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Learning Objectives

Upon completion of this presentation, you will be able to:

- Recognize and identify potential causes of wet packs in steam sterilization
- Describe preventative measures in order to abate wet packs
- Compose and incorporate quality audit tools/measures to negate wet packs

What Is A Wet Pack?

A wet pack is a, "Package or container with moisture after the sterilization process is completed."

IAHCSSMM (2016)

What does that really mean?

A wet pack means:

- Potential for microorganism penetration
- Unsterile pack
- Indication of change

Steam Sterilization: Key Components

Mechanical:

- Steam delivery system
- Sterilizer performance

Environment:

- Room temperature and humidity

Human:

- Daily equipment inspection
- Preparation and packaging
- Load content and configuration

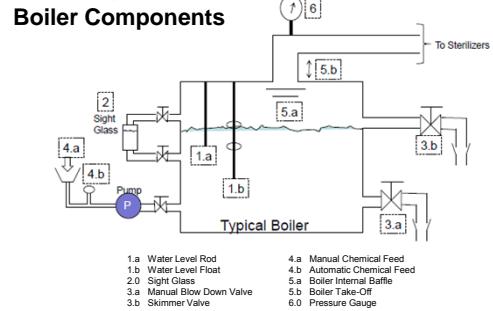
Steam Sterilization: Mechanical

- Steam delivery system
 - Boiler/Generator
- Sterilizer performance (Autoclave)

The BOILER



Boiler Schematic



Steam Generator

- The Steam Generator creates the steam required for the sterilization process.
- An improperly functioning steam generator can cause water to enter the chamber and may contribute to wet packs.



Sterilizer

Visual Inspection (Daily):

- Chamber Improperly Leveled
- Steam traps and strainers non-operational
- Chamber steam baffle failure or removal
- Sterilizer door
- Loading car/cart

Be aware of:

- Steam to Chamber valve leakage
- Chamber drain valve or check valve leakage
- Sterilizer improper calibration
- Steam generator operation & Steam pressure regulator

Steam Sterilization: Environment

- Heating, ventilation, and air condition (HVAC)
- Monitor HVAC performance parameters
- Small variance vs. large variance
- Conduct a risk assessment when parameter variance occurs

Steam Sterilization: Human

- Daily equipment inspection
- Preparation and packaging
- Load content and configuration

Daily Inspection



The image shows a sterilization chamber with a green door. To the right, there are two inset images: one showing a blue glove with a circular gauge, and another showing a pair of yellow gloves.


Preparation and Packaging: Complex Process



The image shows a group of people's hands pointing at a large, detailed technical drawing or blueprint spread out on a wooden table.

Preparation: Packaging Material Selection

- Allow air removal, steam penetration, and steam removal
- Provide a barrier against microorganisms
- Be compatible with the intended sterilization methods



The image contains two photographs of instrument trays. The top one is a blue tray with various surgical instruments, and the bottom one is a white tray with surgical instruments.

Packaging Material


- Sterilization Wraps
 - Woven
 - Non-woven
- Paper-Plastic Pouches
- Rigid Containers



The image shows three different types of packaging materials: a blue woven wrap, a blue paper-plastic pouch, and a rigid container.

Preparation: Basin Set

- Place all basins in the same direction
- Nested utensils separated with nonlinting absorbent material
- Permit air removal, steam penetration and removal



The image shows a pair of hands placing a metal basin into a larger basin that is lined with a blue absorbent material.

Instrument Set Preparation

- Instruments should be:
 - Clean and dry
 - Inspected for cleanliness and damage
 - Assembled; and packaged according to IFU



The image shows two photographs of instrument sets. The top one is a blue tray with surgical instruments, and the bottom one is a white tray with surgical instruments.

Instrument Sets: Configuration

- Use compatible containers/organizing accessories
- Position instruments to allow sterilant contact with all surfaces
- Open lumened ports
- Unlatch ratcheted instruments
- Use tip-protectors
- Do not use rubber bands to secure instruments



Instrument Set: Configuration, continued

- Concave or flat surfaces should be placed on edge
- Place heavy instruments so as not to damage delicate items
- Position lighter items to protect tips and prevent damage from changes in position
- Sets should not weigh <25 lbs.
- Use approved organizing containers and accessories
- Use appropriate sized instrument tray
- Ok to use approved mat



Instrument Set Contents

- Instruments must be dry
- Open box locks (stringers)
- Even instrument distribution
- Disassemble instruments
- Alternate heavy handle instruments
- Organizing accessories may be used if: Designed and intended for sterilization



