

 <p style="text-align: center;"><b>DIVISION OF ADULT INSTITUTIONS</b></p> <p style="text-align: center;"><b>POLICY AND PROCEDURES</b></p>	<b>DAI Policy #:</b> 500.31.07	<b>Page</b> 1 of 5
	<b>Original Effective Date:</b> 03/05/13	<b>New Effective Date:</b> 03/05/13
	<b>Supersedes:</b> N/A	<b>Dated:</b> N/A
	<b>Administrator's Approval:</b> Jim Schwochert, Administrator	
	<b>Last Reviewed, No Changes:</b> 11/22/16	
<b>Required Posting or Restricted:</b>		
<input type="checkbox"/> Inmate <input checked="" type="checkbox"/> All Staff <input type="checkbox"/> Restricted		
<b>Chapter:</b> 500 Health Services		
<b>Subject:</b> Mixing of Bicarbonate Solution and Disinfection of the Bicarbonate Mixer and Containers		

**POLICY**

The Division of Adult Institutions shall ensure the mixing of bicarbonate solution and disinfection of the bicarbonate mixer/bicarbonate containers shall be completed according to the manufacturer's guidelines and AAMI Standards for Dialysis Units.

**REFERENCES**

AAMI Standards, 2010

**DEFINITIONS, ACRONYMS AND FORMS**

AAMI – Association for the Advancement of Medical Instrumentation

DOC-3521 – Hemodialysis 2.5 Gallon Containers Disinfection Log

DOC-3522 – Hemodialysis Daily Bicarb Conductivity Log

mS – Millisiemens

PPE – Personal Protective Equipment

ppm – Parts per million

RO – Reverse Osmosis

**PROCEDURE****I. Mixing Bicarbonate**

- A. Open mix-tank lid and inspect tank for cleanliness. The bicarbonate mix tank shall be completely empty. Close the lid.
- B. Close drain valve at bottom of mix tank.
- C. Verify the correct brand, series and size of bicarbonate powder available for use.
- D. Open water inlet valve. Fill tank to desired level per the manufacturer's instructions. Product water used to prepare dialysate or concentrates from powder shall contain a viable microbial count and endotoxin concentration within the AAMI Standards.

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- E. Close water inlet valve.
  - 1. Test water from mix tank sample valve for residual chlorine.
  - 2. Result of < 0.5 ppm must be obtained to proceed.
  - 3. Document on DOC-3522 – Hemodialysis Daily Bicarb Conductivity Log.
  
- F. Mix per the manufacturer's instructions.
  - 1. Do not over mix.
  - 2. Vigorous mixing can drive carbon dioxide from the solution and is not recommended.
  - 3. Verify the powder is dissolved in solution. If it is not, allow for more mix time. Visually recheck solution until it is dissolved thoroughly.
  
- G. Test for specific gravity utilizing a hydrometer or test for conductivity utilizing the Phoenix Meter.
  - 1. Desired results shall be based on the specific brand and concentration of solution utilized.
    - a. For the Naturalyte, 45X, 4000 Series the Hydrometer result should be between 1.049 and 1.065.
    - b. The Phoenix Meter result should be 50 mS +/- 4.
  - 2. Document on DOC-3522 – Hemodialysis Daily Bicarb Conductivity Log.
  
- H. Use concentrate solution within the desired time frame recommended by the manufacturer.

## II. Bicarbonate Mixer Culture

- A. A culture for bacterial growth and endotoxin from the mixed tank shall be obtained from the RO water at least monthly.
  - 1. Fill mixer tank to 25 gallons (97Liters).
  - 2. Agitate water in the mixer.
  - 3. Apply a face mask and clean gloves.
  - 4. Use isopropyl alcohol to wipe the sample tap. Allow it to completely dry prior to culturing.
  - 5. Obtain samples for endotoxin and bacterial count from the end of the drain valve after actuating valve three times and allowing it to flush for two minutes.
  
