STERILIZATION—Packaging & Storage FAQ

August 2002

What types of packaging materials are available for sterilizing instruments?

The primary purpose of packaging is to protect instruments from contamination upon removal from the sterilizer. Packaging materials must be compatible and designed for the type of sterilization process being used. Inappropriate materials may compromise the sterilization process by not allowing the sterilizing agent to penetrate the packaging material. Packaging materials must be appropriate for the items being sterilized; for example, many instruments are sharp and can easily puncture paper packaging. Packages should never be sealed with metal closures (e.g., staples, paper clips) as these could puncture the material and cause a breech of sterility. Finally, a chemical indicator/integrator should be placed among the instruments, inside the package, as well as on the outside of each package.

Types and Use of Sterilization Packaging Materials

Sterilization Method	Packaging Material Requirements	Acceptable Materials
Steam Autoclave	Must allow steam to penetrate	Paper Plastic Cloth Paper peel packages Wrapped perforated cassettes
Dry Heat	Must not insulate items from heat Must not be destroyed by temperature used	Paper bags Aluminum foil Polyfilm plastic tubing Wrapped perforated cassettes
Unsaturated Chemical Vapor	Vapors must be allowed to precipitate on contents Vapors must not react with packaging material Plastics should not contact sides of sterilizer	Wrapped perforated cassettes Paper Paper peel pouches

Modified from Miller CH and Palenik CJ. Infection Control and Management of Hazardous Materials for the Dental Team, 1998.

Can cassettes be used for sterilizing instruments?

The use of instrument cassettes facilitates instrument processing and can significantly enhance organization of instruments. Use of cassettes keeps all the instruments for a specific procedure together from the chairside procedure through cleaning, rinsing, drying and sterilization. Following completion of dental treatment, instruments can be arranged in the cassette, transported to the instrument processing area, and placed in the ultrasonic cleaner as a unit. The cassette can be rinsed and dried in this manner also. With a cassette system, direct handling of potentially contaminated instruments is significantly reduced prior to sterilization. Furthermore, by having the instruments prearranged in the cassette, handling following sterilization is decreased.

Different types of cassettes are marketed. It is important to follow manufacturer's recommendations for cleaning, wrapping, and sterilizing the cassettes. Perforated cassettes are preferable, as completely solid containers will not allow steam or chemical vapor to reach the contents for sterilization to occur. Cassettes can occupy more space than individual packages, so the size of the sterilizer and amount of storage space available should be considered before purchasing any cassette systems.

How should instruments be stored following sterilization?

Sterilized instruments should be stored in a manner that preserves the integrity of the package. The following are recommendations for storage.

1. Sterilized items should remain wrapped until they are needed for use. They should be opened in the treatment area in a manner that will allow the inside of the wrapping to serve as a sterile field.
2. Unwrapped instruments are susceptible to contamination. Storing instruments loose in drawers or cabinets is not recommended as they cannot be kept sterile. Instruments stored in this manner are subject to contamination from dust, aerosols generated during treatment, and handling with contaminated hands.

3. Sterile items should be stored in enclosed cabinets or drawers free from moisture and dust. The storage area should be cleaned and disinfected weekly.
4. Sterile items should not be stored on the floor, under sinks, on window sills or adjacent to air vents. These conditions lead to contamination that compromises the sterility of the packages and instruments.
5. A rotational policy should be developed (e.g., the "oldest" packs should be used first). This policy is also referred to as the "first in--first out" system of stock rotation.

What is the shelf-life of sterilized instruments?

Sterilized instruments should be stored in a manner that preserves the integrity of the packaging material. Although, the issue of shelf-life has been addressed by several organizations including the Centers for Disease Control and Prevention (CDC), Association of Operating Room Nurses (AORN), the Association for the Advancement of Medical Instrumentation (AAMI), and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), these organizations no longer make specific recommendations regarding expiration policies of sterilized items. Instead of an expiration date (time-related), the concept of event related shelf-life for sterilized items now is widely accepted.

The idea of event related shelf-life recognizes that the product should remain sterile until some event causes the item to become contaminated. The quality of the packaging material, storage and transport conditions, and the amount of handling all contribute to maintaining sterility of the package and its contents. Any package that is wet, torn, dropped on the floor, or damaged in any way should not be used. When such events occur, the contents should be removed, repackaged with new packaging materials, and re-sterilized.

All packages containing sterile items should be inspected prior to use to verify barrier integrity and dryness.

Selected References and Additional Resources:

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