

Sterilization and Disinfection A Nursing Responsibility

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Operation  Smile

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OBJECTIVES

At the end of this presentation the participant will be able to:

- Discuss Operation Smile sterilization and disinfection policy.
- Discuss proper implementation of sterilization of re-useable items.
- Identify solutions for onsite sterilization problems.
- Discuss Operation Smile policy concerning disinfection of semi-critical items.
- Describe Operation Smile procedure for high level disinfection.

Operation Smile's Commitment

The logo for Operation Smile is a stylized globe composed of several overlapping, curved lines in shades of blue and grey. Below the globe is a thick, red, upward-curving arc that resembles a smile.

Safe quality surgical care
for every child, every time

Perioperative Nursing

Provide safe, efficient, and caring environment for each surgical patient.

Minimize patient risk for surgical site infection

Prevent cross contamination of communicable diseases between patients.

Infection Risk



Contaminated instruments

- Inadequately cleaned and sterilized
- Contaminated after sterilization.

Safe practice recommendations

- Apply principles of aseptic and sterile techniques which have a direct influence on patient outcomes.
- Apply principles of sterilization and disinfection to safeguard patients and lower their risk for hospital acquired infections.

Operation Smile

Ensuring Safe Surgery

1. Global Standards of Care

Standard 3.6

Requires equipment for proper sterilization of surgical instruments

2. Medical Policy

Policy 5.6

Sterilization and Disinfection

Purpose of Operation Smile Sterilization Policy



- ✧ Ensure that recommended standards of practice with regards to infection control are being applied in the care of Operation Smile patients.
- ✧ Create and maintain a sterile environment to reduce the risk to the patient of hospital-acquired infections.
- ✧ Provide quality measures in the proper cleaning, decontamination and sterilization of instruments.



Medical Policy 5.6

Sterilization



1. All critical items such as instruments, supplies and equipment used during surgical procedures must be sterile.
 - a. Critical items are those that enter sterile tissue or the vascular system.
 - b. This includes surgical instruments utilized in cleft lip and cleft palate surgery, craniofacial surgery, microsurgery, orthopedic surgery, burns and dental procedures.



Policy - 2

2. Items are considered sterile that have undergone one of several sterilization methods including steam sterilization, gamma radiation or ethylene oxide.
 - a. Manufactured items must have sterility status printed on the package and the outer packing must be dry and intact to be considered sterile.
 - b. Items that have been processed within the facility must have a positive external and internal chemical indicator reading denoting adequate exposure to sterilization



Policy - 3

3. All facility processed re-useable critical items will be considered unsterile after being packed and moved to another location.



Policy - 4

4. All manufactured sterile supplies must be stored within a closed container in a temperature controlled facility. Extreme temperatures and humidity compromise the outer package and can render an item unsterile.



Policy - 5

5. During missions saturated steam under pressure will be the method of sterilization for re-useable critical items. Single use items should not be sterilized for reuse.

How do we accomplish
all this in a mission
setting?



Quality Assurance



Let's all get on the same page!!

Implementation

Common problems

- Achieving sterilization between cases
- Monitoring sterilization processes
- Adjusting to local hospital policy
- Preparation of sets for processing
- Sterile processing by local hospital
- What to do with wet packs?

Unwrapped Instrument Sets

Gravity Displacement

Autoclaves

Item	Time	Temperature	Pressure	Notes
small load few instruments no lumens	3 minutes	270° F (132°C)	30 psi	clean open box locks chemical indicator
mixed load many instruments lumens	10 minutes	270° F (132°C)	30 psi	clean open box locks chemical indicator flush lumens

*** Add 5 minutes to recommended load time to allow autoclave to reach temperature parameters**

Operation Smile Autoclaves



Load time
unwrapped
items



Reach parameters – 5
minutes

Exposure time – 10 minutes

Total time = 15
minutes

Monitoring Sterilization process



Autoclave tape – external indicator
indicates that set has been exposed to
process parameters.



Chemical indicator – internal
indicator
indicates that process parameters
have been met in the interior of the
wrapped or packaged set

**Indicators should be checked prior to using any item.
No color change – do not use and return for proper
sterilization.**

Wrapped Instrument Sets

- ❖ Wrapped sets require drying time. Drying time requires 15-60 minutes inside autoclave.
- ❖ Packs that are not allowed to dry inside the autoclave are considered unsterile.
- ❖ Wet packs can not be handled or transported. “Strike-through”
- ❖ If hospital requires sets to be wrapped or packaged between cases they must be removed from the autoclave and opened with sterile gloves.

