**Instrument Sterilization Procedure**

**REFERENCES: OSHA Standard 29 CFR 1910.1030**

**OBJECTIVE: To institute a process for cleaning instruments that utilizes the most up-to-date knowledge of infection control, exposure control, and biomedical instrumentation techniques.**

**PROCEDURE(S):**

**1. SEPARATION:** Once the procedure requiring the instruments has been completed, the

patient will be escorted out of the room, as appropriate.

**2. COLLECTION:** Nursing Personnel, wearing gloves, will collect all instruments and place them in a covered, puncture resistant, plastic instrument container with the appropriate bio-hazardous label affixed. The empty containers should be kept in each exam/procedure room.

**3. TRANSPORTATION:** The instruments container, with cover firmly affixed, shall be transported by appropriately trained personnel to the instrument cleaning area.

**4. LOCATION:** The soiled instrument container will be placed at the beginning of the cleaning cycle area.

**5.PROTECTION:** Appropriately trained staff shall wear a lab coat or plastic apron, rubber utility gloves, as well as aface shield or goggles and mask during this phase of the cleaning process as the likelihood of splashing increases during this stage.

**6. EVALUATION:** Appropriately trained staff shall evaluate each instrument to determine if any of the instruments are visibly soiled. If they are visibly soiled, then the staff member should try rinsing the instruments off under running water first, then scrubbing with an appropriate brush, if necessary.

**7. IMMERSION:** The container will then be filled with either Maxizyme (2 tubes per 4 liters) or a standard bleach solution of 1*-part* bleach to 10 parts water (depending on the manufacturer’s recommendation). The liquid should completely submerge all instruments. An ultrasonic cleaner is recommended for this step as it further assists in the cleaning and disinfection process.

8. **DISINFECTION:** The instruments will be allowed to soak according to the manufacturer’s guidelines for destruction of HW virus, TB, or other nosocomial infections. However, in the absence of such guidelines, a minimum soak time of at least 10 minutes shall be required.

**9. EVACUATION:** Once the instruments have been thoroughly soaked, appropriately trained staff shall don new gloves, a lab coat or scrubs, a face shield or goggles and a mask. The instruments shall then be removed one at a time from the soaking container and scrubbed vigorously with a standard scrub brush under a constant stream of tap water. The objective in this stage is to evacuate the instruments and remove any remaining debris or visual signs of contamination.

**10. LUBRICATION:** As appropriate and per manufacturer’s guidelines, a silicon lubricant shall be used to immerse the instruments to prevent corrosion, wear and tear, as well as to promote the instruments effective use. Note: The lubricant utilized should not negatively affect the sterilization process.

**11. EVAPORATION:** Once the instruments have been scrubbed and rinsed, they shall be placed on a towel in a relatively isolated area and allowed to air dry completely.

**12. ISOLATION:** Appropriately trained staffs will then remove their protective equipment used in steps five *(*5*)* though nine (9) wash their hands and don new gloves. The instruments will then be packed as follows:

a. Individual instruments will be placed in individual autoclave bags,

b. A temperature indicator strip is placed in each bag,

c. Autoclave bags should then be sealed and placed on the autoclave instrument trays.

**13. STERILIZATION:** Once the instruments have been properly packed, they should be placed directly into the autoclave and run through a complete cycle, as follows:

a. Packages with sharp instruments in them should not be allowed to touch each other. Use sterile gauze or cotton between the instruments to protect each other from puncture during the sterilization process.

b. Any items that might hold water should be placed in a manner which facilitates drainage

c. Check reservoir to make sure unit is full of distilled water.

d. Press on/stand-by button to start unit and place autoclave specific instrument trays into the autoclave.

e. A spore test indicator should be used at least weekly. Weekly spore testing is recommended if autoclave is used frequent (i.e. daily autoclaving is performed). Spore testing for each use is recommended if autoclaving is infrequent (i.e. less than once a week autoclaving). All spore testing results should be maintained for reference.

f. Close and lock autoclave doors checking that “door indicator” is not displayed on the readout.

g. **Press desired cycle button to start cycle. The criteria for determining the appropriate cycle is as follows:**

