Decontamination: The Essential First Step

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LEARNING OBJECTIVES

1. Learn common myths associated with instrument cleaning
2. Understand how chemical application affects decontamination outcomes
3. Review tips for using common mechanical cleaning equipment and learn quality assurance processes that can identify cleaning concerns

Effective device cleaning is the foundation for successful sterilization. Items that are not cleaned properly cannot be considered sterile—a fact that underscores why technicians assigned to the decontamination area must be knowledgeable about cleaning processes and instrument configurations and understand how to properly use the equipment, tools and chemicals with which they work. They must also diligently follow the instructions for use (IFU) for all devices, chemical agents, equipment, and other supplies.

Further, technicians must recognize their contribution to the larger scope of processing to help ensure items are managed safely, effectively and efficiently. They must also know about some of the processes and needs of the departments they serve. Decontamination technicians' knowledge, skill sets, and ability to prioritize their work positively affect the flow of instruments, helping ensure devices are on time and ready for patient use in the Operating Room (OR) and other procedural areas. Errors and avoidable interruptions can contribute to procedural delays and jeopardize patient safety.

Given the decontamination technician's critical role in process outcomes, they must possess deep knowledge about each process step. They need solid critical-thinking skills, keen attention to detail, and the integrity to always do the right thing, even when under pressure. Moreover, they should be adaptable and flexible as needed to ensure high-quality output and support.

Objective 1: Learn common myths associated with instrument cleaning

Several myths about Sterile Processing (SP) practices have endured over the years. Learning the truth behind these misconceptions is necessary to promote effective decontamination processes, prevent instrument damage instruments and improve patient safety.

One of the biggest and most egregious myths is that cleaning is a simple

process, and anyone can work in the decontamination area. In reality, instrument cleaning is often quite difficult and time-consuming, and the steps involved differ greatly from cleaning procedures one might follow at home. In the domestic setting, the definition of clean is usually defined by the homeowner or other inhabitants and may vary from home to home. In the healthcare facility, cleanliness has a specific definition, and all items must be cleaned to that standard. Cleaning is critical, and no sterilizer can compensate for poor cleaning technique.

Another myth is that most instruments that enter the decontamination area are not easily damaged because they are often made of metal. Rough or improper handling, however, can bend instruments, dull sharp edges, and damage the passivation layer. Inappropriate cleaning tools, such as harsh brushes or chemicals, can damage instruments. At times, the damage from instrument mishandling is not immediately evident, but the device's life can still be shortened. Instruments are precision devices that should be in good condition when they arrive for use in procedural areas, and they must be handled with care.

A third common misconception is that instruments are simple and not complex in their design. While some might have a simple configuration, many are quite complex, with lumens and other areas that are difficult to inspect, multiple parts, and fragile or sophisticated components. The cleaning instructions can also be quite complex.

Decontamination technicians must know the design features of the devices they clean, including how to disassemble (if appropriate) and inspect them. Equally important, they must understand and consistently apply each step in the cleaning instructions outlined in the device manufacturer's IFU.

Objective 2: Understand how chemical application affects decontamination outcomes

Selecting cleaning chemicals for decontamination can be intimidating. Different brand names, solution types, and labels with product ingredients can be daunting to SP technicians. Each chemical is designed for a specific purpose and may have very different IFU. A decontamination technician must always read the product label and follow the IFU for the instrument and the chemicals and tools used to clean it.

Chemicals must be diluted as indicated and applied as directed and at the required temperature. Exposure times must be carefully monitored. Failure to use chemistries at the required temperature, dilution and exposure time will result in inadequate outcomes. It is prudent to remember that if a chemical does not state that it will provide a specific outcome on its label, it will **not** provide that result. Also, if a chemical is not applied and used according to its IFU, it will not provide the level of cleaning or disinfection that its label states.

When using chemicals in the decontamination area, technicians must always follow all safety precautions, even for products one might not consider a safety risk. Decontamination chemicals can hurt the eyes, burn the skin, or cause other injuries. All chemicals can harm the user, but chemicals used in the decontamination area are often much more concentrated than cleaning chemicals used at home.

Objective 3: Review tips for using common mechanical cleaning equipment and learn quality assurance processes that can identify cleaning concerns

Mechanical cleaners improve cleaning consistency and reduce manual labor. Several types of cleaners are available for the decontamination area, and technicians should be trained to safely and properly operate each machine and cycle used. Items must be prepared according to each instrument's and mechanical cleaner's IFU. Loading a machine incorrectly or failing to prepare instruments for the process can result in cleaning process failures and other adverse outcomes. If a device has connections, such as flushing ports, they must be connected correctly to the machine for effective cleaning.

Mechanical cleaning equipment used in the decontamination area should be monitored to help ensure that it is performing as intended. A qualified professional should perform routine and preventive maintenance on each piece of equipment following a predetermined schedule.

