Automating sterile processing for safety, efficiency

Lean management and automation have come together to create a sterile processing department (SPD) that can efficiently process the 700 to 1,000 instrument sets a day needed to support a caseload that is primarily orthopedic.

The SPD at New England Baptist Hospital in Boston is one of the few in the US to be fully automated. The hospital performs 15,000 surgical cases a year, with 80% of those in orthopedics.

Because of the department’s capacity and efficiency, an entire total hip or knee setup can be turned around and back to the OR in 3 1/2 to 4 1/2 hours, says Mark Duro, CRCST, FCS, manager of the Central Sterile Processing Department.

“We’ve removed the human element from many of our functions, but we still have safeguards,” Duro says.

Harnessing technology

Duro, who has a keen interest in automation, says he’s always on the lookout for technology that would cut waste and streamline the department’s operations. That was particularly true during a complete renovation 3 years ago. With 20 years of experience in sterile processing, he helped lead the team that planned the new department, researching automated systems and going on site visits.

Because of the automation, the workflow is different than in traditional SPDs, Duro explains. Each tech builds a sterilizer load at his or her workstation. “Our techs don’t move. Everyone is assembling kits.

“The only time they leave is to push a whole cart of trays over to the sterilization area,” he notes.

There, the assigned tech scans the trays on the cart and parks the cart in front of the sterilizer, where it is pulled in automatically after being identified by a photo sensor. After the cycle is finished, the cart is automatically ejected into the storage area where techs put the sets away.

Here are features of the automated system.

An automated SPD

The department is organized in 3 zones—decontamination, prep and pack, and sterilization—as recommended by the Association for the Advancement of Medical Instrumentation (AAMI).

• When dirty case carts return from the OR, they are placed on a rotary conveyor system, which Duro says is common in Europe. The conveyor is integrated with the washer-disinfectors and tied into the instrument tracking system. Settings are automated.

• To avoid cross-contamination, only a pass-through window—but no door—connects the decontamination area with the clean areas.

• The instrument tracking system is also integrated with the sterilizers and with the biological indicator (BI) incubator. If any parameter falls outside the prescribed limits, the system stops and doesn’t proceed until the problem is resolved. An ex-
ample is a set that requires an extended cycle or has an unusual parameter.

- A bank of lights signals when action is needed, saving phone calls and interruptions. A red light flashes when the elevator arrives from the OR. A blue light means the cart washer is ready to be unloaded. A green light means a sterilizer has automatically unloaded. The lights are triggered by photo sensors.
- All instrument sets are barcoded. To document which sets are in a load, all of the sets are scanned before they go into the sterilizer—no handwritten documentation is required.
- Sterilizers are on an automated pass-through. When a cart of sets is parked in front of the sterilizer, the tracking system signals the sterilizer. A door to the sterilizer pass-through automatically opens, the cart is pulled in, and the cycle starts. At the end of the cycle, the cart is unloaded automatically, tripping another photo sensor that triggers the green signal light.
- The sterilizers, once permission is given, connect to the instrument tracking system and report the load’s parameters. The BI incubator, also integrated with the tracking system, prompts the staff to gather the appropriate data from the BI.

“If any of our systems, such as a washer or sterilizer, don’t meet the parameters, the system does not allow the process to go forward,” Duro says. If a sterilizer’s temperature drops from the intended 270°F to 269.9°F, for example, the system will only let the cart go back into the processing area; it will not go forward into storage.

**Getting the resources**

Duro believes the hospital’s investment in automation for sterile processing reflects its view that the department is essential for safe care.

“To make sure we are doing the best job possible and to make sure our surgeons have the best tools they can have, it’s almost a slam dunk to see that everything starts with processing,” he says.

—Pat Patterson

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*Have a question on the OR revenue cycle?*

Keith Siddel will respond to questions in the column. Send your questions to editor@ormanager.com. You can also reach Siddel at ksiddel@hrmlc.com.