**(1) Unwrapped: 132 C/270F 3 minutes**

**Wrapped 132 C/270F l0 minutes**

**Liquids 121 C/250F 40 minutes**

**Packs 121 C/250F 30 minutes**

**(2) When in doubt or when time is available, always choose the longest cycle.**

**(3)** Button will illuminate at the end of the cycle, “door indicator” will display and

tone will sound.

h. If drying is not required, open door, press On/Standby button.

i Unload unit and press reset button.

j. If drying is required, open door approximately ¼ inch to start drying.

k. The drying phase is up to 60 minutes in duration. Tone will sound at 30. 45, and 60 minute intervals. At the end of desired dry time, press On/Standby button, unload unit and press reset button.

**\*RESTORATION:** The newly sterilized packs should be removed carefully from the autoclave and distributed to the appropriate storage area.

Sterilized Autoclave packs are assumed to be sterile indefinitely unless the packaging has been damaged in some way (i.e. package tear, water stains, etc.). This “Event Related Sterilization” process means that autoclave packets do not need to be dated. Additionally, nursing staff can periodically go through the facility and visually review the instruments to determine if they must be sterilized again.

**dd01352_ PLEASE NOTE: See the Sterilizer Operations Procedures for**

**more details about Sterilizer Operations.**

**STERILIZATION & SPORE TESTING LOG**

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| --- | --- | --- | --- | --- | --- | --- |
| **DATE** | **CYCLE TYPE**  **STERILIZATION**  **OR SPORE TEST** | **PACK/SPORE**  **TEST ID#** | **CYCLE**  **COMPLETED**  **YES OR NO** | **SPORE**  **TEST**  **RESULTS** | **CONTROL**  **TEST**  **RESULTS** | **INITALS** |
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**TITLE: Biological Monitoring (Spore Testing) of Sterilizer Performance**

**OBJECTIVE: To effectively monitor the performance of the organization’s** **sterilizers to ensure that patient assessment and care equipment are safe for use on other patients.**

**PROCEDURE(S):**

“Proper functioning of sterilization cycles should be verified by the periodic use (at least weekly) of biologic indicators (i.e., spore tests) (3, 9). Heat-sensitive chemical indicators (e.g., those that change color after exposure to heat) alone do not ensure adequacy of a sterilization cycle but may be ‘used on the outside, of each pack to identify packs that have been processed through the heating cycle.”

Therefore, organizational staff ’will perform biological (spore) testing of every sterilizer in the organization with each load and at least weekly following this established procedure.

Place one biological test pack per manufacturer~ instruction in the front of the sterilizer

along with anormal instrument load.

2. Sterilize according to the normal procedure.

3. After the sterilization cycle is completed, remove the test pack from the autoclave.

4. Complete the Sterilization Log and testing paperwork per manufacturer’s guidelines.

Place testing packages per manufacturer’s guidelines into the pre-addressed envelope that

already contains the viability control piece and are sent to the reference lab.

**Note: (a) The A-test spore test should be documented and results of all spore tests should be sent to the Safety Office. All lot control number must be placed on lab slips.**

Test results will be mailed to you after a three (3) day incubation period. (Some spore test results can be obtained in 48 hours) If the culture is positive, the vendor/testing lab will notify you by phone and then mail you the results.

Some sites (high risk) are using the immediate readout sterilization integrators. These strips are used for the highest level of Sterilization assurance.

A positive result will require that the autoclave be tested again, repaired if necessary,

and a negative spore test result must be obtained prior to the autoclave’s reuse.

Any positive results will require that ALL instruments that were autoclaved since the

last spore test was reprocessed, if these instruments cannot be identified separately

then ALL patient assessment and care instrumentation must be reprocessed.

**TITLE: Autoclave/Sterilizer Cleaning Procedure**

**REFERENCES: Manufacturer (TUTTNAUER) Guidelines for Operator/User Maintenance of the Autoclave/Sterilizer**

**OBJECTIVE: To minimize the risk of transmission of nosocomial infections by maximizing the effectiveness of instrumentation cleaning equipment.**

**PROCEDURE(S):**

The manufacturer’s guidelines for cleaning the Tuttnauer Autoclave/Sterilizer are as follows:

DAILY (or per use if less than daily):

• Clean External Surfaces — Wipe with a clean dry paper towel and wash occasionally with a damp cloth and mild soap detergent.

