

STERILE PROCESSING BASIC TRAINING: SPD BOOT CAMP®

Module #4:
*Basic Infection Prevention and Control for
Sterile Processing Professionals*

by

The Central Sterile Processing Initiative

Sterile Processing Basic Training: SPD Boot Camp

Published by:

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Message From The Central Sterile Processing Initiative Director

Thank you for purchasing this e-course, an introductory and review survey of the basics of sterile processing, *Sterile Processing Basic Training: SPD Boot Camp*.

Thank you, enjoy the program, and I am always just an e-mail away if you have questions or need my assistance during the course of your studies.

Sincerely,
Shane Huey,
Director

www.centralsterileprocessing.net

Preface

This e-course is neither the traditional textbook nor the typical student workbook. It is, rather, a combination of the best and most relevant of information related to the basics of sterile processing education and training presented much like a series of lecture notes with multimedia elements included for a more complete and well rounded educational experience for both sterile processing "newbies" and seasoned veterans simply seeking a comprehensive review alike.

The content is structured as a classroom lecture/text with all relevant points discussed and references provided for further information and investigation.

In this text one will be presented with material contained within the industry standard texts, current field relevant articles, and as well have workspace much like contained within the likewise standard workbooks. Herein, however, the student will find no superfluous material to bog one down unnecessarily. Covered within is only that which one needs to know as a sterile processing tech at the level 1 stage—the ESSENTIALS of sterile processing, that which every tech need know—the prerequisites of the field. References will be cited throughout the course, however, to point students in the right direction should they choose (and we are trusting that they will!) to pursue additional knowledge, training, and advancement in the field of sterile processing.

The course consists of multiple individual modules (at least 15 at the time of this printing). Please read through each module from beginning to end at least once before attempting to complete the assignments and then work your way back through the text completing the required coursework specified in the assignment directions at the end of the module (see contents).

Module 4



Module Objectives

- Comprehension of the role of the sterile processing technician in terms of infection prevention and control
- Understanding of concepts of *infection prevention* and *infection control*
- Modes of disease (infection) transmission
- Role of Standard Precautions and PPE in infection control
- Understanding of nosocomial infection
- Understanding of bloodborne pathogens and the OSHA standards related to bloodborne pathogens
- Environmental considerations for infection control in the sterile processing department
- The importance of handwashing

Basic Infection Prevention and Control for Sterile Processing Professionals

Introduction

You have already learned much about the historical developments of sterilization technology and the sterile processing department in module 2. In module 2, the emergence of modern theories and the science of infection transmission was also covered and will not be covered again herein at this point. Rather, to be discussed in this particular module will be the practical aspect of infection control for the sterile processing professional. After all, the sterile processing professional functions daily as an infection prevention specialist. In fact, this is arguably the chief role of the sterile processing technician.

Goals

The primary goal of an infection prevention and control platform in sterile processing is the safe distribution and redistribution of appropriately processed and reprocessed instrumentation and equipment for the areas of service providing for the highest possible quality of patient care.

This is accomplished by means of the eradication of contamination (actual and possible) on the objects of reprocessing.

It is pertinent that policies be in place and the recommended standards be followed in terms of setting guidelines for infection control practices as these are indeed "best practices" and ensure that safety of all concerned parties, e.g., the sterile processing technician, the patient, other staff, visitors, vendors, etc. Infection control practices, positively or negatively, impact all players in the healthcare setting.

The best way to control the spread of infection is to control. This effort begins in the sterile processing department.

Millions of patients in the healthcare system become infected with hospital acquired (or *nosocomial*) infections annually with approximately 100,000 deaths associated with such infections per

year.

A hospital acquired infection (HAI) or nosocomial infection is an infection acquired in the healthcare setting and is directly related to inadequate infection control practices. Not only do such unnecessary and preventable infections impact the lives of patients detrimentally, they also inflate healthcare costs into the billions.

Ironically, it is the healthcare setting itself that enables such infections to emerge. This is so due to 2 particular factors: 1) Presence of a vast number of microorganisms in the healthcare setting and; 2) the compromised immunity of the patients in the healthcare setting.