How does the SP team know that cleaning processes have been effective? The last thing anyone wants is a patient infection caused by an unclean instrument or a procedural delay caused by residual soil found on a device at the point of use. Fortunately, several ways exist to help identify cleaning issues before instruments are placed in the sterilizer.

For many years, technicians relied on lighted magnification to inspect instruments for cleanliness. Lighted magnification is one part of inspection. Most departments now use magnifying lamps, computer-assisted magnification, and borescopes to inspect instruments. Borescopes enable technicians to see areas they could not see previously, such as lumens, internal components of handpieces and shavers, and other areas difficult or impossible to visualize with the naked eye. Borescopes entered instrument processing as a tool for use with flexible endoscopes and quickly became part of the inspection process

for many other instruments. Not only do borescopes help identify cleaning issues, but they can also identify device damage. Decontamination technicians can learn a lot from areas that were missed in the cleaning process and that information can help them improve their processes.

Cleaning verification testing also helps determine the cleanliness of decontaminated items and helps identify opportunities to improve the process. Adenosine triphosphate (ATP) is an enzyme in all living cells, and ATP testing can detect the amount of organic matter that remains after cleaning.

Conclusion

It is critical that all SP professionals know the truth about longstanding and potentially dangerous myths regarding the devices they handle, clean, and inspect, and the decontamination steps involved. The saying, "You can clean without sterilizing, but you can never sterilize without cleaning," underscores the critical importance of the decontamination process.

Proper tools, chemistries, equipment and IFU are essential parts of the process but only effective when applied by well-trained, skilled, quality-focused SP professionals. P

CRCST Self-Study Lesson Plan Quiz
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1. Items that are not cleaned properly:
   a. Will break more easily
   b. Will be made safe during the sterilization process
   c. Pose a patient safety risk
   d. Should be discarded

2. Instruments delayed in decontamination:
   a. Are caused by technician performance issues
   b. May result in procedural delays
   c. Typically require another round of cleaning
   d. Usually have lumens

3. The belief that surgical instruments are durable is:
   a. A fact
   b. A myth
   c. Supported by manufacturers and the U.S. Food and Drug Administration
   d. Not a consideration for decontamination technicians

4. Cleaning in the decontamination area:
   a. Is quite similar to how one cleans items at home
   b. Is best standardized so all instruments receive the same cleaning
   c. Is most important when instruments are visibly soiled
   d. Should prepare instruments for a future biocidal process (disinfection or sterilization)

5. Failure to use a chemical according to the product's instructions for use (IFU):
   a. Will result in inadequate outcomes
   b. Will usually cause injury to the employee and patient
   c. Is acceptable in certain situations
   d. Will void the mechanical cleaning equipment warranty and damage the devices' passivation layer

6. Chemical exposure times:
   a. Should be extended for heavily soiled items
   b. Should be authorized by the senior-most SP technician
   c. Must be carefully monitored
   d. Are not as crucial as chemical dilution

7. Mechanical cleaners:
   a. Require monitoring and maintenance
   b. Should only be operated by Sterile Processing (SP) leaders
   c. Should be inspected by SP technicians once a month
   d. Are not as effective as manual cleaning

8. Inspection and cleaning verification tools:
   a. Should only be used when a problem is identified
   b. Can help identify cleaning issues
   c. Are less critical in smaller facilities with lower procedural volume
   d. Are typically limited to endoscope inspection

9. Decontamination technicians must:
   a. Understand the design features of the devices they clean
   b. Reassemble each device before it leaves the decontamination area
   c. Know which steps in the IFU are most essential to follow
   d. Time each step in the cleaning process to prevent delays

10. Chemicals used in the decontamination area:
   a. Are universal
   b. Are most effective when they are high foaming
   c. Perform best in water temperatures above 190 degrees F
   d. None of the above

11. Cleaning verification testing helps determine the cleanliness of cleaned items but cannot identify opportunities to improve the process.
   a. True
   b. False

12. Which tool helps technicians inspect lumens?
   a. Borescope
   b. Fluorescent lights
   c. Forced air
   d. Mechanical washer alarms

13. Loading a mechanical washer incorrectly:
   a. Damages the washer chamber
   b. Is especially harmful to lumened devices
   c. Can result in failure of the cleaning process
   d. Is not a concern for newer washer models

14. Once a chemical is diluted per the product's IFU:
   a. There is no need for safety precautions
   b. Safety precautions must still be followed
   c. The product will be effective for 90 minutes
   d. It may not be effective

15. Which testing method can detect organic matter that remains after cleaning?
   a. Adenosine diphosphate
   b. Adenosine triphosphate
   c. Enzymatic foam
   d. Carbohydrate monomer

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