**dd01352_** **WARNING: Make sure that unit is cool when cleaning the door gasket and**

**any mating surfaces. Failure to do so could result in serious burns to hands.**

• Clean Sterilizer Door Gasket — Clean door gasket and mating surface with a damp cloth. Examine gasket for possible damage that could prevent a good sealing surface.

**WEEKLY**

**dd01352_EQUIPMENT ALERT** — **Do not use abrasive or bleaching agents in the chamber (i.e. steel wool, scouring powder, bleach, etc.). Also, never use a wire brush. If these materials are used, possible damage to the metal surfaces of the chamber and other components could result.**

• Clean Chamber and Trays — The sterilizing chamber and instrument trays should be cleaned weekly. First, drain the water from the reservoir. A drain tube is located on the front of the unit for draining. Wash the inside of the chamber and the trays with mild cleaner and distilled water, Refill the reservoir with distilled water,

**MONTHLY**

• Flush the system — To protect the intricate parts of the unit, the system must be flushed once a month with the appropriate sterilizer cleaner.

I. Add the sterilizer cleaner and mix with distilled water per manufacturer’s guidelines.

2. Drain reservoir and fill with cleaning solution.

3. Run the autoclave/sterilizer for a **full 30-minute cycle at 121°C *(250°F).***The sterilizer must not contain any patient care instruments during this process.

4. Drain the cleaning solution from the chamber and reservoir. Fill reservoir with clean

distilled water and run two 30 minute cycles at 121°C (250°F).

Drain reservoir and allow sterilizer to cool to room

temperature. Remove the trays, tray rack (1), and the

tray plate (2). This is accomplished by grasping the

tray rack (I) on both sides in the front and gently

pulling outward. The tray rack and tray plate should

slide out of the chamber together.

Wipe out the inside of the chamber with a clean towel

being careful not to damage the heater element or the

temperature level sensor components. Wipe off the

trays, tray rack, and the tray plate as well.

7. Re-install the tray rack (I) and the tray plate (2) in the

chamber as follows: Position the two rear

posts of tray rack in the rack holes (A) of tray plate. Then hold front end of tray rack at approximately a 30° angle from the tray plate. Then, inset rear end of tray rack and tray plate as an assembly in chamber (3). Push tray rack and tray plate into chamber completely. Reinstall the trays.

8. Refill the reservoir with fresh distilled water.

**• Perform Pressure Relief Valve Check —** the pressure relief

valve must be checked each month by a qualified person to

be sure that the relief valve is functioning properly:

1. Remove the top inspection cover (I).

2. Select the UNWRAPPED cycle and START the cycle.

**dd01352_** **WARNING: The pressure relief valve will be HOT. Do not use bare hands to: pull wire ring; use a screwdriver or rod. Failure to do so will result in burns to hands. Also, steam will be vented from under the rear of the sterilizer. You need to keep in place a steam barrier (a rolled up towel) around the bottom of the sterilizer.**

**3.** When the “heat up” portion of the cycle is complete and the elapsed time is being counted down on the display panel, pull upward on the wire ring (A) of pressure relief valve (2) with a screwdriver for approximately *3* seconds; steam should discharge freely from beneath the rear of unit.

**dd01352_NOTE: If the pressure relief vale does not close completely when the wire ring is released, pull the wire ring again and release it quickly so the valve snaps back into position. Do this until the valve reseats properly.**

4. Release the wire ring of pressure relief valve (2). The steam should vent out of the pressure

relief valve until the wire ring is released, the valve should seat, stopping the release of steam.

5. Press STOP to prevent the unit from overheating.

6. If excessive force is required to open pressure relief valve (2) or pressure relief valve will not

reseat properly, the pressure relief valve must be replaced.

7. If test goes well and everything appears operational, the top inspection cover (I) should be

reinstalled.