Environmental considerations are paramount and this is most often beyond the sphere of practice of the sterile processing department rather being the realm of environmental service and the individual nursing unit.

Two primary offenders in the healthcare setting are *Clostridium difficile* (*C. difficile*) and MRSA (as well as other varying strains of staphylococcus). *C. difficile* is particularly difficult to eradicate in its spore form by standard disinfectants utilized in the healthcare setting. The key to prevention of the horizontal spread and migration of this infectious organism is aggressive handwashing and environmental control.

Infection Control Practices in the Sterile Processing Department

- Appropriate attire (e.g., appropriately laundered and maintained scrub suit, surgical cap, shoe covers, etc.)
- Thorough hand hygiene
- Appropriate PPE where required

Hand Hygiene

“Handwashing is the single most effective way to prevent infections in the healthcare environment” (Chobin p. 77). Since Semmelweis discovered the importance of handwashing in reducing microbial count on the hands (see module 2), the spread of disease has been minimized astronomically. Today, this practice remains the number one, most effective method of disease transmission reduction.

Handwashing is effective in that it, when completed appropriately, reduces the microbial count on the hands and, thus, subsequently reduces the amount of microbes transferred horizontally (e.g., from

caregiver to patient).

An effective handwashing cycle consists of a minimum of 15 seconds of handwashing with an appropriate soap (effective surfactant). Wet hands, apply soap, and then lather. Hands (palm side and back side), fingers, and underneath nails should be washed thoroughly for this duration. Dry hands with a disposable paper towel and turn off faucet with towel, not exposed hand.

It is also important to keep hands moisturized due to the amount of daily handwashing in the healthcare setting. Washing should be followed by utilization of a healthcare facility approved moisturizing lotion (hypoallergenic and fragrance free). Such will keep the hands from over drying, which results in flaking of skin and cracks which can become a haven for microorganisms.



Alcohol-based sanitizers may be utilized and are often utilized in



the healthcare setting. This may only be used in cases in which there is no visible soiling of the hands as they will not be as effective as handwashing.

Alcohol-based products work via their ability to denature proteins.

Effective alcohol concentrations are between 60-95% (Chobin 77).

The sterile processing technician is to always wash his or her hands upon both entering the work area and prior to departing. It is also to wash hands immediately after exposure to any potentially contaminated substance or item. Wash also after removal of gloves.

In the healthcare setting, artificial or extended nails should not be worn and nail length should not exceed 1/4". Studies have shown that the area underneath the fingernail can harbor a staggering number of microorganisms, even after washing if the area isn't easily accessible. Short nails renders this area accessible.

Modes of Disease Transmission and the Spread of Infection

Infection transmission is related to the the **reservoir of infection**. The reservoir of infection is the that agent which harbors and transmits a given pathogen. The actual reservoir can be either completely immune to or minimally impacted by the pathogenic agent carried. Such agents can be animate or inanimate (i.e., living or nonliving entities) and are the source of infective matter.

Example reservoirs include: people, animals, and nature itself (e.g., soil, water, etc.)

Disease is typically spread via direct, contact modes as well as via indirect contact (e.g., spread of germs from animate reservoir to inanimate object).

There are three primary modes of disease and infection transmission (see Chobin p. 75):

- 1) **Contact transmission.** Contact may be either direct (person to person) or indirect (exposure to microorganisms via contact with an object contaminated by another individual). With indirect contact, the object of disease transmission is referred to as a **fomite**-an inanimate agent functioning as a reservoir of infection and disease transmission.
- 2) **Vehicle transmission.** This is the spread of infection and disease via a particular, secondary medium. Such media consists of food, water, air, etc.
- 3) **Vector transmission.** Transmission of disease via living carriers such as insects. E.g., ticks, mosquitoes, etc.

Infectious or pathogenic microorganisms typically enter the host via

what is referred to as a **portal of entry** and exit from common **portals of exit**. Portals of entry are the mucous membranes, skin, and parenteral tissue (the area of tissue below the skin or mucous membranes). Portals of exit include, for example, the gastrointestinal, respiratory, and genitourinary tracts.

