

Surveying Your Water Treatment System

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A primary focus in almost every Medicare survey is the water treatment system. To check the safety of your water treatment system, the surveyor will inspect the actual equipment, review logs and reports, and talk to staff members who are responsible for the monitoring and operation of the system.

Inspection of the equipment: The surveyor inspects the equipment, checking for any issues that could affect patient safety. Generally, the minimum components would be a carbon tank (some states require two tanks in series) and a reverse osmosis (RO) system. For smaller units, a deionization (DI) system might substitute for the RO. Whether the system is a RO or DI, the quality of the product water should be continuously monitored, with visual and audible alarms to warn the operator if the quality drops below set points. While inspecting the equipment, the surveyor will ask the responsible staff member questions to determine whether that person knows enough about the system to operate it safely. Here are some typical questions:

- Why do you have this component in your system?
- How do you know if this component is working as expected?
- What would you do if this component was not functioning? Can you bypass this piece of equipment and still dialyze patients?

Review of logs and reports: The surveyor will review start-up logs, operational logs, and reports of water testing. These logs must be maintained as a permanent part of the medical record: use ink, not pencil, and avoid correction fluid. The start-up log entries should be completed before patient treatment is initiated. The medical director and chief technician should determine the minimum that must be checked before patient treatment is started. Some facilities have the nursing staff start the water treatment system, rather than scheduling a member of the bio-technical staff to come in early. If this is true for

your facility, be sure the nursing staff responsible for start-up has been trained, and that there is evidence on file that they are competent to do these tasks. Questions the surveyor considers in looking at start-up logs include:

- Are entries complete each day of operation?
- Do entries demonstrate that each component of the system was functioning within the facility's set parameters? If not, is corrective action taken and documented?
- Are entries timed?
- Is the person making the entry identified?



Protecting patients' blood from exposure to chlorine/chloramine in the dialysate is critical to their safety. You can expect the surveyor to observe the actual testing as well as review the logs recording these tests. Testing must be done daily before treatments begin. Several states require testing before each shift of patients. Testing must be done when the equipment is running: you want to test water that has the same contact time with the carbon as the minimum expected, not water that has been sitting in the tank for hours. Many facilities find it simpler to test for total chlorine and accept only results of <0.1 mg/l. The test for total chlorine will include chloramines. Accepting only results lower than the allowable level for chloramine will provide water that is safe for patient treatment without requiring two tests and calculation to determine both the chlorine and chloramine levels.

The surveyor will also review the water chemical analysis and culture reports. Recently the Association for the Advancement of Medical Instrumentation (AAMI) issued a revision of their guidance

document for water for hemodialysis. This new document (RD62) has not yet been adopted as regulation by any state or the federal government, so these more stringent guidelines are not required at this point. References in this article refer to the previous AAMI standards for water. Remember that state and federal rules are considered to be minimum standards. You can always do more than the minimum, and you would probably be wise to move on to the new AAMI recommendations, so that you will be ready when state and the federal rules are updated to reflect them.

Water analysis is required at least annually, with some states requiring more frequent testing. The sample should be taken from a point after all treatment components. If the results are not within AAMI standards, corrective action should be taken and the analysis repeated. The medical director is ultimately responsible for the water treatment. There should be some way of demonstrating that he or she is aware of the results of the test. One way of doing that is to have the medical director sign the reports, or document their attendance at quality management meetings where the water treatment issues were discussed. Just remember, a serious water issue should be brought to the attention of the medical director promptly—don't wait until the next scheduled QA meeting.

Water cultures should be collected at least monthly from a sufficient number of sites to assure that water is safe for patient treatment throughout the delivery system. At a minimum, these sites would include the start and end of your water distribution system, and the water supply to any reprocessing area in your facility. If the results are not within AAMI standards, the medical director should be notified, corrective action taken and the cultures repeated. Currently, a dialysis facility that reprocesses dialyzers can monitor the bacterial or endotoxin levels of their product water. Limulus Amebocyte Lysate (LAL) testing for endotoxins is recommended, especially if high flux dialysis membranes are reprocessed.

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Talking to the person doing the work:

The most important "component" of your water treatment system is the staff member assigned to be responsible for its daily operations. The surveyor's goal is to verify that these individuals have sufficient understanding of the risks and hazards of water to operate your systems safely. We have to ask questions to do this, and get their best answer! Here is a list of sample questions:

- What is the purpose of this component?
- Where does the water go next?
- What happens if this component fails?
- What are the limits you would accept for this reading?
- Where do you take test samples?
- What training did you receive for this job?
- Who starts the system if you're not here—what about on Saturday?

- Who do you notify if there is a problem and what would make you call?

Examples of findings, from inspection, observation and interview, that demonstrated non-compliance outside acceptable parameters:

- assigning responsibility for operation of the system to an individual who has not had sufficient training to operate the system safely
- not testing chlorine/chloramine at least daily
- not monitoring the quality of the product water
- not taking action when the data collected are outside the acceptable parameters.

Remember, we all want the same outcome: safe water provided for patient treatment and dialyzer reprocessing. **R**