

# INSTRUMENT PROCESSING AND RECIRCULATION: ISSUES AND CONSIDERATIONS

BY JOHN A. MOLINARI, PHD

Procedures involved in processing contaminated dental instruments continue to evolve as new technologies and products are developed to both maximize efficiency and minimize occupational risks. A series of complex multiple steps are required to accomplish cleaning and sterilization of instruments, including specialized equipment, adequate space, and qualified dental health-care workers (DHCW). While the ultimate goal is to provide sterile instruments for patient care, it is also important to utilize procedures that promote a safe work environment for those personnel involved in the process. Since multiple approaches can be employed, questions can arise about what is appropriate. The following article discusses a few of the common inquiries. Hopefully, the information will be useful in your clinical facility.

*Our practice gets so busy at times that the dental assistants are not able to clean and sterilize instruments between patient appointments. When that happens, the dirty instruments may remain in a container for more than an hour before reprocessing. The dried-on debris is usually very hard to remove by hand scrubbing, and even ultrasonic cleaning can leave organic material on instrument surfaces. I have heard that placing the items in a holding solution can alleviate this problem. Is a holding solution a viable option?*

It is important to first mention that cleaning should precede all sterilization processes. If organic or inorganic matter is not removed, it will interfere with microbial inactivation in the sterilizer. The issue described above is a common one. It is much more difficult to remove dried debris than moist material from contaminated items. One approach to prevent drying when cleaning cannot be performed immediately is to place the dirty instruments in a puncture-resistant container and immerse them in an enzymatic ultrasonic solution or a detergent. In addition, an enzymatic spray gel or foam can also be applied onto instruments in cassettes or on trays. When these measures and products are used, they can loosen debris and keep instruments wet for extended periods. Subsequent cleaning is easier, less time-consuming, and safer. Please note that using a liquid chemical sterilant/high-level disinfectant (e.g., glutaraldehyde) as a presoak or holding solution is not recommended.

*I am thinking about purchasing cassettes for our practice. Can I be assured that instruments and cassettes contaminated with biological debris will be effectively cleaned in an ultrasonic unit and a dental instrument washer?*

The first thing to remember about ultrasonic cleaning units and instrument washers is that they are manufactured to meet high technical standards and also **must** be approved by the Food and Drug Administration (FDA) for use in cleaning contaminated medical and dental instruments. Each of these automated methods is far superior in cleaning efficiency compared to hand scrubbing soiled instruments. Over the years, many controlled studies, including a number performed in our laboratory at The Dental Advisor, have reinforced the rationale for automated vs. mechanical cleaning. As an example, experiments performed in the mid-1980s demonstrated that ultrasonic cleaning was 15 to 17 times more efficient in removing organic debris from visibly contaminated dental instruments than scrubbing with a hand brush. This advantage was improved with the introduction of ultrasonic cleaners that contain dual enzymes to further loosen and break down accumulated material. As for instrument washers, while most dental practices use ultrasonics as the primary method for cleaning instruments prior to sterilization, installation of larger washers has increased rapidly in schools, dental clinics, and private practices. They generally accommodate more in-

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struments in a single load than ultrasonic units and eliminate the need for manual presoaking, rinsing, and drying. Regarding cassettes, it has been well documented that instruments housed in cassettes can be effectively cleaned when either ultrasonics or an approved instrument washer are used. A word of caution to remember, though, is that although instrument washers and washer disinfectors may appear to be similar to home dishwashers, only the former are regulated by the FDA. Commercially available household dishwashers are neither designed nor approved to process sensitive medical instruments, and they do not meet FDA requirements for effectiveness and safety.

### ***How long can packaged sterilized instruments remain sterile?***

The shelf life of sterilized instruments is the period during which an item is considered safe for use. Two important determining factors for maintaining sterility include the packaging material quality and storage conditions. Infection control recommendations by several health-care organizations, such as the Centers for Disease Control and Prevention, Association of Operating Room Nurses, and the Joint Commission, specifically include *event-related* shelf-life practices, as opposed to placing expiration dates on packages. The event-related approach recognizes that items should remain sterile indefinitely, unless an event (i.e., packaging becomes torn) causes

the packaging to become compromised and contaminated. Instead of placing an expiration time-related date on the package, an indefinite shelf-life label with the date of sterilization is used. Placing the date of sterilization on the wrapped instruments is important as it facilitates the retrieval of processed items in the event of a sterilization cycle failure. Sterile packages are to be stored in a place and manner that does not cause the paper, plastic, or cloth to become torn, wet, or punctured. The integrity of the material should then be examined to ensure sterility has been maintained when the DHCW is subsequently setting up the operatory for patient care. If the packaging has been compromised, the items must be cleaned, packaged, and sterilized again before use. **DE**



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