STANDARD OPERATING PROCEDURE

Dental Instrument Sterilization SOP

Document no.	SOP-DEN-001
Revision	1.0
Owner	Sterilization Coordinator
Effective date	September 15, 2026
Review cycle	Every 12 months

1. Purpose

To make sure every reusable dental instrument is cleaned, packaged and sterilized correctly before use, and that sterilizer performance is verified and documented.

2. Scope

Applies to reusable dental instruments and cassettes processed in the sterilization area. Single-use disposable items and dental unit waterlines are covered by separate SOPs.

Definitions

Biological indicator	A test vial containing spores used to confirm that a sterilization cycle actually achieved sterilization, not just the correct temperature and time.
Instrument cassette	A tray or case that holds a set of instruments together through cleaning, packaging and sterilization.
Sterile shelf life	The length of time a sterilized, packaged instrument set remains sterile if the packaging stays intact and dry.

3. Responsibilities

Dental Assistant	Cleans, packages and loads instruments, and runs and unloads sterilization cycles.
Sterilization Coordinator	Manages biological monitoring, sterilizer maintenance and processing records.
Dentist	Confirms sterilization compliance during case review and addresses any failed monitoring result.

RACI matrix

Activity	Dental Assistant	Sterilization Coordinator	Dentist
Clean and package instruments	R/A	C	I
Run and unload the sterilization cycle	R/A	C	I
Perform biological indicator testing	R	R/A	I
Respond to a failed sterilization test	R	R/A	C

R = Responsible, A = Accountable, C = Consulted, I = Informed

4. Materials and PPE

Materials, tools and systems

- Ultrasonic cleaner or instrument washer
- Sterilization pouches and cassette wraps
- Steam autoclave with cycle printout or data log
- Biological indicator vials and incubator
- Chemical indicator strips
- Sterilization processing log

Personal protective equipment

- Heavy-duty utility gloves for cleaning
- Mask and eye protection
- Protective apron or gown

5. Procedure

Step	Task	Owner	Done
5.1	**Transport contaminated instruments safely** Carry used instruments from the operatory to the sterilization area in a covered, puncture-resistant container immediately after the appointment. **Warning:** Never carry loose contaminated instruments by hand or leave them uncovered on a counter.	Dental Assistant	☐
5.2	**Pre-rinse and sort instruments** Rinse gross debris from instruments and sort sharps and cassettes before placing them in the ultrasonic cleaner or washer.	Dental Assistant	☐
5.3	**Clean instruments before packaging** Run instruments through the ultrasonic cleaner or automated washer for the manufacturer's recommended cycle time, then rinse and dry them completely. **Checkpoint:** Instruments are visibly free of debris and completely dry before packaging.	Dental Assistant	☐
5.4	**Inspect instruments for damage** Inspect each instrument for corrosion, damage or malfunction and set aside any that need repair or replacement before packaging.	Dental Assistant	☐
5.5	**Package instruments with a chemical indicator** Place cleaned instruments or cassettes into sterilization pouches or wraps, including a chemical indicator strip inside each package, and seal according to the manufacturer's instructions.	Dental Assistant	☐
5.6	**Load the sterilizer correctly** Load packages into the autoclave without overloading the chamber, leaving space between packages so steam can circulate freely.	Dental Assistant	☐
5.7	**Run the sterilization cycle** Select the correct cycle for the load type and run it to completion, following the sterilizer manufacturer's time and temperature settings.	Dental Assistant	☐
5.8	**Check the cycle printout or log** Confirm the cycle reached and held the correct temperature and pressure for the required time, and file the printout or electronic log entry. **Checkpoint:** Every cycle's printout or log confirms the required temperature and time were reached before packages are released.	Dental Assistant	☐

Step	Task	Owner	Done
5.9	**Unload and cool sterilized packages** Unload packages once the cycle is complete and let them cool and dry fully on a rack before handling or storage, avoiding condensation that can compromise sterility.	Dental Assistant	☐
5.10	**Run weekly biological indicator testing** Run a biological indicator test at least weekly and with every load containing an implantable device, then incubate and read the result according to the manufacturer's instructions. **Checkpoint:** Biological indicator testing is completed at least weekly and the results are documented before instruments from an implant load are used.	Sterilization Coordinator	☐
5.11	**Respond to a failed biological indicator** If a biological indicator fails, remove the sterilizer from service, recall and reprocess all items sterilized since the last passing test, and have the sterilizer inspected before returning it to use. **Warning:** Never use instruments from a load associated with a failed biological indicator until the sterilizer is confirmed working again.	Sterilization Coordinator	☐
5.12	**Store sterile packages correctly** Store sterilized packages in a clean, dry, enclosed area, rotate stock so older packages are used first, and check package integrity before use.	Dental Assistant	☐

6. Quality checks

- Biological indicator testing is performed at least weekly and passes every time.
- Every sterilization cycle has a printout or log showing correct temperature and time.
- Instruments are packaged with a chemical indicator that changes correctly.
- No sterile package with damaged or wet wrapping is used on a patient.

7. Records

- Sterilization cycle printouts or logs
- Biological indicator test results
- Sterilizer maintenance and calibration records
- Failed test recall and reprocessing log

8. KPIs

- Biological indicator pass rate
- Sterilizer downtime due to failed testing
- Instrument turnaround time from operatory to sterile storage
- Percentage of packages with intact, dry wrapping at point of use

9. Common mistakes

- Overloading the autoclave so steam cannot circulate around every package.
- Skipping the weekly biological indicator test when the schedule is busy.
- Packaging instruments that are still wet from cleaning.
- Using instruments from a load before the cycle printout has been checked.

10. Revision history

Revision	Date	Description	Reviewed by
1.0	September 15, 2026	Initial release	Ilia Pirozhenko

Approval

Prepared by	Approved by	Date

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