Wrapped or Packaged Instrument Sets in Operation Smile Autoclave

Item	Time	Temperature	Pressure	Notes
Small wrapped or packaged loads	15 minutes Add 5 min to allow for reaching parameters	270° F (132°C)	30 psi	drying time 15-30 min No drying time – packs must be handled with sterile gloves

***Not recommended without use of minimum drying times**

Soft Tissue Surgical Set

Cleaning and Inspection Guidelines

Keith Ballance
August 2014



Instrument wrap



- Usually supplied by hospital
- Should be square wrap with a 6 inch border around each side of the pan.
- Alternative wrap: 140-thread count, 100% cotton muslin.
- Wrap must be laundered between uses
- Disposable wrap must be specific for instrument wrap. It allows for steam penetration and faster

Rigid containers



- Place manufacturer approved unidirectional filter paper in disc holder in the bottom and top lid of the container which allows for steam penetration.
- Filter paper must be changed each time container is processed.
- Container does not need to be wrapped.
- Plastic ties or autoclave tape secures lid and serves as tamper resistance
- The inner casket is removed by the sterile scrub nurse and transferred to the sterile field.

Hospital sterilization

At the end of day instruments sets are cleaned, assembled and wrapped, then taken to be sterilized overnight in hospital autoclaves.



What if packs come back wet?

Wet packs?



If the exterior wrap is damp or wet or if condensate/water droplets are found inside of the pack it must be considered **unsterile**.



Pack should be opened and instruments for the first case should be flash sterilized in the Operation Smile autoclaves. Additional loads should be done as time allows.

Wet packs

Causes and Solutions

Cause	Solution
Over packed autoclave	Ask head nurse to run smaller loads
Dehydrated wrap	Launder wrap after each use
Short drying time	Ask head nurse to extend drying times
Stored on solid cool surface	Store on wire mesh shelving
Steam quality	?????

High Level Disinfection (HLD)

- Process of destroying or inhibiting growth of pathogenic microorganisms on inanimate objects.
- Reduces the risk of microbial contamination but does not provide the same level of assurance as sterilization because all spores are not killed.

HLD Policy

All semi-critical items that will be re-used for patient care will undergo high level disinfection.



HLD is NOT Sterilization

Purpose of HLD



- Disinfect semi-critical items, which are those that come into contact with non-intact skin and mucous membranes.
- Kill all bacteria, fungi, viruses and TB on hard, non-porous surfaces.
- Does not kill spores
- Intended to disinfect anesthesia scope blades.

Preparation of Disinfectant Solution

Diluted household **bleach: 1:20 dilution**

1 part bleach to 20 parts water.

50 ml bleach in 1 liter of water

or

$\frac{3}{4}$ cup (187.5 ml) bleach in 1 gallon (3.8 L) of
water

HLD Procedure

- Prepare disinfectant solution
- Submerge item in solution
- Soak/contact time **12-30 minutes**
- Minimum contact time is 12 minutes for HLD
- **Rinse thoroughly** with water prior to use
- Monitor anesthesia blades for possibility of metal alloy reaction especially with gold plated blades.



make.

do.





WON'T DO

TRUST

Patients and surgeons TRUST
that we have provided a sterile
environment.

Surgical
Conscience

Future Goals

- Monitoring the effectiveness of sterilization processes with biological indicator testing
- Unidirectional filter paper for rigid containers in all cargo.
- Nursing education in sterilization processes

Summary

- Sterilization and disinfection is a nursing responsibility that involves the trust of the patient and the entire surgical team.
- It is a quality assurance measure that affects patient outcomes.
- In the mission field methods are altered but endpoints are the same.
- There is no compromise on **STERILITY**.

Resources

Alexander's Care of the Patient in Surgery, Jane C. Rothrock, 15th edition, Mosby Elsevier, 2015.

Berry & Kohn's Operating Room Technique, Nancymarie Phillips, 12th edition, Mosby Elsevier, 2012.

Essentials of Perioperative Nursing, Goodman and Spry, 5th edition, Jones and Bartlett Learning, 2014.

Perioperative Standards and Recommended Practice, Association of Perioperative Registered Nurses (AORN), 2014 edition.

Surgical Technology for the Surgical Technologist: A Positive Care Approach, American Association of Surgical Technologist (AST), 4th edition, Delmar, 2012.

Questions or
comments