In CONTROL Fact Sheet

NUMBER 11

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Instrument Processing: Cleaning

Why is a central instrument processing area necessary?

Cleaning, disinfecting, and sterilizing instruments in a designated central processing area controls both quality and personnel safety. The instrument processing area should be divided physically or at a minimum, spatially, into distinct areas for receiving, cleaning, and decontamination; preparation and packaging; sterilization; and storage. This division is designed to contain contaminated items for cleaning, thus preventing contamination of the clean areas where packaging, sterilization and storage of sterile items occur. If physical separation of the areas is not achievable, separation of work areas using signs may be satisfactory if personnel processing instruments are trained in appropriate work practices to prevent contamination of clean areas.

Central Instrument Processing
Work Area Design

Cleaning
- Receiving, sorting, and cleaning reusable contaminated instruments and devices

Packaging
- Inspecting, assembling, and packaging clean instruments in preparation for final processing

Sterilization
- Sterilization equipment and related supplies and adequate space for loading, unloading, and cool down; may also include incubators for analyzing spore tests and enclosed storage for sterile items and disposable (single-use) items

Storage
- Enclosed storage for sterile and disposable (single-use) items

Why is cleaning necessary when we're going to heat sterilize the instruments?

Cleaning is the most critical step in instrument processing because it involves the removal of debris and organic contamination from an instrument or device. If blood, saliva, and other contamination is not removed these materials can shield underlying microorganisms and potentially compromise the disinfection or sterilization process.

Is a presoak or holding solution required before cleaning the instruments?

If cleaning is not performed immediately, placing instruments in a puncture-resistant container with an enzymatic cleaner/detergent solution will prevent drying of patient material. By keeping the instruments moist, this may make cleaning easier and less time-consuming. Also, many holding solutions also contain rust inhibitors, which may help decrease corrosion of the instruments. As with any product, always follow manufacturer instructions, especially contact time.

What type of personal protective equipment (PPE) is necessary when cleaning instruments?

Since instrument processing involves handling contaminated instruments and working with chemical solutions, dental health-care personnel (DHCP) are required to wear PPE. Instruments should be considered contaminated and handled as such until processed through the sterilization cycle. To avoid injury from sharp instruments, personnel should wear puncture- and chemical-resistant, heavy-duty, utility gloves when handling or manually cleaning contaminated instruments and devices. A mask, eye protection or face shield, and gown or jacket should be worn when splashing or spatter may occur (e.g., handscrubbing instruments). Head and shoe covers may be indicated if required by the medical treatment facility (MTF) policy. One exception to wearing gloves is when handling instruments that have been processed through the high-level disinfection cycle of an instrument washer. If that has been done, the instruments are considered safe to handle without wearing gloves, however the instruments must still be wrapped and heat sterilized before use.

What is the best method for cleaning instruments before sterilization?

Use of automated cleaning equipment (e.g., ultrasonic cleaner, instrument washer, washer-disinfector) is more time-efficient and can improve cleaning effectiveness compared to handscrubbing. When using automated equipment, worker exposure to blood and body fluids is reduced and there is less instrument handling. Therefore, the potential for injury during instrument processing is greatly reduced. With most types of automated cleaning equipment, instruments are placed in cassettes or baskets before cleaning. By doing this, splashing that may occur when adding instruments to the cleaning chamber is reduced. Also, cassettes keep instruments organized throughout the cleaning process. Thus, using automated cleaning equipment is preferred over handscrubbing, and can result in a "no-touch" system that is safer and more efficient.

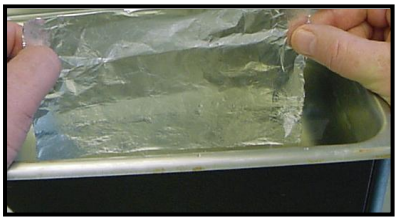
If handscrubbing cannot be avoided, what precautions should be taken?

To avoid injury from sharp instruments, DHCP should wear puncture- and chemical-resistant heavy-duty utility gloves when handling or manually cleaning contaminated instruments and devices. Other recommendations include applying work-practice controls such as using a long-handled brush to keep the scrubbing hand away from sharp instruments, and cleaning instruments under water to decrease spatter. Individuals should never reach into trays or containers holding sharp instruments that cannot be seen or sinks filled with soapy water in which sharp instruments have been placed.

Why do instruments need to be dried before being sterilized?

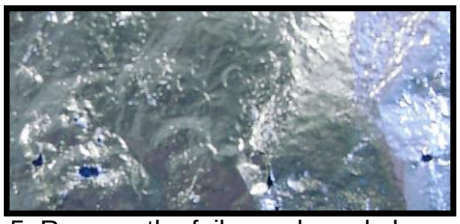
Dry instruments are less likely to damage packaging materials. Also, drying instruments before sterilization can reduce instrument corrosion. Many instrument washers or washer-disinfectors have drying cycles. However, if you're using equipment that doesn't have an automatic drying cycle, safety precautions (e.g., wearing PPE, using work practice controls) should be taken, such as removing the instruments using forceps or emptying them onto a towel to reduce the risk of injury. Towels can be used to carefully pat the instruments dry.

Is there a method to test the function of an ultrasonic cleaner?



The aluminum foil test is a simple and fast method to check for an even distribution of the cleaning power in an ultrasonic cleaner. In the absence of manufacturer's recommendations, the following procedure can be used:

1. Using standard lightweight or regular household aluminum foil, cut a piece of foil to fit the width of the cleaner chamber. For example: A tank with dimensions of 9 inches long by 5 inches wide by 4 inches deep would require a foil sample measuring 9 inches by 5 inches.
2. Prepare a fresh solution of ultrasonic cleaning solution and fill the tank according to the manufacturer's instructions. Do not turn the heater on for the test.



3. Insert the foil vertically into the cleaner chamber, with the length of the foil running the length of the chamber and the bottom of the foil about one inch above the bottom.
4. Holding the foil as steady as possible, turn on the ultrasonic cleaning unit for 20-60 seconds (if the unit is supplied with a high/low switch, it should be set in the high position).
5. Remove the foil sample and observe for small indentations (pebbling) on the foil. Some holes may also be present.

With a properly functioning unit, the entire foil surface will be uniformly "peppered" (covered with a tiny pebbling effect). If areas greater than ½ inch square show no pebbling, the unit may require servicing.

TEST YOUR KNOWLEDGE ABOUT CLEANING DENTAL INSTRUMENTS

1. Cleaning, disinfecting, and sterilizing instruments in a designated central processing area controls both quality and personnel safety.
a. True
b. False

2. What types of personal protective equipment should be available when cleaning instruments?
a. puncture- and chemical-resistant, heavy-duty, utility gloves; masks; eye protection; protective clothing; head and shoe covers
b. puncture- and chemical-resistant, heavy-duty, utility gloves; masks; protective clothing; head and shoe covers
c. puncture- and chemical-resistant, heavy-duty, utility gloves; masks; eye protection; protective clothing

3. Which of the following is true regarding instrument cleaning?
a. Using a washer-disinfector eliminates the need for heat sterilization.
b. Using automated cleaning equipment is less time efficient than handscrubbing instruments.
c. Using automated equipment is more time efficient, improves cleaning effectiveness, and is safer than handscrubbing instruments.
d. a and c

Selected References and Additional Resources (Updated August 2011)

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USAF Guidelines for Infection Control in Dentistry.

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Answers: 1) a; 2) a; 3) c