**dd01352_ NOTE: I*n* the event the pressure relief valve is malfunctioning, the sterilizer must be taken out of service and must not be utilized for sterilizing instruments until the proper maintenance has been**

**\* Cleaning Chamber Filter: The cleaning chamber must be cleaned monthly to ensure proper**

**operation of the autoclave/sterilizer.**

1. Before performing this procedure, make sure

that the sterilizer has cooled to room temperature.

1. Open the sterilizer door and remove all trays,

tray rack, and tray plate from the chamber filter (1)

on the bottom of the chamber.

**NOTE: If the filter cannot be cleaned effectively,**

**the filter must be replaced. The sterilizer must be taken**

**out of service and must not be utilized for sterilizing**

**instruments until the filter has been replaced.**

3. Grasp the filter *(1)* and gently pull upwards while twisting slightly (a pair of pliers may be used is filter is stuck). The filter may be cleaned with mild cleaner and distilled water. A small stiff bristled brush or ultrasonic cleaner may be helpful to remove foreign objects from the filter surface. Rinse the filter with distilled water.

**dd01352_** **EQUIPMENT ALERT: Do not operate the sterilizer with the filter in**

**place. Doing so could result in the sterilizer malfunctioning.**

4. Replace the filter (I) by inserting the filter into the hole in the chamber bottom and pressing

downwards while twisting slightly.

**QUARTERLY**

• Remove and Clean Door Gasket: The door gasket and dam gasket must be removed and checked

and the gasket housing channel must be cleaned as follows:

**Open sterilizer door.** Then, remove dam gasket (I)

and door gasket (2) from door (3).

**Clean the gaskets** (l and 2) with a mild detergent

and inspect the gaskets for cracks, cuts, shrinkage,

or swelling. Replace gaskets if any of these

conditions exist.

3. **Clean the gasket housing channel:** (A) with a solution

of mild cleaner and distilled water. A small brush

(not a wire brush) may be used to aid the cleaning.

4. **Press the door gaskets** (2) in the channel (A).

Then install dam gasket (I).

**TROUBLE SHOOTTING GUIDE:**

**Use the following table to assist in correcting minor problems with the sterilizer.**

**Problem**

**WATER LOW lamp is on.** Not enough water in reservoir Add distilled water to

Tank to fill chamberReservoir tank

**DOOR AJAR lamp is on.** Chamber door is not fully closed Close the door properly

And/or latched and make sure the door

is fully latched

**ERROR lamp is on. See Error Code Guide**

**in The**

**Owner’s manual for a**

**Detailed Explanation.**

**Steam is escaping** from the Pressure Relief valve was not Reseat the pressure relief valve Pressure relief valve properly reseated after pressure (see Perform Pressure Relief

Relief valve inspection Valve Check) under

Monthly maintenance

either in this Procedure).

**QUARTERLY STERILIZER PREVENTATIVE** **MAINTENACE**

**& CLEANING RECORD**

Maintain the following safety and preventative maintenance record to insure safe use and proper performance of the autoclave/sterilizer. Forward the completed forms to the Risk Manager or their designee.

**DAILY (D) WEEKLY (W) MONTHLY (M) QUARTERLY (Q)**

Clean External Surfaces Daily Cleaning Weekly Cleaning Monthly Cleaning

Clean Door Gasket Clean Chamber &Trays Flush the system Remove & Clean

Spore Testing Cycle Relief Valve Check Door, Gasket

Clean Chamber Filter

**BRAND NAME: MODEL # SERIAL #**

**MONTH: YEAR:**

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| **MONDAY** | **TUESDAY** | **WEDNESDAY** | **THRURDAY** | **FRIDAY** |
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**QUARTERLY STERILIZER PREVENTATIVE MAINTENANCE & CLEANING RECORD**

**(Continued)**

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| **Description of Services Performed & Factor Parts Replaced** | **Date** | **Signature** |
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Please give a brief description of any problems or concerns you may have with the operation of this sterilizer. Identify any trends you may by seeing that might indicate a problem with this piece of equipment.

