BRIGHT IDEAS

Hospital Takes Hard Look at Immediate-Use Steam Sterilization

Joseph Sheffer

By increasing the rigor of its policies surrounding immediate-use steam sterilization (IUSS), Aultman Hospital improved patient safety and lowered the risk of surgical site infection. Headed by Joanne Rhodes, a registered nurse and director of the Sterile Processing Department (SPD) at the hospital, the initiative by the SPD and operating room (OR) teams drastically reduced the rate of open IUSS and moved the sterilization process out of the OR and into the SPD, therefore strengthening the hospital’s efforts to prevent infections.

Challenge

When items were dropped or needed to be turned around quickly for the next case, the circulating nurse or scrub technician staff in Aultman’s OR often were washing items in utility rooms. Although this “flash sterilization” cleaning process, said Rhodes, has been around years, it does not necessarily involve meticulous attention to detail, performed according to manufacturer instructions. “Items were being taken into the adjacent utility room, placed in a water-filled sink or bucket, scrubbed with a brush using whatever soap was available, then placed in the autoclave and sterilized using an open gravity load process. When the open load was finished, the staff would remove the items using sterile towels and bring them back to the OR for use on the next patient case,” she explained.

Questions posed by the IUSS team highlighted the variable and unsystematic nature of this flash sterilization process: “After staff placed the item in the sink, how would they go about washing it? Would they rinse it? Would they put it in dish soap instead of an enzymatic solution? Did they have the proper tools to avoid contamination while cleaning or when removing items from the autoclave? Did proper air exchanges exist in the room in which items were being cleaned?”

In fact, SPD found that OR staff did not have the proper tools and that items were not being cleaned in the same exacting, manufacturer-recommended manner as that done in the SPD.

At a Glance

SUBJECT
Sterile Processing Department, Aultman Hospital

LOCATION
Canton, OH

SIZE
806 beds

STAFF
Key team members in the Sterile Processing Department
Open Versus Closed Immediate-Use Steam Sterilization

Open immediate-use steam sterilization (IUSS) refers to an antiquated process of sterilization in which a device is put in a sterilizing pan, then placed in an autoclave and run on a gravity load. Those items are not protected or covered by a container, hence the term “open.” For closed IUSS, the device is placed in an enclosed container that has indicators and locks. The container allows the device to be sterilized in the autoclave, then removed without contamination. Closed is better than open IUSS because it involves less risk of infection. However, IUSS itself involves an inherent risk of infection because items are sterilized via a shortened abbreviated load—they are not completed by terminal sterilization.1

Depending on volume in the operating room, IUSS may be necessary to improve turnaround time for sterilizing devices. Closed and open IUSS give clinical staff options when sterilized items are needed urgently.

case, deserves the same standard of care with a sterile terminal item that is done according to manufacturer instructions,” she added.2

In addition, from about 2006 to 2009, Aultman Hospital was using a manual sterilization process based on a turnover or pick list. According to that practice, SPD would build the carts for the day, and when the OR staff ran out of instruments, they would note them in the turnover list. Then, when items were returned to the SPD, priority items from the turnover list would be fast tracked through the system.

“Over time, we found that this manual process was inefficient and not in line with best practices,” said Rhodes. “We weren’t sterilizing everything by the end of the day, only items on the turnover list. This forced us to look at staff productivity and processing volumes on a whole. The manual process of tracking trays is very time consuming and requires constant communication between the OR and SPD. At the end of the day, when all instrument trays were returned to the SPD, it looked like a war zone with items everywhere. It was difficult to find what you needed to prioritize when OR sent down the items all mixed up in the cart. First you have to find it, put it through rigorous cleaning practices, and be sure it is complete and correct before it can pass inspection and be considered sterile. Then it, had to be sterilized in a timely manner before the case was scheduled.”

Solution

A new process clearly was needed. “At the end of day, everything should be sterilized,” said Rhodes. However, that meant reshuffling the amount of staff to meet the increased instrument volume.

Aultman’s instrument tracking system (Censitrac) was vital to this process, allowing the SPD to know where trays were located at any given moment. “Surgery volume” reports pulled from the system gave the team data on what items were needed within a specific time frame. Rhodes explained that the tracking system interfaces with the OR scheduler (SurgiNet) and turnover list preference cards.

“That allowed us to consistently know what tray moved to the front of the line. Prioritizing the trays according to scheduled case times reduces IUSS by showing staff which tray should be completed first. Now, we do not run reports because the system tells you what to prioritize,” she said.

