Identifying Common Cleaning Challenges Associated with Washer-Disinfectors and Loaned Instrument Sets

BY ROBERT WILLIAMS, MMHC, BA, CSPDT, SENIOR CLINICAL EDUCATION SPECIALIST - STERIS CORPORATION AND ARTHUR HENDERSON, RN, BA, CNOR, CRCST, GTS, SENIOR CLINICAL EDUCATION SPECIALIST - STERIS CORPORATION

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More than ever, Sterile Processing (SP) professionals are having to work faster, turn instruments around quicker, and complete sterilization sooner to support the Surgical Services schedule. Instrument cleaning is at the core of this process. Clean devices are critical to patient safety. One dirty device can yield a catastrophic infection, cause blindness, or even lead to death. It is critical that SP supervisors/managers pay close attention to even the smallest details that, if left undone, can cause big problems.

Objective 1: Identify common loading errors of washer-disinfectors

Advancements in water and energy consumption, shorter cycle times, water filtration, and targeted chemistry formulations have improved automated washing. Despite these advancements, one fundamental truth holds true: soil removal only happens when water and detergent have contact with the soil for enough time to remove it. Without effective contact, residual soil remains and potentially interferes with decontamination and sterilization of the device. Often, SP professionals blindly load washer-disinfector racks without thinking about this simple truth. Supervisors should regularly audit washer-disinfector practices across all staff members to prevent common errors.

Overloading

Overloading happens when too many devices are placed into the washer-disinfector at one time. In a rush to clean devices, technicians may ignore instructions for use (IFU) and overload washers. The result is dirty devices that require reprocessing. Cleaning can
only effectively result when all IFU are followed. Signs of washer-disinfector overloading include:
- Multiple dirty devices found in the preparation and packaging area;
- Finding hinged instruments processed in a closed position; and
- Seeing multiple instruments placed on top of each other within trays.

Overloading must always be avoided. Employees should be instructed regarding proper instrument placement. Stringers and other tools that hold instruments in an open position should be provided. Finally, employees should be taught about the importance of proper contact with detergent and water.

Shadowing
Shadowing within a washer-disinfector occurs when one device comes between the detergent or water and another instrument. A basin placed over instruments blocks the detergent dispensed from the spray arm above, for example. Instruments within the shadow do not receive proper contact with detergent or water, which results in them remaining dirty at the end of the cycle.

Signs of shadowing include many of the same symptoms of overloading, in part due to the shadows created within overloaded trays; however, shadowing is more likely to occur throughout the day, whereas overloading tends to occur at peak processing times.

Employees must be aware of the washer rack’s spray direction to allow optimal device placement to prevent shadowing. Operating manuals and IFU should be available for the washer-disinfector and racks used at the facility. Consider using reference guides for proper loading.

Containers
Container systems are prone to shadowing, especially when using small washer-disinfectors. Often, facilities use general purpose baskets for container processing. The limited number of containers that fit in the washer leads technicians to place lids beneath or between the bases and baskets. Technicians often place bases, baskets and lids in ways that prevent detergent or water from reaching all surfaces, which results in poor drainage.

Signs of container shadowing include:
- Residual soil;
- Water deposit rings; and
- Excess moisture on or in bases, trays and lids following the cycle.

Employees should be made aware of proper container positioning. Racks or rack inserts designed to hold containers and promote fluid contact to all surfaces should be obtained.

Lumens
The cleaning process begins at the sink for lumened instruments and often ends in the washer-disinfector. Ensure all lumens are cleaned using a proper brush, followed by sonification, as appropriate, for further cleaning by cavitation. Some facilities choose to process lumened instruments through the washer-disinfector for thermal disinfection; however, this poses a challenge. Lumens can hold fluid, especially when placed horizontally in a washer tray. If this occurs, trapped detergents become potential hazards when transferred to a patient during a subsequent procedure.

SP employees must load lumened devices in a way that allows water and detergent to flow through the lumen and provide proper drainage. Specialized positioning inserts or lumen flow port connectors may be necessary. Identify lumened devices suitable for processing through the washer-disinfector and obtain the correct racks or rack inserts needed to process them. Employees should be trained on proper positioning, use of rack inserts, and instructions for rack connectors.

Objective 2: Pinpoint cleaning challenges of loaned instrument sets
A loaned instrument set can present challenges to the Sterile Processing department (SPD). Does the facility have the right tools to clean the instruments? Will the facility’s washer-disinfector cycle meet the new IFU? Did the previous facility process the set correctly? Any such questions that can’t be clearly answered can pose a risk to patient safety.

