Summary of Infection Prevention Practices in Dental Settings: Basic Expectations for Safe Care

MODULE 7 — Sterilization and Disinfection of Patient-Care Items and Devices

Modules in the Slide Series

1. Introduction
2. Hand Hygiene
3. Personal Protective Equipment
4. Respiratory Hygiene/Cough Etiquette
5. Sharps Safety
6. Safe Injection Practices
7. **Sterilization and Disinfection of Patient-Care Items and Devices (this module)**
8. Environmental Infection Prevention and Control
9. Dental Unit Water Quality
10. Program Evaluation

Categories of Patient-Care Items

- Three categories:
  1. Critical.
  2. Semicritical.
  3. Noncritical.
- Based on intended use and the potential risk of disease transmission

Critical Items

- Penetrate soft tissue or contact bone, enter into or contact the vascular system or other normally sterile tissue.
- Greatest risk of transmitting infection.
- Must be heat sterilized between use, or sterile single-use, disposable devices must be used.
- Examples: surgical instruments and periodontal scalers.

Semicritical Items

- Contact mucous membranes or non-intact skin (e.g., exposed skin that is chapped, abraded, or has dermatitis).
- Lower risk of transmission.
- Should be heat sterilized or high-level disinfected.
- Examples: mouth mirrors, amalgam condensers, and reusable impression trays.

NOTE: If a semicritical item is heat-sensitive, DHCP should replace it with a heat-tolerant or disposable alternative. If none are available, the item should, at a minimum, be processed using high-level disinfection.

Semicritical Items

Special Considerations—Dental Handpieces

- Follow manufacturer's instructions to safely reprocess dental handpieces and accessories (e.g., low-speed motor, reusable prophylaxis angles).
- Clean and heat sterilize between patient uses.
- Do not subject the handpiece to high-level disinfection and do not simply wipe the surface with a low-level disinfectant.

Semicritical Items

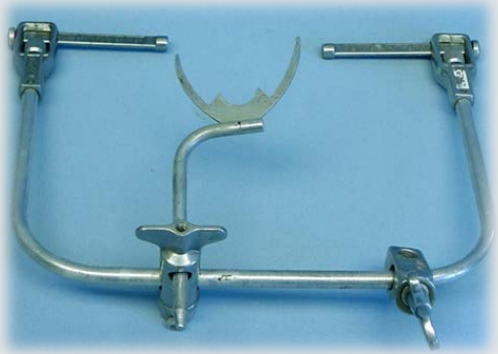
Special Considerations—Digital Sensors

- Follow manufacturer's instructions to safely reprocess digital radiography equipment.
- Ideally, barrier protection should be used, followed by cleaning and heat sterilization or high-level disinfection between patients.

  - If the item cannot tolerate these procedures, then at minimum, barrier protection should be used, followed by cleaning and disinfection with an intermediate-level disinfectant between patients.

Noncritical Items

- Contact intact skin.
- Barrier protect or clean and disinfect (if visibly soiled) using a low to intermediate-level (i.e., tuberculocidal) disinfectant.
- Examples: x-ray head or cone, facebows, blood pressure cuff.



Single-Use (Disposable) Devices

- Intended for use on one patient during a single procedure.
- Usually not heat-tolerant.
- Cannot be reliably cleaned.
- Do **NOT** reprocess.
- Examples: syringe needles, prophylaxis cups, and plastic orthodontic brackets.

Instrument Processing

- Follow manufacturer's instructions for reprocessing (i.e., cleaning, packaging, disinfecting, sterilizing) reusable dental instruments and equipment.
  - Maintain manufacturer's instructions (ideally) in or near the reprocessing area.
- Use FDA-cleared devices and supplies for cleaning, packaging, and heat sterilization.
- Should be assigned to DHCP with training in the required reprocessing steps.