- B. Send samples to the contracted lab provider. Review results and act as follows:
  - 1. If sample results are within the recommended AAMI standard, no additional action is required.
  - 2. If sample results within the action level:
    - a. Disinfect the bicarbonate mixer.
    - b. Resample.
  - 3. If sample results are greater than the allowable upper limit for AAMI Standards, the mixer will not be utilized for preparing bicarbonate until

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disinfected, recultured, and the results are within AAMI standards. During this waiting period, manufacturer prepared liquid bicarbonate or dry pack bicarbonate cartons shall be utilized for patient treatments.

### **III. Bicarbonate Mixer Disinfection**

- A. Disinfection of the bicarbonate mixer shall be completed at least weekly utilizing household bleach at a ratio of 30-60mL bleach per gallon of water.
  1. The amount utilized shall be based on previous culture results for bacteria and endotoxin.
  2. For culture results exceeding the AAMI acceptable standards 60mL bleach per gallon of water shall be utilized.
- B. Staff shall apply PPE (jacket, gloves, face shield).
- C. Open drain valve and drain completely.
- D. Spray out mix tank with sprayer hose while draining.
- E. Close drain valve.
- F. Fill tank to 25 gallon (97Liters) level with RO water.
- G. Add 750 ml to 1500 ml of household bleach (30ml-60ml/gallon). Mix for 15 minutes.
- H. Allow additional contact time of 15 minute dwell.
- I. Open drain valve and drain completely. Spray out tank thoroughly until water in tank and in faucet is <0.5 ppm residual chloramine. Document on DOC-3521 – Hemodialysis 2.5 Gallon Containers Disinfection Log.

### **IV. Bicarbonate Containers Disinfection**

- A. Container disinfection shall be completed at least weekly utilizing household bleach at a ratio of 30-60mL bleach per gallon of RO water (total of two gallons of RO water).
- B. The ratio of bleach/water shall be based on previous culture results for bacteria and endotoxin. For culture results exceeding the AAMI acceptable standards 60mL bleach per gallon of water shall be utilized.
- C. Staff shall apply PPE (jacket, gloves, face shield).
- D. Completely empty bicarbonate containers.
- E. Add bleach/RO water solution to the containers. Mix bleach/RO water solution in container, apply cover and swirl.

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- F. Allow for contact time of 30 minutes.
- G. Drain and rinse by filling containers with a few inches of RO water, agitating gently and discard rinse water. Repeat rinsing three times or until test strip is < 0.5 ppm. Document on DOC-3521 – Hemodialysis 2.5 Gallon Containers Disinfection Log.
- H. Bicarbonate containers shall dry in an inverted position with the opening of the container facing downward to allow for maximum drainage of fluid.
- I. Bicarbonate containers shall be cultured for bacteria and endotoxin as necessary per dialysate culture results. Cultures will be obtained either as part of the dialysis machine culture or separately utilizing RO water as the medium.
- J. Pick-up wands shall be rinsed after each daily use with RO water.
- K. Bicarbonate containers shall be rinsed after each daily use with RO water.

**Bureau of Health Services:** \_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
James Greer, Director

\_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
Ryan Holzmacher, MD, Medical Director

\_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
Mary Muse, Nursing Director

**Administrator's Approval:** \_\_\_\_\_ **Date Signed:** \_\_\_\_\_  
Jim Schwochert, Administrator

**DIVISION OF ADULT INSTITUTIONS FACILITY IMPLEMENTATION PROCEDURES**

<b>Facility:</b> Name		
<b>Original Effective Date:</b>	<b>DAI Policy Number:</b> 500.31.07	<b>Page</b> 5 of 5
<b>New Effective Date:</b> 00/00/00	<b>Supersedes Number:</b>	<b>Dated:</b>
<b>Chapter:</b> 500 Health Services		
<b>Subject:</b> Mixing of Bicarbonate Solution and Disinfection of the Bicarbonate Mixer and Containers		
<b>Will Implement</b> <input type="checkbox"/> As written <input type="checkbox"/> With below procedures for facility implementation		
<b>Warden's/Center Superintendent's Approval:</b>		

**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