be negative.
 - Z. Actuate valve – 19 and 20 and leave open.
 - AA. Check Drain Valve for disinfectant. If negative, close valve and remove tubing.
 - BB. Turn pump off, close Loop Return to Drain Valve and remove tubing. Reopen valve – 21 and 21A at a 45* angle.
 - CC. Turn Recirculation Pump to “Auto”.
- V. Reassembly of Water Room**
- A. DI Tank Reassembly
 - 1. Open valve – 12, Close valve – 11, close valve – 13.
 - 2. Open DI hose connections. Confirm O-rings are present.

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3. Reattach hoses to DI tanks, working from left to right. DI hose from the polisher needs to be at the ten o'clock position.
 4. Open valve – 11, open valve – 13 and close valve – 12.
 5. Towel dry DI tanks to assist with visualizing leaks at hose connections.
- B. Turn Recirculation Pump to “Auto”.
1. Visualize Gauge – 16 for an increase in pressure to confirm that water is exiting the water treatment room and entering the distribution loop.
 2. Visualize the quality resistivity increase on the Myron L Meter.
 3. Verify Gauge 18 reads 26 PSI.
 4. Visualize for leaks at the DI tank hose connections.
- C. Drain a 2000 ml cylinder of water from each of the upper and lower final filters, then test each for disinfectant. Result shall be negative. If positive for residual chemical continue to test until result is negative.
1. Plug in UV light. Confirm indicator light turns on.
 2. Plug in the working indicator light on DI tank #4. Confirm indicator light turns on.
 3. Plug in Blocking Valve. Confirm indicator light turns on.
 4. Test three RO water spigots in the water room.
 - a. If any machines are present, turn on to the rinse mode and allow to operate for a full rinse, then test machine at drain tubing for disinfectant. The result shall be negative. Allow to complete a second full rinse cycle.
 - b. Test SVA, valve – 7, and Quality Flush Valve drain and document. The result shall be negative.
- D. Bicarbonate Room:
1. Open and close the sink the sink hose valve. Open again and test for disinfectant. Result shall be negative.
 2. Open and close the valve for bicarbonate mixer hose. Open again and test for disinfectant. Result shall be negative.
- E. Lab Room:
1. Open and close the 3 points of use. Open again and test for disinfectant. Result shall be negative.
- F. Dialysis Treatment Room:
1. Turn on all dialysis machines to the rinse mode. Allow the machines to run for a full rinse. Test each drain hose for disinfectant. All machines shall complete two full rinse cycles and test negative. In some cases, it may require multiple machine rinse cycles for the test to be negative.
 2. If machines are not located at all points of use, turn on the water inlet valve and test for disinfectant at the hose end.

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- G. Open the point of use in the nurse's station. Test for disinfectant. The result shall be negative.
- H. All 15 identified points of use, SVA, valve – 7, Quality Flush Valve and Final Filters shall be tested at three separate times throughout the machine rinse cycle. Document each negative result.
- I. If all points of use and test sites are not testing negative:
 - 1. Rinse system with additional reverse osmosis water.
 - 2. Retest all points of use.
 - 3. If after additional rinsing, disinfectant is detected, consult with the contracted water treatment provider.
 - 4. Do not proceed with Hemodialysis Treatments.
- J. Once test sites at all 15 points of use, SVA, Quality Flush Valve, and both Final Filters test negative three times, the procedure is complete.
 - 1. Return all supplies.
 - 2. Complete a final water room check utilizing the Water System Check Sheet.
 - 3. Turn on the Nurse's Audible Alarm.

DIVISION OF ADULT INSTITUTIONS FACILITY IMPLEMENTATION PROCEDURES

Facility: Name		
Original Effective Date:	DAI Policy Number: 500.31.38	Page 10 of 10
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Chapter: 500 Health Services		
Subject: Dodge Correctional Institution Dialysis Water Distribution System Disinfection		
Will Implement	<input type="checkbox"/> As written	<input type="checkbox"/> With below procedures for facility implementation
Warden's/Center Superintendent's Approval:		

REFERENCES

DEFINITIONS, ACRONYMS, AND FORMS

FACILITY PROCEDURE

- I.
 - A.
 - B.
 - 1.
 - 2.
 - a.
 - b.
 - c.
 - 3.
 - C.

II.

III.

RESPONSIBILITY

I. Staff

II. Inmate

III. Other