Instrument Processing Area

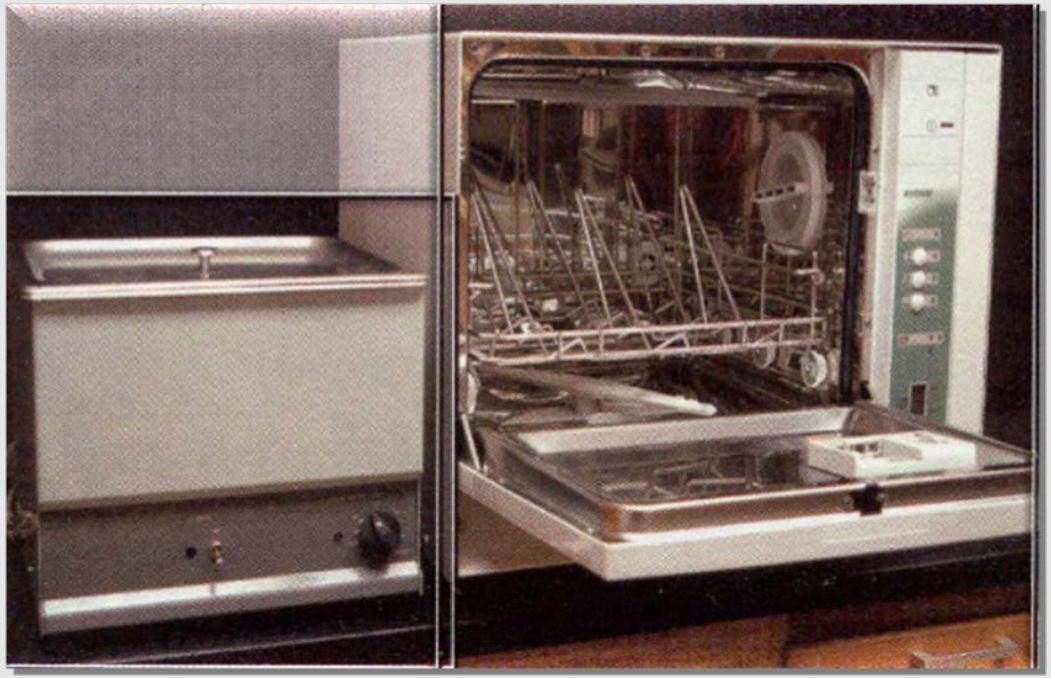
- Use a designated processing area to control quality and ensure safety.
- Divide processing area into work areas:
  - Receiving, decontamination, and cleaning.
  - Preparation and packaging.
  - Sterilization.
  - Storage.
- Devices and instruments should flow from high contamination areas to clean and sterile areas.

Cleaning

- Cleaning should always occur before disinfection or sterilization.
  - Presence of soil can compromise the disinfection or sterilization process.
- Automated or manual.
- Minimize exposure potential.
- Use carrying containers to transport contaminated instruments.
- Wear personal protective equipment (e.g., heavy duty utility gloves, mask, protective eyewear and clothing).

Automated Cleaning

- Ultrasonic cleaner.
- Instrument washer.
- Washer-disinfector.

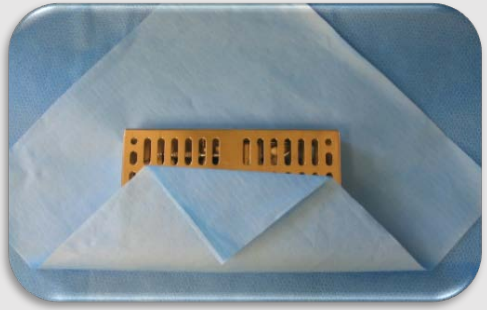


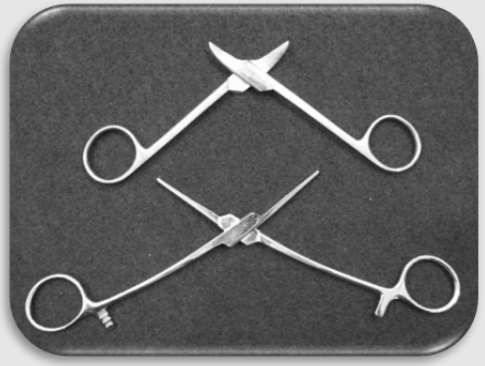
Manual Cleaning

- If not performed immediately, soak instruments until ready to clean to prevent debris from drying on instruments.
- Wear heavy-duty utility gloves, mask, eyewear, and protective clothing.

Preparation and Packaging

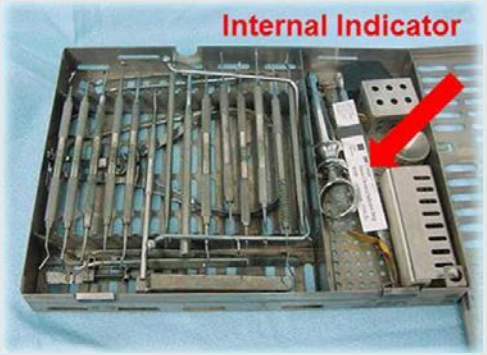
- Wrap, package, or place instruments in containers before heat sterilization.
  - Instruments should be thoroughly dry before they are packaged, wrapped, or otherwise contained.
- Follow manufacturer's instructions.
  - For example: open hinged instruments, disassemble instruments if required, and ensure that packaging materials are compatible with the method of heat sterilization being used.





Preparation and Packaging (Continued)

- Place a chemical indicator inside each package.
  - If the internal chemical indicator cannot be seen from the outside, place another indicator on the outside of the package.
- Label the package with the following:
  - Sterilizer number.
  - Cycle or load number.
  - Date of sterilization.
  - Expiration date, if applicable.

