Medical Environment Update

A SERVICE FOR HEALTHCARE PROVIDERS RESPONSIBLE FOR OCCUPATIONAL SAFETY AND HEALTH COMPLIANCE

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Using steam to get clean: Operating your facility's autoclave

Recent standards assist with maintenance and proper protocols for sterilizers

When patients arrive at your facility, the one thing they are certain to expect is cleanliness, especially when it comes to equipment.

Whether you are a renowned operating room or a small ambulatory care facility, proper use of your steam sterilization machine is imperative to quality patient care and worker safety.

For many healthcare workers, particularly in smaller facilities, autoclave protocols have simply been passed down through generations of employees, says **Peggy Prinz-Luebbert, MS, MT(ASCP), CIC, CHSP,** owner and consultant at Healthcare Interventions, Inc., in Omaha, NE.

"The one thing I see commonly is that the sterilizers have been around since God created them, and no one has the original paperwork that came with it as far as the instructions and troubleshooting and so forth," Luebbert says. "The person responsible for that was taught by that person, who was taught by that person, who was taught by that person. So by the time I start interviewing them to see how it's working, they just say, 'Well, that's how I was told to do it.' "

Because there are so many brands, Luebbert's No. 1 recommendation is to contact the manufacturer and ask for the instructions that come with the machine so you have a reference for specific parameters.

Fortunately, there are some general rules to follow.

This year, the Association for the Advancement of Medical Instrumentation (AAMI) published an amendment to modify its 2006 steam sterilizations standards (ST79). Adopted by the American National Standards Institute (ANSI) and referenced by the recently released CDC *Guideline for Disinfection and Sterilization in Healthcare Facilities* (see "CDC disinfection guideline issued" on p. 7), these standards are suggestions that will help you avoid improper maintenance and use of your facility's autoclave.

Write it down

As with most preventive measures in healthcare, a written policy helps alleviate confusion, especially with a machine that only a few people in the facility know how to use.

ANSI/AAMI ST79 states that "policies and procedures provide guidelines of maintaining control and determining > p. 2

INSIDE THIS ISSUE:

OSHA blog connects you to peers on compliance and training

Have you had a chance to check out HCPro's **OSHA Healthcare Advisor?** It's a new online resource to help you connect with fellow safety officers in healthcare facilities.

Popular posts have included:

- When safety battles fashion over bloodborne pathogens
- Where does the iPod fit into workplace infection control?
- OSHA Obama-gram

www.oshahealthcareadvisor.com

The Web site also has sample policies and downloadable tools for training staff members, and there is always the opportunity to lend your voice to safety matters that are important to you. Look for the BLOG icon throughout this newsletter, which signals additional resources found at **OSHA Healthcare Advisor.**

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methods of improving processes and products."

Perhaps more importantly, it puts procedures specific to the machine in writing so there is no confusion. Everything from turning it on and off to the actual sterilization process should be recorded, along with how to use your biological indicators, maintenance, troubleshooting, contact numbers, and where the manufacturer's instructions are kept or maintained.

Instructions are sometimes kept on one person's hard drive, and when that person leaves, nobody has access to them, says Luebbert. Therefore, a hard copy should be easily accessible.

Avoiding human error

One of the major contributions to a failed sterilization process is human error, which thorough and comprehensive training can alleviate. At least one employee needs to be up to date on maintenance requirements and standard procedures. Consistency and repetition are crucial in the sterilization process, and both can be implemented during employee training.

It's not enough simply to talk through the process, says **Rose Seavey,** president and CEO of Seavey Healthcare Consulting, Inc., in Arvada, CO. Make employees demonstrate procedures to avoid misconceptions.

"They need be competent," says Seavey. "The training can't just be put this in and shut the door. That's why I recommend return demonstration, where the trainer is watching them do it."

For smaller physician or dental facilities, training includes knowing the ANSI/AAMI ST79 standard and any state department of health standards, which can easily be overlooked.

"I think a lot of small facilities—especially those who are independent—don't even realize there is such a thing," says Luebbert. "So what I tell them to do is contact the hospital they are affiliated with or that they work the most with and talk to the person in charge of sterilization there, and they can lead them in the right direction."

