TITLE: AUTOCLAVE (PRE-STERILIZATION, OPERATION AND MAINTENANCE)

Scope/Purpose: To provide guidance on the sterilization process to ensure client safety and best practice in the sterilization of equipment, use of the autoclave, as well as preventative and scheduled maintenance procedures.

Division/Department: All Clinics
Policy/Procedure #: __New__ __X__Replacement for: Cleaning Instruments and Use of Autoclave (9/26/2013)

Original Date: 9/26/2013
Date Reviewed: April 2016
Date Revised: 05/17/2016
Implementation: CPIC Approved: Board Approved: 

Responsible Party: Director of Nursing

DEFINITIONS:

AUTOCLAVE: A device designed to sterilize equipment or biological waste by means of moist heat (steam) under pressure. Autoclaving is the most reliable method to destroy all forms of microorganisms.

BIOHAZARDOUS MATERIAL: Any waste containing infections material or potentially infectious material.

STERILIZE: The use of a physical or chemical procedure to destroy all microorganisms and their spores.

POLICY:

This policy provides practical information that can be utilized by all clinical staff for the pre-sterilization of equipment, safe operating, and appropriate maintenance of the autoclave. Patient and staff safety are ensured when best practices are followed.

HAZARDS ASSOCIATED WITH AUTOCLAVE USE:

- Heat burns from hot materials and autoclave chamber walls and door;
- Steam burns from residual steam coming from autoclave and materials on completion of cycle;
- Hand and arm injuries when closing the door; and
- Body injury if there is an explosion.

PROCEDURE:

1. Safety Practices of the Autoclave:
   - Facility Managers shall ensure staff are trained on use of site autoclave prior to staff using the autoclave.
   - Staff shall adhere to the following practices when using the autoclave:
     - Follow manufacturer’s instructions for loading, operating, maintaining, cleaning, and performing quality assurance checks. Do NOT sterilize products/instruments unless they are designated by manufacturer as being heat and moisture resistant.
     - Check inside the autoclave before using it to make sure no items were left by previous user as items left in equipment could pose a hazard.
     - Clean the drain strainer (check the tubing and make sure water is up to the green line) before loading the autoclave.
     - Load the autoclave properly per the manufacturer’s instructions (NOT overload) and select the correct cycle for the material being sterilized.
Ensure the door of the autoclave is **fully closed and latched** when in use.

Open the door slowly (about 1”) when the cycle is complete, keeping head, face, and hands away from the opening. (This releases residual steam and allows pressures within packages to normalize.

Allow the autoclaved load to stand for **10 minutes** in the chamber. This will allow steam to clear and trapped air to escape from hot liquids, reducing risk to operator.

2. **Preparing Items Needing Sterilization:**
   - Use personal protective equipment (PPE) when handling and cleaning contaminated instruments.
   - Clean instruments prior to packaging by:
     - Rinse items using warm water and brushes to clean away any blood or other particles.
     - Soaking (totally submerging) items in **long life activated dialdehyde solution for 24** (twenty four) hours.
   - Post Cleaning (post 24 hour soaking):
     - Rinse all equipment thoroughly with water
     - Add specified amount of **dual enzymatic detergent** and **pre-soak for one hour**.
     - Dry devices following manufacturer’s instructions.
     - Inspect brushes and other cleaning equipment for damage after each use and discard if necessary.
     - Clean, disinfect, dry, and store tools used to assist in cleaning after each use OR discard.
   - Pre packaging:
     - Visually inspect instruments to ensure cleanliness and integrity of the device.
     - Repeat cleaning on any item that is not clean.

3. **Packaging items in autoclave wrap or pouches.**
   - Wrap or bag loose dry materials in **steam-penetrating paper.** (Wrapping too tightly will impede steam penetration, decreasing effectiveness of the process.)
   - Use heat-sensitive tape on the autoclave wrap as this provides monitoring to indicate whether the load has undergone effective steam sterilization process (meaning temperature required for sterilization has been reached).
   - Write the date, batch number that day, employee initials, and label contents on the wrap or pouches to be sterilized.

4. **Loading the autoclave:**
   - Do not mix unwrapped and wrapped items, or sterilized and non-sterilized items.
   - Do not overload.
   - Close and latch door firmly.

5. **Operating the Autoclave:**
   - Follow individual autoclave manufacturer’s operating instructions (make sure water level is up to green fill line).
   - Press ON/Standby button.
   - Refer to Standard Cycle Parameters and select (press) the proper sterilization program time and temperature
   - Press the START button.
   - Address any error messages; make corrections and reprocess the instruments.
• If the autoclave is **not working properly**
  ✓ **Discontinue using** immediately.
  ✓ **Post sign** alerting others not to use the autoclave.
  ✓ **Report issue** to facility manager so service company can be contacted.

6. **Unloading the Autoclave:**
   • Allow the load to **cool down** to room temperature.
   • **Examine** the load items for:
     ✓ Any **signs of compromised** packaging integrity
     ✓ **Change to brown color** of heat sensitive tape or pouch color strip
   • If the heat-sensitive tape or color sensitive strip on outside of autoclave pouch **does not turn brown** (indicating the load did not undergo proper sterilization process), **re-run** the load.