With so much risk, one might question why facilities need loaned instrument sets. Facilities borrow specialty instruments when needed from implant vendors. Loaned instrument sets reduce hospital spending by preventing the need to purchase, store and maintain limited use instruments. They allow facilities to stay abreast of latest trends and current surgical technologies. They also allow facilities to expand their range of surgeries offered with less capital expense.1

Patient safety depends greatly on loaned instrument set processing. All loaned sets received, regardless of how they are wrapped or where they came from, should be considered contaminated at time of arrival, and sent to the SPD for immediate processing.3

Often, received loaned instrument sets are unwrapped, lids removed, and placed directly in the washer-disinfector. Sets with solid walls, multiple levels or limited drainage holes challenge the washer-disinfector’s cleaning ability. This is further complicated by placement of lids beneath bases, which hinders drainage. The overloading and shadowing created within the loaned instrument set results in unclean devices. Instrument sets improperly broken down will not be washed and disinfected adequately due to impeded flow in the washer-disinfector.2,3

Thus, failure to break down loaned instrument sets could potentially place a patient at risk from cross contamination from contaminants.

A second cleaning challenge associated with loaned instrument sets is the
possibility of the presence of residual soils from the previous facility. Residual soils, bioburden and/or bone hardens when a device is steam sterilized. Typical washer-disinfector cycles cannot remove hardened residual soils. It is critical that loaned instrument sets undergo inspection and proper manual cleaning prior to automated washing. Soaking of lumens and cannulated instruments may be necessary.²

Facilities must effectively manage loaned instrument sets to ensure proper processing. Policies and procedures should include a space for receipt and inspection, expected delivery time and all IFU necessary to clean the loaned instrument set. Managers should periodically audit the receipt and processing of loaned sets against the written policies and procedures.

**Objective 3: List telltale signs of washer-disinfector issues**

SP professionals must be able to read the telltale signs of equipment problems; this helps them proactively respond before a failure actually occurs. Washer-disinfectors use water impingement, temperature and specialized detergents to properly clean instruments. When one of these critical elements is missing, effective cleaning can’t happen. Fortunately, the following signs exist to warn of impending problems.

**Scaling and discoloration**

Scale is the buildup of mineral deposits on surfaces exposed to water. White scaling can accumulate on washer surfaces. Flakes collect in trays, clog drains and spray arms, or prevent spray arm movement. Several different minerals can be involved, with lime being the most common. Discoloring occurs when minerals bond to surfaces. Each mineral has a distinctive color. High iron content can leave surfaces stained red.

Scaling and discoloration are normal processes that occur over time on washer surfaces. Following the washer-disinfectors preventative descaling schedule will prevent formation; however, a sudden need to increase frequency or instrumentation showing signs of scaling and discoloration point to a problem of mineral control.

Minerals are controlled through a series of filters and water treatments at the facility. The more thoroughly treated the water, the less minerals are present. Washer-disinfectors use two types of water during processing. Fill water is the least treated water source. Fill water is used during cool water rinsing and as the basis for the cleaning solution within the washer-disinfector. Deionized (DI) and reverse osmosis (RO) water have less mineral content than fill water. Final rinse water uses DI or RO water. When these systems stop working, the water’s mineral content elevates above specification, allowing higher deposition in the washer-disinfector.

Water testing is the primary way to detect minerals. A testing schedule should be developed in conjunction with the water treatment equipment’s maintenance schedule. Samples should be drawn from the point of use. If mineral content remains high, increased descaling or a change to detergent with mineral ion controls may reduce the impact of water.

**Random rack cleaning issues**

Washer racks are designed to hold instrumentation and, in some cases, to flow lumens. Clogged spray arms and lumen ports prevent proper distribution of cleaning agents and water, which results in dirty devices. When multiple racks are used, detecting a clogged spray arm or lumen port can be difficult.

Signs of clogged spray arms include:

- Random washer-disinfector loads with dirty devices throughout the day;
- Slow or no rotation of spray arm during wash or rinse cycle phases;
- Consistent dirty instruments from one rack; and
- Little to no flow of solution from spray arm tip.

Spray arm tips should be checked daily for cleanliness and spray arms should be checked to ensure they spin freely. Spray arm tips should be regularly removed and inspected for debris. Employees should regularly watch washer-disinfectors during the wash cycle for signs of clogged spray arms. Any washer-disinfector cycle that shows sign of a clog should be immediately aborted and the equipment should be repaired, if necessary. Additionally, daily testing of washer disinfectors using a cleaning indicator will help capture spray arm clogs and other issues. Lastly, a means to document and track testing is necessary to ensure all racks are tested through the test rotation.

**Conclusion**

SP professionals routinely feel pressured to go faster and get more done. To help keep safety a top priority, it is essential that these employees are taught about common cleaning process failures associated with washer-disinfector usage, and then take proper steps to reduce those risks.

**REFERENCES**