In 2009, SPD began taking a closer look at infection control and rates of surgical site infections. Rhodes and her team scoured literature from AAMI, the Association of periOperative Registered Nurses, the Centers for Disease Control and Prevention (CDC), and The Joint Commission to determine a clear process for IUSS.

Also, in 2010, Aultman’s electronic medical record (EMR) system was upgraded. In conjunction with the medical device tracking system, the EMR system allowed for computer-based instrument tracking, and during the succeeding years, the ability of hospital staff to navigate the tracking system improved steadily.

Another major shift came when the hospital decided to move away from open IUSS to a closed container system. “Even though open IUSS is not strictly disallowed, it’s not the best choice for optimal patient safety,” explained Rhodes.

A sterilization container system (Aesculap) that had been validated for IUSS was introduced at the hospital in 2012, and with the support of the OR leadership, SPD began revamping its process. Rhodes described how the containers for IUSS have clear lids, allowing them to be easily differentiated from regular containers—a visual Kanban, so to speak,” she said. Rhodes added that the items in these containers have a “shelf life” of 24 hours, after which they must be sterilized again.

The closed-container system also allows items that aren’t used in one area of the OR to be easily relocated to another area. Such a practice would not be allowed for items cleaned using open IUSS, because open items can only be taken into sterile rooms. They cannot be transported down hallways, as that would result in contamination.2

“Moving from an open to a closed IUSS system improved our efficiency greatly, as it drastically reduced the amount of rework,” said Rhodes.

The shift away from open IUSS required
buy-in from OR staff—and the included requisite growing pains that go with it. “At first, they fought the change tooth and nail,” said Rhodes. “The primary concern of OR staff was that much-needed items would not be returned in a timely fashion.”

To get everyone on board, SPD conducted an education program that included demonstrating to OR staff how the clear-lid containers functioned. Each employee was required to sign off on the education program.

Selling the timing aspect was made doubly difficult by the fact that flash cleaning in the OR setting could be done in about 10 minutes—a time that SPD-based IUSS could not hope to rival.

“That was a huge struggle for them,” said Rhodes. “I was asking them to accept an average turnaround time of about 50 minutes to an hour, whereas their ‘open flash’ approach only took 10 minutes.”

Rhodes therefore set out to convince OR staff that allowed it would take more time, enough time did in fact exist: “The room in the OR has to be turned over, which takes about 40 minutes. Then, it can take another 30 minutes for the patient to be brought into the OR, put to sleep, positioned, etc. So, given all these factors, we have more than enough time to deliver the sterilized items.

And, of course, we also are helping to ensure patient safety by giving them items that have been sterilized according to manufacturer instructions—this is a major consideration that cannot be overlooked.”

“Once they started trusting the process, it actually alleviated a lot of burden,” added Rhodes.

These sentiments were backed by Mary Beth O’Connor, MSN, RN, CNOR, the magnet program director at Aultman. “An essential part of the education process for OR staff was to address the elephant in the room, which was the existing OR cultural practices that focused on speed of instrument sterilization over best practice. We had to address the evidence and talk about why that was not ideal for the patient. Once we detailed how the new process could actually deliver instruments back to the OR in a manner that was safer and more convenient, staff began to support and accept the changes,” she said.

“I found the strongest motivator for the staff was reinforcement of why the change was best for the patient,” said Cindy Montgomery, BSN, RN, CNOR, who works as a nurse in Aultman’s OR. “As nurses, patient care is what we do,” she added.

Results
Rhodes said that in 2008, the main OR at Aultman Hospital ran approximately 330 open IUSS loads during a 28-day period. Since making the move to closed IUSS, that number has dropped to almost nil, with Rhodes estimating that the main hospital has only done two open loads in the past two years (Figure 1).

Closed IUSS numbers, in fact, have been reduced substantially as well. “When we first started tracking closed loads in 2011–12, we were at about 180 per period. Now, we’re down to about 25. So, the overall number of IUSS loads have decreased exponentially in the main part of the OR.”
Conclusion

Years ago, said Rhodes, it was common practice to have sterilization equipment in close proximity to the OR. Times have changed.

“In today’s large hospital setting, with the ever-increasing volume of patient cases and related need for having an ample supply of sterile, ready-to-use medical equipment, it’s becoming less and less practical to have sterile processing in close proximity to surgical suites,” said Rhodes. “Luckily, we also have a lot of great research on sterilization best practices and technology such as tracking software to help us streamline these complex processes. Improving efficiency is critically important, but it can never come at the expense of patient safety. Our revamped policies related to IUSS have helped us to achieve sterilization best practices while maximizing efficiency.”

 References