Standard Precautions



Standard Precautions (formerly recognized as Universal Precautions) refers to a component of OSHA's 1991 OSHA Bloodborne Pathogens Standard in which the requirement is that all body fluids encountered during the course of direct (e.g., nursing) or indirect (e.g., sterile processing) patient care be deemed infectious.

Per *The Central Service Technical Manual, Seventh Edition*:

Standard precautions place emphasis on the use of blood and body fluid precautions for all patients. The most important principle in following these guidelines is to treat all items used with all patients as contaminated. Exposure prevention by the careful handling of needles and other sharps and by the use of gowns and gloves is emphasized as well. Masks with eye protection to prevent mucous membrane exposures of the eyes, nose, and mouth during certain procedures are also included.¹

This standard is of utmost importance to the sterile processor, particular while working in the decontamination area, an area in which the technician comes into contact with soiled and hazardous materials on a regular basis. It is imperative that appropriate PPE (personal protective equipment) be utilized AT ALL TIMES while working in the area. Appropriate PPE consists of:

- Impermeable gown
- Mask with face shield or other eye protection
- Gloves appropriate for the task
- Shoe covers
- Apron
- Etc. as required by policy and standard

¹ p.103

If, as a sterile processing technician, one does not utilize appropriate PPE, he or she is subjecting himself/herself to the possibility and risk of acquiring a serious (**possibly even life threatening!**) infection.

The Standard Precautions are in place as an infection control and prevention tool to minimize such risks.

OSHA's Bloodborne Pathogens Standard and You

The Bloodborne Pathogens Standard was first published by OSHA in 1991 in response to the possibility of bloodborne disease transmission in the healthcare setting (e.g., HIV, hepatitis B and C, etc.) This OSHA standard sets guidelines for employers for protecting their employees from exposure to such pathogens.

***Bloodborne pathogens** - pathogenic microorganisms present in bodily fluids (e.g., blood, saliva, mucous, etc.)

Components of the OSHA Bloodborne Pathogens Standard (see *Central Service Technical Manual, Seventh Edition*, pp. 103-104):

- ✓ **Exposure Control Plan.** The exposure control plan is the written policy and plan for control of exposure to bloodborne pathogens on the part of a facility's employees as well as policy and plan for dealing with incidents of actual exposure.
- ✓ **Staff training.**
- ✓ **Facility provided hepatitis B vaccine** made available to each employee.
- ✓ **Standard Precautions.**
- ✓ **Environmental and engineering controls** for minimization of exposure risk.
- ✓ **Availability of PPE** to all employees at risk of exposure (see Standard Precautions).
- ✓ **Appropriate identification of soiled and hazardous biomaterials**, e.g., via biohazard signs.
- ✓ **Appropriate handling and disposal of sharps.**

- ✓ **Appropriate transport of soiled and hazardous materials.**
- ✓ **Up-to-date training and medical records** of staff related to the OSHA standard.
- ✓ **Facility provided medical evaluation and treatment** in the event of exposure.



Environmental Considerations

Environmental considerations are directly related to the workflow considerations discussed in module 1. Appropriately applied workflow control methodologies minimize the risk of cross contamination and thus are effective infection controls and preventative measures in the sterile processing department.

The workflow pattern of the sterile processing is always from soiled to clean to sterile to storage. Departmental traffic must be monitored and controlled at all times to minimize cross contamination as well as the inadvertent transport of microorganisms. See module 1 for a refresher on workflow and traffic control. The physical design of the sterile processing department should be such as to be conducive to the above.

The physical work area should be well maintained and cleaned on a regular, ongoing basis (all areas). Floors in the sterile processing environment should never be swept (renders dust particles airborne which may enter instrumentation sets, for example) but rather wet mopped and this at least once daily.

