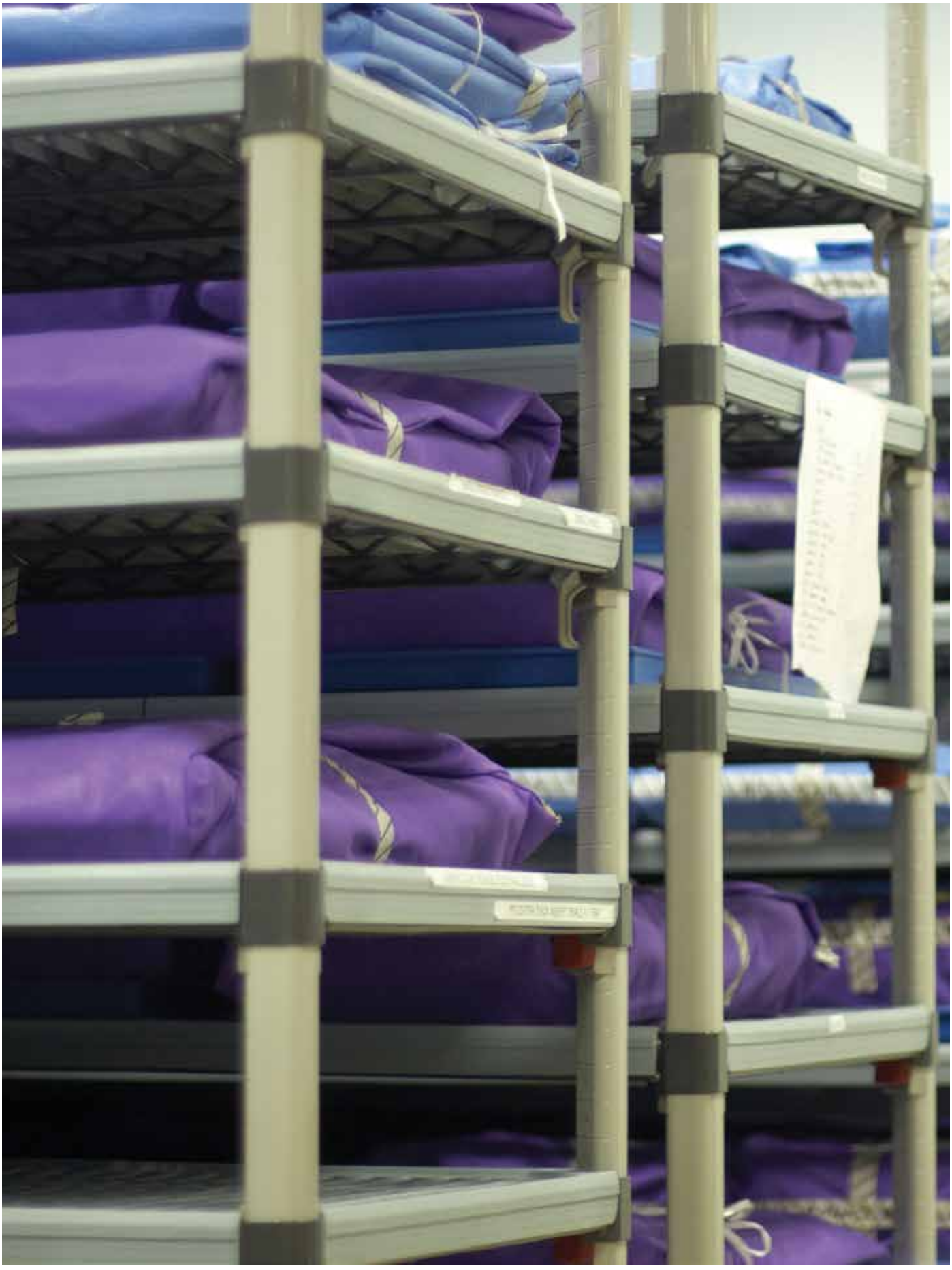

CRCST Self-Study Lesson Plan
Lesson No. CRCST 155 (Technical Continuing Education - TCE)

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Preventing Wet Packs

LEARNING OBJECTIVES

1. Learn how to identify wet packs
2. Review the effect wet packs have on patient care
3. Identify the more common causes of wet packs
4. Identify strategies to prevent wet packs

IT HAS BEEN A GOOD MORNING IN CENTRAL SERVICE (CS), AND THEN the department gets the dreaded call stating that the Operating Room (OR) team opened a tray and discovered it is "wet." Finding the cause of wet packs can be a daunting task because there can be many variables involved. Only after the cause is identified can the solution can be explored and implemented.

This lesson will address the patient care issues caused by wet packs, the reasons wet packs occur, and the strategies to prevent wet packs.