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Sterilizer Cleaning Procedure

**Instrument Sterilization Flowchart**

## Instrument

**Contaminated**

**Separation**

**Isolate/remove instruments & Escort Patient from Room**

**Transportation**

**Collect Instruments Using PPE & Place in Tray**

**Location**

**Move covered instrument Tray to Sterilizer room covered**

**Collection**

**Place instrument Tray at the Beginning of the Cleaning Cycle Area**

Protection

**Put on Protective Equipment**

Evaluation

**Free instruments of any visible debris**

Decontaminate

Immersion

**Immerse in an approve chemical soak**

**Soak instruments Per Chemical Manufacture’s Guidelines / or at least 10minutes**

Disinfection

Evacuation

## 

**Don PPE & Scrub Instruments Vigorously under a Constant Stream of Water to remove any Remaining Debris or signs of Contamination**

Evaporation

**Place on a Clean Towel or Drape in a Fairly Isolated Area & Allow to Air Dry**

**Place Instruments in Individual Autoclave Bags with a Temperature Indicator Strip. Seal the Bag(s) & Place into Autoclave Instrument Trays**

Isolation

**Cleaned Instrument Stored**

**Follow the Sterilizer Operation Manual for proper**

Sterilization

## n

**processing.**

**Instrument Sterilization Procedure Knowledge Check**

**(Please check correct answer)**

**PROCEDURE(S):**

**SEPARATION:**

* Once the procedure requiring the instruments has been completed, the

patient will be escorted out of the room, as appropriate.

* Leave patient in room while instruments are being collected.

1. **COLLECTION:**

* Nursing Personnel, wearing gloves, will collect all instruments and place them in a covered, puncture resistant, plastic instrument container with the appropriate bio-hazardous label affixed. The empty containers should be kept in each exam/procedure room.
* Nursing Personnel, wearing gloves, will collect all instruments and place them in plastic container that do not have to be puncture resistant without the bio-hazardous label affixed. The empty containers do not have be kept in each exam/procedure room.

1. **TRANSPORTATION:**

* The instruments container, don’t have to be cover to transport instruments short distances

by appropriately trained personnel to the instrument cleaning area.

* The instruments container, with cover firmly affixed, shall be transported by appropriately trained personnel to the instrument cleaning area.

1. **LOCATION:**

* The soiled instrument container will be placed at the beginning of the cleaning cycle area.
* The soiled instrument container will be placed at the end of the cleaning cycle area.

1. **PROTECTION:**

* Appropriately trained staff shall wear a lab coat or plastic apron, rubber utility gloves, as well as aface shield or goggles and mask during this phase of the cleaning process as the likelihood of splashing increases during this stage.

* Appropriately trained staff do not have to wear a lab coat or plastic apron, rubber utility gloves, as well as aface shield or goggles and mask during this phase of the cleaning process as the likelihood of splashing increases during this stage as long as you are trained to be careful.

1. **EVALUATION:**

* Appropriately trained staff don’t have to evaluate each instrument to determine if any of the instruments are visibly soiled if the ultrasonic cleaner is being used. If they are visibly soiled, then the staff member should try rinsing the instruments off under running water first, scrubbing with a brush is not if necessary.

* Appropriately trained staff shall evaluate each instrument to determine if any of the instruments are visibly soiled. If they are visibly soiled, then the staff member should try rinsing the instruments off under running water first, then scrubbing with an appropriate brush, if necessary.

1. **IMMERSION:**

* The container will then be filled with either Maxizyme (2 tubes per 4 liters) or a standard bleach solution of 1*-part* bleach to 10 parts water (depending on the manufacturer’s recommendation). The liquid should completely submerge all instruments. An ultrasonic cleaner is recommended for this step as it further assists in the cleaning and disinfection process.
* The container will then be filled with either Maxizyme (2 tubes per 4 liters) or a standard bleach solution of 1*-part* bleach to 10 parts water (depending on the manufacturer’s recommendation). The liquid does not have to completely submerge all instruments as long as you use an ultrasonic cleaner to further assists in the cleaning and disinfection process.

1. **DISINFECTION:**

* The instruments will be allowed to soak according to the manufacturer’s guidelines for destruction of HW virus, TB, or other nosocomial infections. However, in the absence of such guidelines, a minimum soak time of at least 30 minutes shall be required.

