Of Critical Importance: Infection Prevention Strategies for Environmental Management of the CSSD

Study Points

I. Introduction

Management of the CSSD environment is vital to preventing surgical site infections. In fact, it only takes one break in technique to create the steps necessary for infection. This is why, as a CS technician, you must be aware of how pathogens are spread, and the infection prevention strategies that create a safe CSSD environment.

II. Infection Prevention & Control Practices

Healthcare-associated infections are caused by bacteria, fungi, viruses, spores and protozoa that are acquired during the course of receiving medical care.

Infectious organisms or pathogens can cause infection from their presence, as well as their ability to survive on - and be transferred to - many surfaces.

Pathogens can be transmitted from human to human from excretions, secretions, blood and body fluids transmitted either by:

- Contact with the organism
- Through the air
- Healthcare workers hands

Pathogens can also be spread from surface to human from:

- Medical equipment or devices that are not properly reprocessed
- Improperly cleaned surfaces
- A vehicle such as contaminated sharps

Let’s discuss how you- the CS technician - can prevent the spread of infectious organisms.

A. Asepsis & Surgical/Sterile Consciousness

Asepsis is the absence of the microorganisms that cause disease. There are 5 basic aseptic principles that CS technicians must remember:

1) Any item used for patient care or that is visibly soiled must be considered dirty and contaminated.

2) Any item that has been mechanically cleaned is considered clean. If the item has been cleaned with a detergent disinfectant, it is both clean and decontaminated.
3) Sterile items are devices processed by steam, dry heat, ethylene oxide or other sterilization method to kill all organisms.

4) Dirty, clean and sterile items must be separated at all times.

5) If dirty, clean and sterile items are not separated, correct the situation immediately! If clean or sterile items come in contact with dirty items, they must go through the entire reprocessing cycle, starting with decontamination.

As a CS technician, you must develop what is called a sterile or surgical consciousness - always adhering to the rules of asepsis, and maintaining an awareness of all the possibilities for contamination in your department.

B. Standard Precautions

Standard Precautions for CSSD includes:

- Adherence to hand hygiene protocols
- Using the appropriate personal protective equipment
- Environmental cleaning and disinfection practices
- Taking specific precautions when handling blood, body substances and sharps

1. Hand Hygiene

Hands are the primary vehicle for disease-causing organisms; therefore, always practice excellent hand hygiene by using soap and water or alcohol-based hand rub when indicated, and doing so properly.

2. Personal Protective Equipment (PPE) & Appropriate Attire

Personal protective equipment or PPE protects you from exposure to, or contact with, pathogens. The appropriate PPE is based on the expected level of contamination during your tasks.

The decontamination area is where there is the greatest likelihood of exposure to biohazardous material from contaminated devices, as well as chemical solutions. Wear scrubs, head cover, utility gloves, gown or apron, eye protection, and masks or face shields.

Semi-restricted areas such as Clean Assembly, Sterile Processing, and Sterile Storage, and support areas for the OR require surgical scrub and hair coverings.

Restricted areas, where sterile procedures are performed, require surgical scrub attire, hair covering and a mask.

Unrestricted areas including normal traffic areas, such as equipment rooms and locker rooms, do not require PPE.

PPE Rules:

- Before donning PPE always perform hand hygiene.
• During use, change your PPE if it becomes soiled or contaminated.
• Remove and discard PPE before leaving the decontamination area, according to protocol, and in a way that does not contaminate you. Always follow with hand hygiene.

3. Environmental Cleaning & Disinfection

It is also important to clean and disinfect all CS work areas to reduce the transmission of pathogens. Decontamination, preparation and sterilization areas require the same extensive cleaning procedures used to clean the OR and delivery rooms. While some cleaning may be performed by Environmental Service personnel, CSSD personnel may be responsible for some level of cleaning in their area.

4. Precautions When Handling Blood, Body Substances and Sharps

• Treat all items used on patients as potentially contaminated.
• Wear the appropriate PPE, and handle sutures and other sharps carefully.
• Never be afraid to report an incident involving sharps, and don’t wait to report the injury.
• Take advantage of your facility’s free Hepatitis B vaccine. This will help protect you from job-related exposure to bloodborne pathogens.