OBJECTIVE 1: LEARN HOW TO IDENTIFY WET PACKS

The definition of a wet pack, according to the Association for the Advancement of Medical Instrumentation (AAMI), is the presence of any moisture (internal or external) left in or on a package after sterilization. One wet pack is considered a single wet pack; however, if there are two or more packages the load should be considered a wet load and the load should not be released. Wet packs should be completely reprocessed, with measures taken to prevent excess moisture/condensation from occurring. If wet packs are observed in the user area, such as the OR, they should not be used.

Wet packs can be found in multiple locations. They may be found in the sterilizer, storage area, on a case cart or in the surgical environment. Most often, wet packs are discovered after the fact – such as in surgery, after the tray has been opened.

OBJECTIVE 2: REVIEW THE EFFECT WET PACKS HAVE ON PATIENT CARE

Instrumentation-related issues can and do arise, even for the most conscientious and diligent CS professionals. Wet packs are one of those issues, and their presence has the potential for jeopardizing patient care and safety. Moisture creates a pathway for microorganisms to travel from the outside of the sterilized package to the inside of the package. If a wet pack is placed on a sterile field, it renders the

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Dense instrument set	Steam cannot readily escape
Loading of the sterilizer too tightly	Insufficient space for steam to escape after sterilization
Improper packaging, such as the package bound too tightly	Prevents steam from leaving the package
Improperly loading the sterilizer so that the metal containers are above peel packs or fabrics	Causes condensation to drip onto the lighter items below
Solid flat tray or basins not placed on an angle	Prevents steam from escaping
Improperly prepared items that results in concave surfaces in the wrong position, Multi-part instrumentation not disassembled	Prevents steam from escaping
Not following medical device IFUs	Some IFU require longer dry times
Using the wrong type of packaging material.	Using a packaging material not validated for steam sterilization can result in moisture being trapped, leading to a wet pack
Loading peel pouches in the sterilizer flat	May not permit steam from escaping
Wet Instrumentation or packaging going into the sterilizer	Insufficient drying of instrumentation or packaging before sterilization may leave excess moisture in the set
Wet sterilization containers	Check the container IFU to assure the correct sterilization cycle and for loading contents
Pooling on/in a wrapper caused by excess folds	Check the wrapper size. If the wrapper is too large for the item being packaged, it may create a pooling area for steam.
Insufficient cooling time allotted for sterilized items	Transporting hot items to a cool surface or environment can result in condensation

Boiler not maintained	An improperly-maintained boiler can cause wet steam
Steam lines not insulated	Not having insulated steam lines can result in condensation
Clogged strainer	Prevents the complete release of steam from the chamber
Malfunction of drain trap or drain check valve	May result in wet steam
Poor steam quality	Steam quality is expressed as the dryness of the steam. Steam dryness should be between 97% and 100%.
Sterilizer door gasket not completely intact	A compromised door gasket prevents steam from escaping
Malfunctioning sterilizer gauges and controls	Any malfunction of the mechanics of a sterilizer can result in the load being unsterile (and may also contribute to the incidence of wet packs)

sterile field contaminated. When a wet package is opened in surgery, it cannot be used and the entire sterile field must be broken down and set up again using different disposable and reusable items. As such, the discovery of a wet pack in the OR can and frequently does result in a delayed surgical case.

OBJECTIVE 3: IDENTIFY THE MORE COMMON CAUSES OF WET PACKS

Wet packs can be caused by numerous factors, including steam quality, sterilizer malfunction, storage conditions, packaging errors, and sterilizer and operator errors. Clinical errors are one of the leading causes of wet packs. The chart above identifies some of the more common clinical causes. These charts are intended to serve as a guide and should not be viewed as a comprehensive list of causes.

Figure 1 shows a package wrapped too tightly. Wrapping a package too tightly can cause steam to remain inside the

Figure 1: Package wrapped too tightly

Figure 2: Wrapped package placed under rigid container

package, thereby causing a wet pack.

Figure 2 shows a flat-wrapped tray sterilized underneath a rigid container. The flat wrap has noticeable liquid on the outside, rendering it a wet pack and unusable.

Figure 3 shows a pipe that is not completely insulated. Partially insulated pipes can cause wet packs.

Figure 3: Pipe not completely insulated

OBJECTIVE 4: IDENTIFY STRATEGIES TO PREVENT WET PACKS

The complex factors that can contribute to a wet pack need to be reviewed and investigated by a multidisciplinary team. This team should include representation from CS, Surgery, Infection Prevention, Facilities, and Clinical Engineering.