* The instruments will be allowed to soak according to the manufacturer’s guidelines for destruction of HW virus, TB, or other nosocomial infections. However, in the absence of such guidelines, a minimum soak time of at least 10 minutes shall be required.

1. **EVAPORATION:**

* Once the instruments have been scrubbed and rinsed, they shall be placed on a towel in a relatively isolated area and allowed to air dry completely.
* Once the instruments have been scrubbed and rinsed, they shall be bagged and put in a relatively isolated area and autoclaved.

1. **ISOLATION:**

* Appropriately trained staffs will then remove their protective equipment used in steps five *(*5*)* though nine (9) wash their hands and don new gloves. The instruments will then be packed as follows:

a. Individual instruments will be placed in individual autoclave bags,

b. A temperature indicator strip is placed in each bag,

c. Autoclave bags should then be sealed and placed on the autoclave instrument trays.

* Appropriately trained staffs will then use in steps five *(*5*)* though nine (9) wash their hands. The instruments will then be packed as follows:

a. Individual instruments will be placed in individual autoclave bags,

b. A temperature indicator strip is placed in each bag,

c. Autoclave bags should then be sealed and placed on the autoclave instrument trays.

**13. STERILIZATION:**

* Once the instruments have been properly packed, they should be placed directly into the autoclave and run through a complete cycle, as follows:

a. Packages with sharp instruments in them should not be allowed to touch each other. Use sterile gauze or cotton between the instruments to protect each other from puncture during the sterilization process.

b. Any items that might hold water should be placed in a manner which facilitates drainage

c. Check reservoir to make sure unit is full of distilled water.

d. Press on/stand-by button to start unit and place autoclave specific instrument trays into the autoclave.

e. A spore test indicator should be used at least weekly. Weekly spore testing is recommended if autoclave is used frequent (i.e. daily autoclaving is performed). Spore testing for each use is recommended if autoclaving is infrequent (i.e. less than once a week autoclaving). All spore testing results should be maintained for reference.

f. Close and lock autoclave doors checking that “door indicator” is not displayed on the readout.

g. **Press desired cycle button to start cycle. The criteria for determining the appropriate cycle is as follows: (Note: the first load of the day should be 15 minutes longer)**

(1) **Unwrapped: 132 C/270F 3 minutes**

**Wrapped 132 C/270F l0 minutes**

**Liquids 121 C/250F 40 minutes**

**Packs 121 C/250F 30 minutes**

**(2) When in doubt or when time is available, always choose the longest cycle.**

**(3)** Button will illuminate at the end of the cycle, “door indicator” will display and

tone will sound.

STERILIZATION:

* Once the instruments have been properly packed, they should be placed directly into the autoclave and run through a complete cycle, as follows:

a. Packages with sharp instruments in them should not be allowed to touch each other. Use sterile gauze or cotton between the instruments to protect each other from puncture during the sterilization process.

b. Any items that might hold water should be placed in a manner which facilitates drainage

c. Check reservoir to make sure unit is full of distilled water.

d. Press on/stand-by button to start unit and place autoclave specific instrument trays into the autoclave.

e. A spore test indicator should be used at least weekly. Weekly spore testing is recommended if autoclave is used frequent (i.e. daily autoclaving is performed). Spore testing for each use is recommended if autoclaving is infrequent (i.e. less than once a week autoclaving). All spore testing results should be maintained for reference.

f. Close and lock autoclave doors checking that “door indicator” is not displayed on the readout.

g. **Press desired cycle button to start cycle. The criteria for determining the appropriate cycle is as follows: (Note: the first load of the day should be 15 minutes longer)**

(1) **Unwrapped: 132 C/270F 10 minutes**

**Wrapped 132 C/270F 20 minutes**

**Liquids 121 C/250F 40 minutes**

**Packs 121 C/250F 60 minutes**

**(2) When in doubt or when time is available, always choose the longest cycle.**

**(3)** Button will illuminate at the end of the cycle, “door indicator” will display and

tone will sound.

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Department: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**