Luebbert also suggests visiting the 3M Web site called Sterile U *(http://solutions.3m.com/wps/portal/3M/en_US/sterilization).* This site requires free registration and provides a variety of training tools and updates specifically for ST79, including tutorials.

What is your steam quality?

The steam you are using in your sterilizer needs to be high-quality, says **Thomas K. "Chip" Moore,** the "Sterilization Answer Man" *(www.sterilization-answer-man.com)* in Pittsford, NY.

Moore fields questions from healthcare professionals regarding all things sterilization. High-quality steam is defined as 97% dry vapor with 3% moisture. Any more moisture can affect sterilization.

Larger facilities, such as hospitals and many ambulatory care centers, typically utilize large steam sterilizers that use a steam distribution system that can sometimes develop traps or drip legs, which cool the steam and increase the moisture level. This leaves you with what is called a "wet pack."

Because of the added moisture, wet packs are not completely sterilized. Therefore, maintenance of the distribution system, often by an outside source, is crucial to the sterilization process.

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Occupational safety and health *continued*

Alternatively, a tabletop sterilizer generates its own steam from a chamber. In this case, Moore recommends using distilled water rather than tap to ensure high-quality steam.

"If you don't clean it and you are using tap water, it'll build up crud because you are heating that water," Moore says. "Just like if you had a pot on a stove, and if you never cleaned it, you'd probably see some calcium deposits grow inside your pan. The same thing applies to the sterilizer."

Passing the test

Frequent and consistent testing is perhaps the most important step in the sterilization process. Biological indicators (BI) and chemical indicators (CI) are the only real assurance that the equipment has been sterilized.

AAMI standards recommend using a BI at least weekly, but preferably every day the sterilizer is used.

"The goal should be to test on every load," Seavey says. "And the reason for that is if you do it weekly and a test turns up negative, you are going to have to recall all of those items from all of those loads, and probably some of those have already been used."

Luebbert strongly suggests using a rapid readout BI. Sending tests can delay results up to one week. If they come back positive, you are facing multiple recalls and the chance of a postoperative infection.

Whereas a BI will test each load, a CI will test each pack, making it easier to single out individual packs that were not sterilized. Use both tests each time for maximum assurance.

A positive test

With all the nuances of monitoring steam sterilization, a positive test is bound to pop up at some point. You should first quarantine any equipment in that load and recall any prior equipment up to the last negative test. If you have kept meticulous documentation on each load, this process should be simple.

Although a BI will sometimes turn up incorrect, it's better to treat every positive test as a true risk, Luebbert says. "Many times, a positive biological potentially could be a false positive," she says. "There may be another parameter that was off, but needless to say, you still need to resterilize that equipment and get a negative biological result just to be sure."

Also, if any potentially nonsterile equipment has been used, you need to alert the doctor immediately so he or she can monitor or treat the affected patient. In the meantime, contact the manufacturer for all autoclave repairs.

Maintain it like your car

Moore likens the maintenance of an autoclave to the car you drive. If you neglect it, it will eventually break down.

But, like your car, if you follow the manufacturer's instructions and perform regular maintenance, you'll extend the life of the autoclave and run into fewer problems.

"I just had a timing belt fixed on my car not long ago at the right mileage on the car," Moore says. "Steam is fairly corrosive, so the parts it comes in contact with [in the autoclave]—like solenoid valves and things—they need some maintenance. If you follow the manufacturer's instructions on things, whether it's a tabletop or a larger one, you'll get a much better performance." ■

When to run a BI test on your steam sterilizer

According to the Association for the Advancement of Medical Instrumentation standards, there are a few key situations in which conventional biological indicators (BI) should be used to monitor steam sterilization cycles:

- Installation of a new sterilizer
- After relocation of an existing sterilizer
- When a sterilizer malfunctions
- After a positive biological test
- After major repairs, rebuilds, or upgrades
- During periodic quality assurance testing

Although Class 5, enzyme-only, early readout indicators can be used for daily testing, they should not be used in the above situations. Since they do not contain spores, enzyme-only indicators cannot measure the lethality of a sterilization cycle that a BI can.