III. Health & Personal Hygiene Rules

• Keep your hair, body and nails clean at all times.

NOTE: While AORN allows nail polish that is not chipped, AAMI standards state nail polish should not be worn. To be safe, keep your nails short and natural – no artificial nails that can trap microorganisms – and do not wear jewelry or watches.

• Before beginning work, change into facility-issued scrubs in the locker room. If your scrubs or garments become soiled or wet, change them immediately.
• Wear shoes that are clean, non-skid, and sturdy.
• Make sure all hair is completely covered – including beards and facial hair!
• When your shift is over, change into street clothes before leaving the facility so that you don’t carry potentially infectious organisms out the door. Follow the rules regarding laundering at home versus by the facility.
• Eating and drinking in restricted and semi-restricted areas is never allowed.

IV. Design and Traffic Flow of CSSD Environment

A properly designed CS department:

• Separates contaminated and bio-hazardous areas from clean and sterile areas
- Facilitates effective and efficient processing from decontamination to storage
- Avoids cross contamination between these steps

In the **decontamination area**, the separation of “clean” and “dirty” work areas helps contain potential contaminants within a particular section, and prevents cross-contamination or recontamination of instruments.

When instruments and devices are received into the decontamination area, they must be separated by their different methods of processing:

- **One area for items requiring additional processing after decontamination**, and before patient use, such as most surgical instruments
- **An area for items requiring manual disinfection after cleaning** such as powered surgical instruments, so they are safe for handling in the preparation and packaging area
- **Another area for items that do not require additional procedures**, such as bed pans

There should be a separate break out area dedicated to unpacking items from shipping containers. In this and other areas, be sure to keep corrugated boxes out of CSSD!

**Preparation and Packaging** is where decontaminated instruments, clean instruments and other medical and surgical supplies are inspected, and assembled into sets and trays. They are wrapped, packaged, or placed into rigid sterilization container systems for sterilization, and to protect contents from contamination after processing is complete.

**Sterile Processing** is where sterilizers are located, including the space for loading, unloading, lining up carts and cool-down. Be sure to separate items that have been processed from those that have not.

**Sterile Storage** is where clean and sterile items are stored.

- **Sterilized materials should be packaged, labeled and stored in a manner to ensure sterility**, and each item marked with the sterilization date.
- **The longer items are stored, the more likely they will be compromised.** Therefore, arrange sterile packages by a first in, first out (FIFO) system, and organize items with expiration dates so that items that expire the earliest are used first.
- **The shelf-life of sterile items may be event-related**, meaning the package may come into contact with moisture, have a tear or a puncture, show excessive wear, or was handled roughly – all events that can introduce organisms and contaminate a package.
- **Sterile items must be stored under environmentally controlled conditions** which must be monitored, including temperature and humidity, controlled air changes, and exhaust ventilation.

Finally, items should be transported in a manner that preserves the processed status, such as covered or enclosed carts, according to state guidelines.
V. Traffic Control Patterns

Traffic control patterns must be followed. Staff and visitors can carry microorganisms into processing areas, increasing the potential for environmental contamination; and staff and visitors must be protected from pathogens present on contaminated items. Good traffic control practices also minimize the potential for contamination of immediate use steam sterilized (IUSS) items during removal from the sterilizer and transfer to the point of use.

Every CS technician is responsible for actively monitoring areas for possible sources of cross-contamination, as well as enforcing dress code, PPE and traffic control rules.

VI. Summary

Your role as a CS professional is to transform contaminated instruments and devices into those that are safe for patient care. But this can only happen if you develop a surgical or sterile consciousness. By becoming aware of all the possibilities of contamination in the CSSD environment, following Standard Precautions and personal health protocols, and adhering to work flow and traffic control rules, you can help prevent the spread of infectious organisms.

VII. References


ANSI/AAMI ST79:2006. Comprehensive Guide to Steam Sterilization and Sterility Assurance in Health Care facilities. (Sections 3 and 8.9)