7. **Monitoring:**
   • **ROUTINE:** The following is monitored after each load:
     ✓ Mechanical indicators: Assessment of cycle time and temperature.
     ✓ Chemical indicators: Heat sensitive tape or strips on outside of packs change color when sterilization is successful.
   • **MONTHLY:** Biological testing results are reviewed and action taken for failed results.
   • **ANNUAL:** The autoclave is inspected annually by contract medical equipment inspector.

8. **Cleaning:**
   • **DAILY:** (when autoclave is used)
     ✓ Make sure unit is cool before cleaning
     ✓ Wipe external surfaces with a soft, dry cloth and wash occasionally with a damp cloth and mild soap or detergent.
     ✓ Clean door gasket and mating surface with a damp cloth. Examine gasket to make sure no damage present which could prevent good sealing surface and impair proper sterilization.
   • **WEEKLY:**
     ✓ **Flush the system with Speed Clean Sterilizer cleaner using the following steps:**
       - **Drain the reservoir** (drain tube is on the front of the autoclave) and **fill** with clean, distilled water and **add one ounce** of Speed Clean Sterilizer to a ‘cool’ chamber.
       - **Run** one ‘30 minute’ cycle (packs) at 121°C (250°F). (Instruments must NOT be sterilized while cleaning the autoclave.)
       - **Drain** reservoir and fill with clean distilled or demineralized water and **run one ‘3 minute’ cycle** (unwrapped) at 132°C (270°F).
       - **Drain reservoir** and allow sterilizer to **cool to room temperature**.
       - **Remove the trays and tray plate and wipe them down.** (Grasp the tray rack on both sides in the front and gently pull outward. The rack and tray plate should slide out together).
       - **Wipe out the inside** of the autoclave being careful to not damage the heater element or the temperature and level sensor components.
       - **Re-install the tray rack and tray plate.** (Position the two rear posts of the tray rack in the track holes of the tray plate. Hold the front end of the tray rack at 30° angle from the tray plate. Then insert rear end of tray rack and tray plate as an assembly into the chamber. Push the tray rack and tray plate into the chamber completely and re-install the trays.)
       - **Refill the reservoir** with clean distilled or mineralized water to the green fill line.
     ✓ **Perform pressure relief valve check using the following steps:**
- Remove the top inspection cover, select the UNWRAPPED cycle and START cycle.
- To prevent burn injury use a SCREWDRIVER OR ROD to pull the wire ring and place a steam barrier (rolled up towel) around the bottom of the sterilizer.

- PULL UPWARD on the wire ring for 3 seconds when the ‘heat up’ portion of the cycle is complete and the elapsed time is counted on the display panel. Steam should discharge from beneath the rear of the unit.
- RELEASE the wire ring of the pressure release valve. (The valve should seat, stopping the release of steam).
- PRESS STOP to prevent overheating.
- IF EXCESSIVE FORCE IS REQUIRED to open the pressure release valve OR PRESSURE RELIEF VALVE WILL NOT RESEAT PROPERLY, follow instructions in item #5. (Stop using machine, place sign machine requires repairs and notify the facility manager so arrangements for repair of machine can be made).

- **MONTHLY check of Biological indicators:** Testing is performed to verify sterility. Process involves sending a ‘processed pack or pouch’ to an outside lab for culture.
  - **Log information** on the Autoclave Control Log form and attach Autoclave Biological Indicators Testing reports received from outside agency to the bottom of the Autoclave Control Log form.
  - **If autoclave fails biological testing:**
    - Make arrangements to have machine serviced
    - Pull all instruments from failed date
    - Re-sterilize instruments once machine has been serviced

9. **Recordkeeping:** (Refer to Attachment 1)
- **Log forms** should be kept in the binder labeled AUTOCLAVE for easy access.
- **Entries** must be placed on the log form each time the autoclave is used. Entries should include operator’s name, date, and time.
- **Failure event** (any malfunction or failed biological testing) and **action taken** must be recorded on the log form.
- **Maintain** all autoclave thermometer and temperature logs in a secure place for three years.

**RELATED POLICY:**
(Name of any related procedure here)

**REFERENCES:**


Best Practices For Cleaning, Disinfection and Sterilization of Medical Equipment/Devices in All Health Care Settings, 3rd edition. Retrieved from [http://www.academia.edu/6397803/Lates_for_Cleaning_Disinfection_and_Sterilization_of_Medical_Equipment_Devices_In_All_Health_Care_Settings_3rd_edition_Provincial_Infectious_Diseases_Advisory_Committee_PIDAC](http://www.academia.edu/6397803/Lates_for_Cleaning_Disinfection_and_Sterilization_of_Medical_Equipment_Devices_In_All_Health_Care_Settings_3rd_edition_Provincial_Infectious_Diseases_Advisory_Committee_PIDAC)
**REQUIRED BY:**
(Leave blank if none)

**ATTACHMENTS/ENCLOSURES:**
Attachment 1 - Copy of Autoclave Log
Attachment 2 - Autoclave Cleaning Tip Sheet

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**POLICY/PROCEDURE TRACKING FORM** (to be added as last page of each P&P for documentation of changes)
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