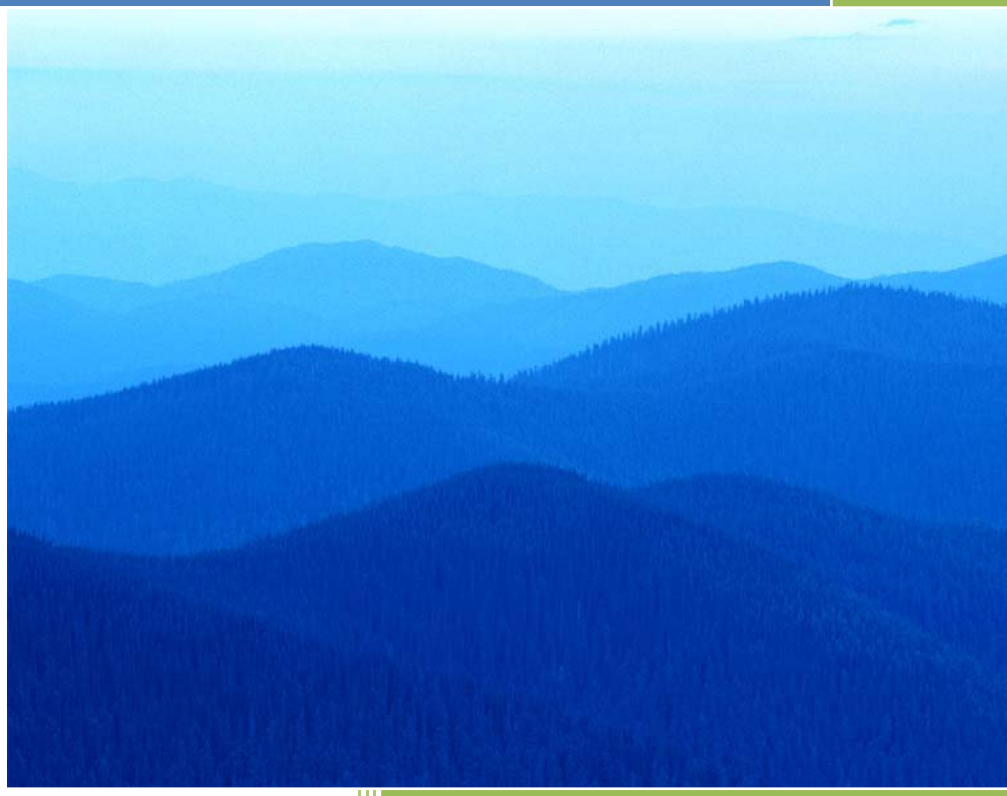
Orientation Program for New Infection Control Professionals



Module 9: Cleaning, Disinfection, and Sterilization of Medical Equipment and Devices

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License Information

Module 9: Cleaning, Disinfection, and Sterilization of Medical Equipment and Devices

Objectives

At the completion of this module, the ICP will:

1. Demonstrate a basic knowledge of cleaning, disinfection and sterilization of medical equipment/devices by completing the exercises in this module.
2. Describe the Spaulding Classifications System and give examples of each category.
3. Outline the key points for workflow, transportation and storage of medical equipment/devices for Sterile Processing Department (SPD), Operating Rooms (OR) and Endoscopy departments

Number of hours

- Key Concepts – 4 hours
- Methods – 4 hours

Required reading

- Best Practices for Cleaning, Disinfection and Sterilization of Medical Equipment/Devices, BC Ministry of Health
- http://www.health.gov.bc.ca/library/publications/year/2011/Best-practice-guidelines-cleaning.pdf

Additional readings

- Hospital Infections Bennett & Brachman's 5th Edition, Chapter 20; p 303
- APIC Text- 3rd Edition-Volume 1 Chapter 21. Cleaning, Disinfection, and Sterilization in Healthcare Facilities.
- Decontamination of Reusable Medical Devices. Canadian Standards Association.
- CSA-Z314.8-08
- Regional Infection Control Network (RICN), SPD Tour Activity List, pg 29. Available at: http://ricn.on.ca/photos/custom/TCICNfiles/Acute%20Care%20ICP%20Orientation%20Binder.pdf
- Infection Prevention and Control Guideline for Flexible Gastrointestinal Endoscopy and Flexible Bronchoscopy found at: http://www.phac-aspc.gc.ca/nois-sinp/guide/endo/index-eng.php

Instructions

Read the material. Write out your answers to the questions and discuss them with your mentor. Your Manager should contact department managers to arrange tours.