Woven Wraps

- Woven wrap density
- Consult newer textile manufacturers
 - Preparation instructions
 - Sterilization parameters

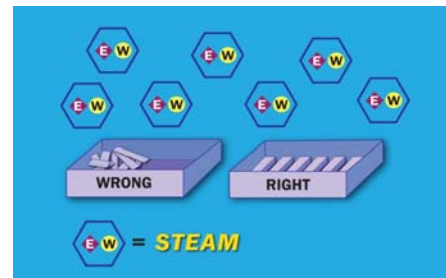


Events During the Sterilization Process

- Heat Transfer
- Condensation
- Re-vaporization



Heat Transfer



Condensation

Sterilization Process

- Steam contacts metal surface
- Heat energy absorbed by metal
- Steam becomes water



Revaporization

Sterilization Process Drying

- Water becomes steam
- Steam removed from chamber



Loading the Sterilizer

- Acceptable absorbent shelf liners
- Consult manufacturer's instructions for use



Loading the Sterilizer, continued

- Do not allow items to touch chamber walls
- User sterilizer carts whenever possible
- Thoroughly cool items on sterilizer carts
- Avoid overloading
- Position correctly



Loading the Sterilizer, continued

- Separate loads if possible
- Mixing load contents



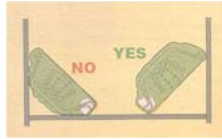
Loading the Sterilizer, continued

When mixing load contents:

- Textiles on top shelves on edge
- Wrapped hard goods below
- Containers below hard goods
- Instrument trays placed flat on shelves
- Basin sets tilted and on edge
- Use baskets to contain small items



Basin Sets – On Edge Tilted

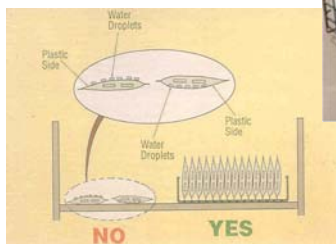


Textile Packs Layers Perpendicular to Shelf

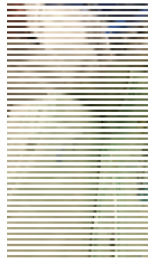


Not correct

Paper/Plastic Peel Pouches on Edge



Placement of Peel Pouches





Unload the Sterilizer: When?

- Leave in chamber or pull out
- Allow items to thoroughly cool on cart
- Prevent condensation

Unload the Sterilizer: Where?

Do not place hot or warm items

- On cold surfaces
- In boxes / bins
- Stacked on top of each other
- Plastic dust covers

Examining Individual Packs

- External
- Internal

Wet Pack Prevention: Audits

- Equipment
- Process
- Environment

Audit: Equipment

Department Checklist

- Steam delivery system
- Autoclave
- Steam supply competition

Audit: Process

Personnel

- Sterile Processing Supervisors
- Sterile Processing Personnel

Preparation and Packaging

- Assembly
- Packaging
- Loading/unloading

Policy and Procedure

Process Audit: Sterilizer Processing Personnel

- Supervisory
- Staff

Process Audit: Preparation and Packaging

Review Processes

- Assembly
- Wrapping
- Loading/Unloading

Process Audit: Preparation and Packaging, continued



Process Audit: Policy and Procedure

Policies and Procedures:

- Clear
- Organized
- Easily followed

States recall procedures

- Staff education
- Is in accordance with current recommended standards and guidelines

Process Audit: Environment

- Seasonal maintenance
- Construction
- Renovation projects
- Temperature and humidity

Action Items

Prevention is key:

- Appropriate training
- Correct Package Selection
- Collaboration with Facility's engineers/service reps
 - Routine maintenance schedule
- Daily inspection
- Proper prep and pack
- Proper load configuration, unloading and storage

When wet packs occur:

- Document and investigate

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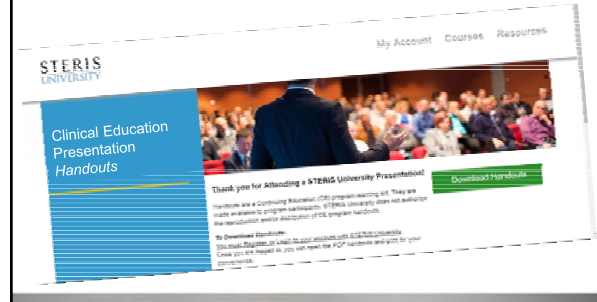


Questions



Handouts

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