The occurrence of all wet packs should be carefully documented and the investigation findings should be carefully reviewed and documented. Finding the cause and remedy of wet packs and/or wet loads can be quite complex, with many factors needing to be taken into consideration. It is essential to then document the findings from the investigation to look for common threads. Some of the data that should be documented includes:

- Time of day the incident occurred;
- Preparation practices in the department;
- Whether the set contents were dry before being packaged;
- Whether items were properly arranged to allow for drying;
- Specific employee to whom the wet load or item can be traced;
- Load type;
- Loading technique;
- Peel pouch placement;
- Loading of the sterilizer cart with mixed loads;
- Date or time of year;
- Whether wet packs are just occurring in a specific sterilizer;
- Maintenance logs for the sterilizer in question;
- Maintenance logs for the boiler system and steam delivery system;
- Tray type;
- Load size and quantity;
- Whether the sterilized item was sufficiently cooled before it was moved;

CS professionals must remain diligent in their quest to process, produce and present items to surgery at the right time and in the right condition. Wet packs are one type of occurrence that can jeopardize patient safety because moisture creates a pathway for microorganisms to travel from the outside of the sterilized package to the inside of the package.

- Placement of items in the sterilizer;
- Whether the instructions for use (IFU) of the medical device was followed;
- Whether there was compliance with the packaging manufacturer's IFU;
- Whether the load was removed correctly from the sterilizer;
- Whether the air conditioning vents in the cool-down area are in the correct location;
- Whether the environmental humidity and temperature were appropriate; and
- Whether CS professionals were properly trained.

Documentation should be carefully reviewed to identify any recurrent trends, and a plan should be developed to rectify the situation(s) leading to the wet pack. For example, if a common trend is improper loading or wet instruments being placed into sets during assembly, or the assembled instrument set is being placed into a wet container, the solution may be to develop a training program that includes a competency assessment to target these errors. Staff should then be retrained and the processes should be monitored to ensure the processes are being performed correctly and consistently.

If the trend shows that wet packs only occur in a certain sterilizer, the Clinical Engineering department can review the sterilizer and the boiler maintenance records to determine a possible cause. The sterilizer will be shut down until the exact cause is determined and the sterilizer is repaired. This sterilizer should then be monitored to ensure the equipment is repaired and working properly.

CONCLUSION

CS professionals must remain diligent in their quest to process, produce and present items to surgery at the right time and in the right condition. Wet packs are one type of occurrence that can jeopardize patient safety because moisture creates a pathway for microorganisms to travel from the outside of the sterilized package to the inside of the package. The presence of a wet pack can also lead to procedure delays because if a wet pack is placed on a sterile field, it renders the sterile field contaminated.

Participating in an ongoing assessment of processes, practices and equipment operation is essential for reducing the likelihood for wet packs and quickly identifying their root cause when they occur.

RESOURCES

Association for the Advancement of Medical Instrumentation. ANSI/AAMI ST79:2010 & A1:2010 & A2:2011 & A3:2012 & A4:2013, *Comprehensive guide to steam sterilization and sterility assurance in health care facilities.*

Association of periOperative Registered Nurses. AORN *Guidelines for the Selection and Use of Packaging Systems for Sterilization*. 2017.

IAHCSMM ACKNOWLEDGES THE FOLLOWING CS PROFESSIONALS FOR THEIR ASSISTANCE IN THE CIS LESSON PLAN SERIES

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CRCST Self-Study Lesson Plan Quiz - Preventing Wet Packs

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Lesson No. CRCST 155 (Technical Continuing Education - TCE) • Lesson expires July 2020

1. A wet pack can be identified by:
a. The color of the tape
b. Moisture in or on the pack
c. The size of the pack
d. The weight of the pack

2. When are wet packs most often identified?
a. After assembly in the Central Service department
b. On the shelf in the Central Service department
c. In the sterilizer
d. In the Operating Room

3. Wet packs should be:
a. Completely reprocessed
b. Rewrapped and sterilized
c. Discarded
d. Used after the moisture has dried

4. Moisture on the outside of a sterilized pack can create a pathway for microorganisms.
a. True
b. False

5. If a wet pack is opened in surgery, the instruments should be dried before placing them on the sterile field.
a. True
b. False

6. Multi-part instruments that have not been disassembled for sterilization can be a cause of wet packs.
a. True
b. False

7. Wet packs can be caused by:
a. Dense instrument sets
b. Improper packaging
c. Improper loading of the sterilizer
d. All the above

8. Sterilizer and utility causes of wet packs include:
a. Wet sterilization containers
b. Old equipment
c. Steam lines not properly insulated
d. All the above

9. Placing instruments in a wet sterilization container can be a clinical cause of wet packs.
a. True
b. False

10. Wrappers that are too large can be a cause of wet packs.
a. True
b. False

11. A clogged sterilizer strainer is defined as a _____ cause of wet packs.
a. Clinical
b. Engineering
c. Sterilizer and utility
d. Staff

12. All occurrences of wet packs should be documented.
a. True
b. False

13. When a wet pack occurs, a multidiscipline investigative team should always include the sterilizer repair technician.
a. True
b. False

14. Upon determining a wet load was caused by instruments being placed into a wet container, the solution should include:
a. Training
b. Competency assessment
c. Process monitoring
d. All the above

15. Data that should be documented when investigating wet packs includes:
a. Sterilization maintenance logs
b. The type of load sterilized
c. The location of the air conditioning vents during the cooling process
d. All the above

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