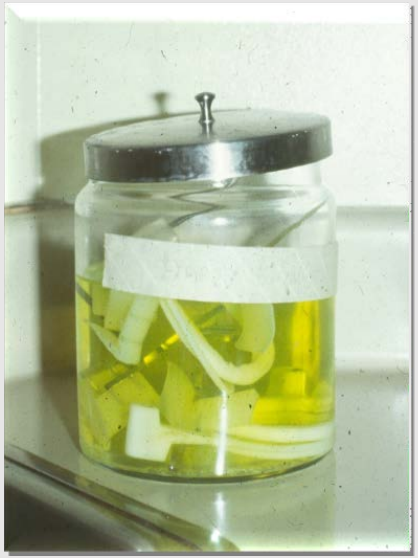


Heat-Based Sterilization

- Use FDA-cleared devices and follow manufacturer's instructions.
- Steam under pressure (autoclaving):
  - Gravity displacement.
  - Pre-vacuum.
- Dry heat.
- Unsaturated chemical vapor.

Liquid Chemical Sterilant or Disinfectants

- Only for heat-sensitive critical and semicritical devices.
- Highly toxic.
- Follow manufacturer's instructions (e.g., regarding dilution, immersion time, and temperature) and safety precautions precisely.
- Heat-tolerant or disposable alternatives are available.

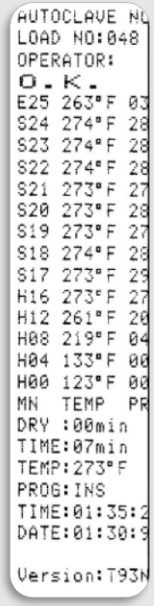


Sterilization Monitoring: Types of Indicators

- Mechanical:
  - Measures time, temperature, and pressure.
- Chemical:
  - Change in color when physical parameter is reached.
- Biological (spore tests):
  - Uses biological spores to asses the sterilization process directly.
- Indicators are specific to the type of sterilization used.

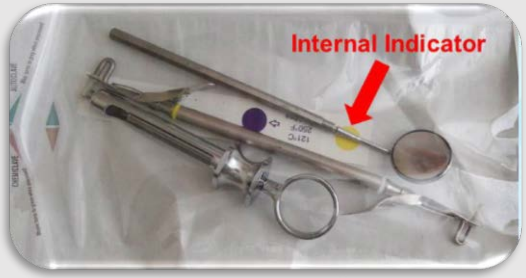
Mechanical Monitoring

- Monitor each load with mechanical (physical) indicators:
  - Time.
  - Temperature.
  - Pressure.



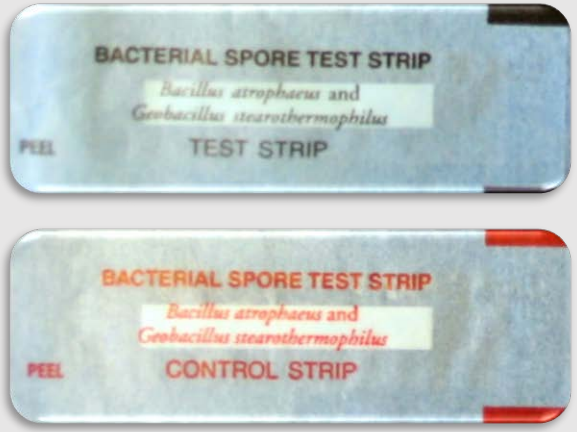
Chemical Monitoring

- Use an internal chemical indicator in every package. If the internal indicator is not visible from the outside, then also use an external indicator.
  - Chemical indicators may be integrated into the package design.
- Inspect indicator(s) after sterilization and at time of use.
- If the appropriate color change did not occur, do not use the instruments.



Biological Monitoring

- Assess sterilization process directly by killing known highly resistant microorganisms.
- Use biological indicators (spore tests) at least weekly.



Record Keeping

- Sterilization monitoring (e.g., biological, mechanical, chemical) and equipment maintenance records are important components of a dental infection prevention program.
- Ensures cycle parameters have been met and establishes accountability.
- If there is a problem with a sterilizer, documentation helps to determine if an instrument recall is necessary.

Storage of Sterile and Clean Items and Supplies

- Store clean items in dry, closed, or covered cabinet.
- Use date- or event-related shelf-life practices.
- Examine wrapped items carefully before use.
- When packaging of sterile items is damaged, clean, repackage, and heat sterilize again.

Resources

- CDC. *Guidelines for Infection Control in Dental Health-Care Settings—2003*
- CDC. *Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008*
- CDC. *Summary of Infection Prevention Practices in Dental Settings: Basic Expectations for Safe Care*
- Resources to use in the event of a reprocessing error or failure:
  - CDC. Health Care-Associated Infections website: Outbreaks and Patient Notifications
  - Patel PR, et al. Developing a broader approach to management of infection control breaches in health care settings. *Am J Infect Control*. 2008;36:685–690.
  - Rutala WA, et al. How to assess risk of disease transmission to patients when there is a failure to follow recommended disinfection and sterilization guidelines. *Infect Control Hosp Epidemiol*. 2007;28:146–155.

End of Module 7

For more information, contact Centers for Disease Control and Prevention (CDC).
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC.