

 <p style="text-align: center;">DIVISION OF ADULT INSTITUTIONS</p> <p style="text-align: center;">POLICY AND PROCEDURES</p>	DAI Policy #: 500.31.35	Page 1 of 6
	Original Effective Date: 04/01/16	New Effective Date: 08/20/18
	Supersedes: 500.31.35	Dated: 04/01/16
	Administrator's Approval: Jim Schwochert, Administrator	
Required Posting or Restricted:		
<input checked="" type="checkbox"/> Inmate <input checked="" type="checkbox"/> All Staff <input type="checkbox"/> Restricted		
Chapter: 500 Health Services		
Subject: Phoenix Meter		

POLICY

When performing hemodialysis the Division of Adult Institutions shall ensure an independent meter is utilized to test pH and conductivity of the final dialysate prior to each dialysis treatment utilizing the Phoenix Meter for this function.

REFERENCES

AAMI Standards, 2014

Contemporary Nephrology Nursing 3rd Edition 2017 (page 182)

Phoenix Meter Calibration Guide – www.MesaLabs.com, 2014

DEFINITIONS, ACRONYMS AND FORMS

AAMI – Association for the Advancement of Medical Instrumentation

Conductivity – Measure of the conduction of the electrolytes in the dialysate.

DOC-3704 – Phoenix Meter Verification/Calibration Log

DOC-3423 – Hemodialysis Treatment

DOC-3522 – Hemodialysis Daily Bicarb Conductivity Log

NIST – National Institute of Standards and Technology

pH – Measure of the acidity or alkalinity of a solution.

RO – Reverse osmosis

TCD – Theoretical Conductivity

PROCEDURE**I. First Daily Use of the Phoenix Meter**

- A. Remove and discard cap.
- B. Expel any remaining NeoCare into an appropriate receptacle.
- C. Rinse the meter two to three times with 10 mL RO water. Draw the RO water through the cell, filling the syringe barrel.

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- D. Verify the instrument by connecting the cell to the standard 7.0 pH solution.
- E. Hold the syringe with the plunger end elevated to eliminate any remaining air bubbles in the syringe.
 - 1. Draw solution through the cell and expel several times.
 - 2. Observe the readings as the solution flows into the cell.
 - 3. When the reading on the display matches the value of the solution, 7 (+/- 0.2), record the reading.
 - 4. Expel the solution.
- F. Rinse the meter two to three times with RO water.
 - 1. Connect syringe to 14.0 mS/cm conductivity solution, draw a sample and compare the value on the meter to the bottle.
 - 2. The display should match the value of the solution 14 (+/- 0.2).
 - 3. Record the reading on DOC-3704 – Phoenix Meter Verification Calibration Log.
- G. If the pH and the conductivity both match, verification is accepted.
 - 1. Calibration is not needed at this time.
 - 2. Rinse the meter again with RO water two to three times.
 - 3. If the pH and the conductivity do not both match, proceed with the calibration of the meter, Level One.
- H. Utilizing a 1% bleach solution fill syringe to 10mL.
 - 1. Allow to dwell for 10 minutes.
 - 2. After the ten minute dwell time, expel the bleach solution; rinse well two to three times with RO water.
 - 3. This can be completed at any point during operational hours on each dialysis treatment day.

II. Testing Conductivity and pH of Final Dialysate

- A. Final dialysate conductivity and pH shall be tested on each machine prior to the start of each hemodialysis treatment.
- B. Press and release the “Mode” button to turn the meter on.
- C. Insert male slip lure adaptor into the sample port on the dialysis machine to obtain dialysate or obtain from a sample cup of dialysate from the dialysis machine. Be sure to insert the adapter far enough into the machine sample port to depress the spring plate if obtaining directly from the dialysis machine.
- D. Holding the syringe end up, draw 10 cc liquid through the cell. Liquid should be flowing while measurement is taken.

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- E. When no air bubbles are present and the reading stabilizes, press and release the “Mode” switch to hold the readings on the display.
 - 1. A “Hold” symbol will appear on the display.
 - 2. Discard the used solution.
 - 3. Never inject the solution back into the flow path.
- F. Press “Mode” button again to deactivate the hold feature.
- G. Document pH reading and conductivity on the DOC-3423 – Hemodialysis Treatment.
- H. The desired pH range is 6.9-7.6.
 - 1. The desired conductivity result on the Phoenix Meter is +/- 0.5 of the dialysis machine displayed conductivity reading.
 - 2. The dialysis machine acceptable range is programmed by the biomedical technician based on the present dialysate bath.
- I. If both results are not within the desired range, retest again. If results continue to be outside of the desired range, perform calibration of the phoenix machine prior to using the hemodialysis machine.
- J. After the calibration is complete, if the result is still outside of the normal range, remove the dialysis machine from usage and contact the biomedical technician for consultation.
- K. Rinse the cell and syringe interior thoroughly with RO water two to three times after each shift of inmate patients to remove residual dialysate. The meter will turn off automatically three minutes after final use.

III. Testing Mixed Bicarbonate For Conductivity

- A. Each batch of mixed bicarbonate shall either be tested for specific gravity with a hydrometer or tested for conductivity with the Phoenix Meter. The result shall be documented on the DOC-3522 – Hemodialysis Daily Bicarb Conductivity Log.
- B. Turn on meter by pressing the “Mode” button.
- C. Rinse two to three times with RO water.
- D. Complete the verification procedure with 100 ms Conductivity Solution. Rinse out solution with RO water two to three times.
- E. Draw sample of bicarbonate into the meter using the flexible tubing.
- F. Document the result on the bicarbonate flow sheet.

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1. The result can vary based on the brand and series of bicarbonate dry mix utilized.
 2. With the NaturaLyte 4000 series 45X brand results should read at 50 +/- 2 mS/ cm.
 3. After obtaining the reading, meter and tubing must be rinsed with RO water.
- G. If result is not at target value, retest and document.
1. Do not use bicarbonate that is not the desired value.
 2. Contact the bicarbonate supplier for further consultation.
- H. Premixed bicarbonate may be used, if time necessitates, as a replacement while mixing a new batch of bicarbonate and retesting.
- IV. Calibration of the Phoenix Meter**
- A. Level one and two calibration of the Phoenix meter shall be done as needed by trained dialysis staff per the Mesa Lab Phoenix Calibration Guide.
- B. Level one calibration should be completed if the verification check fails or suspicious readings exist.
1. Level one covers the mid-range conductivity and pH functions.
 2. Use a conductivity standard solution similar to the solutions being measured in the hemodialysis unit for calibration.
 3. Calibration involves actually changing the settings stored in the memory of the Phoenix.
- V. Storage of Tri-Station Solutions, Containers and Syringe**
- A. Conductivity solutions are stable for 30 days once opened, one year unopened. Date and initial solution when opening it.
- B. PH solutions are stable for 90 days once opened, two years unopened. Date and initial solution when opening it.
- C. Empty, rinse and refill RO and bleach bottle daily.
- D. Never pull plunger of the dry control syringe to enhance longevity of the syringe. Doing so may score the barrel or damage the Teflon syringe tip.
- VI. Overnight Storage and Cleaning the Exterior Surface of the Phoenix Meter and Containers**
- A. At the end of the dialysis day, clean and rinse the meter thoroughly by filling the syringe and expelling NEO-CARE slowly three times.
- B. After the third time, expel the NEO-CARE from the meter, draw the syringe back halfway pulling air into the cell and cap the sample port. The meter can

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then be stored like this, with the port capped to prevent the residual NEO-CARE in the cell and syringe from drying out.

- C. Store your instrument away from extreme temperatures. Do not allow dialysate, conductivity standard solution, or bleach to remain in the cell overnight.
- D. Using a damp cloth, wipe the exterior of the instrument daily, including the ports and syringe with a soap solution. Rinse thoroughly with water and dry with a soft cloth.
- E. Wash the bleach and rinse bottles, caps, check valves, tubing and Tri-Station exterior with diluted Neo-Care (follow instructions on bottle) or diluted bleach solution (1% bleach solution comprised of : 1 part household bleach and 99 parts RO water).
 - 1. Do not use alcohol or solvent-based cleaners.
 - 2. Rinse thoroughly and allow to dry.

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

_____ **Date Signed:** _____
Paul Bekx, MD, Medical Director

_____ **Date Signed:** _____
Mary Muse, Nursing Director

Administrator's Approval: _____ **Date Signed:** _____
Jim Schwochert, Administrator

DIVISION OF ADULT INSTITUTIONS FACILITY IMPLEMENTATION PROCEDURES

Facility: Name		
Original Effective Date:	DAI Policy Number: 500.31.35	Page 6 of 6
New Effective Date: 00/00/00	Supersedes Number:	Dated:
Chapter: 500 Health Services		
Subject: Phoenix Meter		
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.
 - 1.
 - a.
 - B.
 - C.
- II.
 - A.
 - B.
 - C.