Table-top services and similar areas should be kept free from dust (utilizing a wet cloth) and sanitized after each shift at minimum (e.g., wiped down with alcohol or other approved and appropriate disinfectant spray). Both light fixtures and air conditioning vents should be cleaned on a regular basis (at least every 6 months). Walls should also be cleaned as well.

It is recommended that the decontamination area be cleaned between shifts (at the end of each shift). This would include sanitizing counter tops as well as mopping and disinfecting the floor.

Floors should be stripped and refinished on a regular basis to maintain both appearance and minimize microbial growth opportunities.

Each area of the sterile processing department has its own unique environmental control requirements that must be met per standard.

Decontamination

Temp Range - 60-65 deg F

Humidity Level - 30-60%

Air Exchanges - 10/hr

Assembly

Temp Range - 6-73 deg F

Humidity Level - 30-60%

Air Exchanges - 10/hr

Sterile Storage

Temp Range - >75 deg F

Humidity Level - >70%

Air Exchanges - 4/hr

Other Considerations

Infection control and prevention is one of the most important roles of the sterile processing professional from the technician to director. It is the essential component of the job and how SPD professionals directly and indirectly impact patient care (whether positively or negatively). Remember, infection control and prevention starts with YOU. Your job, as an SPD technician is to minimize or altogether eliminate the risk of infection to your patients.

Infection control is not just a pure methodological science—there is room for creativity. See microorganisms everywhere and you will be inclined to become a better practitioner of infection control. This will become easier for you to do as we progress into the next module on microbiology.

Protecting vendors and patients (patients not serviced by your own facility)...

When sending out instrumentation for repair and/or refurbishment, it is imperative that the instrumentation be decontaminated and processed such that it is safe for the vendor to handle, and for use

on other patients of other facilities should, for some unforeseen reason, the other facility does not process the item appropriately (e.g., as with vendor provided loaner sets). Infection control and prevention is universal...it doesn't start and stop with your particular facility but rather is a community enterprise.

Required Readings, Recommended Readings, and Other Resources

Required Reading

Module 4

*Read each of the following articles in its entirety.

http://www.reproline.jhu.edu/english/4morerh/4ip/IP_manual/01_Introduction.pdf

http://www.uth.tmc.edu/uth_orgs/hcpc/procedures/volumel/chapter6/infection_control-02.htm

http://www.westcoastdhb.org.nz/publications/policies_n_procedures/policies_n_procedures_docs/infection_control/Introduction%20To%20Infection%20Control.pdf

<http://microbiology.mtsinai.on.ca/faq/transmission.shtml>

http://www.health.qld.gov.au/EndoscopeReprocessing/module_1/1_1.asp

<http://www.horizonpress.com/jmmb/v2/v2n4/07.pdf>

<http://www.afscme.org/publications/2897.cfm>

Recommended Reading

Central Service Technical Manual, Seventh Edition. Chapter 6.

Chobin, Nancy, Ed. The Basics of Sterile Processing, Third Edition. Chapter 4.

Recommended Links

<http://www.infectioncontroltoday.com>

<http://www.cdc.gov>

Module Assignments

Module 4 Assignments

- 1) Read the module in its entirety from cover to cover at least once.
- 2) Read the infection control articles assigned for required reading.
- 3) Provide a brief but detailed summary (2-3 paragraphs minimum) of each of the required reading assignments.
- 4) Independently, find 3 additional articles online related to the module and summarize (provide web link).
- 5) Find at least one online video on infection control and prevention. Summarize content and provide link to video.
- 6) Describe (2-3 paragraphs) how sterile processing involves infection control and prevention practices.
- 7) In 2-3 paragraphs, describe how handwashing impacts infection control measures (utilize scientific analysis and provide citations for material).
- 8) Research online the topic of *fomites* and list 5 possible fomites in the healthcare setting.
- 9) Research online and find 3 infection control products utilized in the healthcare setting. Describe product, how it works, and provide links to sites consulted.
- 10) Complete the module quiz (posted online separately 3-5 days after posting of this module). Submit with above documents to info@centralsterileprocessing.net. In subject line, type "Module 4 Assignments." In body of e-mail, submit full name.

END MODULE 4