Overview

This module is designed to help you become familiar with the processes involved in the reprocessing of medical devices/equipment. The goals of safe reprocessing of medical equipment/devices include:

- Preventing transmission of microorganisms to personnel and clients/patients/residents: and
- Minimizing damage to medical equipment/devices from foreign material (e.g., blood, body fluids, saline and medications) or inappropriate handling (PIDAC, 2010).

One of the roles of the infection control professional is to provide advice on the cleaning, disinfection and sterilization of patient care equipment. In this module you will be asked to become familiar with key concepts for reprocessing. After you are familiar with these concepts take a tour of the departments that provide reprocessing services. Use the check lists provided under the tour section to help guide you and to document your experiences.

Key Concepts

An important place to start is with Spaulding's Classification System. This system was first proposed in 1968 and is so clear and logical that it has been retained by the Infection Control community and others involved in cleaning, disinfection and sterilization processes. Spaulding believed that the nature of disinfection could be understood more readily if instruments and items for patient care were divided into three categories based on the degree of risk of infection involved in the use of the items.

In the section below define each of the device classifications. Identify the method of reprocessing used for each of the classifications and then give an example of medical devices that fall into each of the categories based on the definition of each device classification.

Spaulding classification

Device classification	Definition	Device Examples	Method for reprocessing
Critical			
Semicritical			
Noncritical			

Define key terms about cleaning and disinfection and then give examples.

Cleaning

Term	Definition	Examples
Cleaning		
Detergents		
Enzymatic cleaner		

Disinfection

Term	Definition	Examples
Disinfection		
Disinfectant		
Antiseptic		
Low level disinfection		
High level disinfection		

Disinfectants

There are many disinfectants in use in the healthcare setting. The following disinfectants are commonly used, so it is important to have an understanding of their advantages and disadvantages.

Disinfectant	Advantages	Disadvantages	Main use in your hospital
Alcohol			
Chlorine (Bleach)			
Glutaraldehyde			
Ortho-phthalaldehyde (OPA)			
Quaternary ammonium compounds			

Disinfectant	Advantages	Disadvantages	Main use in your hospital
Hydrogen peroxide			
Accelerated hydrogen peroxide			
Peracetic Acid			

Often chemical high level disinfectants/sterilants have a process in place to test the quality of the product. Review the products that must be tested with quality indicator strips in your facility.

Indicator	Define	Examples of what products they are used with
Test Strips		

Sterilization

Define sterilization and methods to achieve and monitor sterilization.

Term	Definition
Sterilization	

Sterilization Methods	Definition	Disadvantages	Advantages
Steam sterilization			
Hydrogen peroxide gas plasma			
100% Ethylene oxide (ETO)			
Chemical sterilant			
Flash sterilization or immediate-use sterilization			
Event related sterility			

Indicator	Define	Type used
Biological indicators		
Chemical indicators		
Physical indicators		
Bowie Dick Test		

Manufacturer's recommendations

Manufacture's information for all medical devices/equipment must be easily accessible to staff carrying out the reprocessing. List the information that the manufacturer must provide with each medical device.

Methods

Before you go on a tour of the departments listed below become familiar with these concepts. Read and understand Best Practices for Cleaning, Disinfection and Sterilization of Medical Equipment/Devices (required reading).

Cleaning – Process	
Why is cleaning the first step of reprocessing?	
Describe the steps involved in the cleaning of medical devices.	

 **Important to know!**
How should contaminated equipment or devices be transported to the reprocessing area?

Important to know!
What is the difference between cleaning and disinfection?

Cleaning/Disinfection (C/D) of non critical items

Item	C/D recommendations	Product used in your facility for C/D	Who is responsible for C/D it?	How often is it cleaned /disinfected? Or is it single use?
B/P cuff				
Patient sling				
Bed pan				
Stethoscope				
Glucometer platform				
Electronic thermometers				
IV poles, wheelchairs, beds, call bells				

Cleaning/Disinfection of semi-critical items

Item	C/D recommend-ations	Product used in your facility for C/D	Who is responsible for C/D it?	How often is it cleaned /disinfected?
Flexible endoscopes that do not enter sterile cavities or tissues				
Anaesthesia equipment				

Item	C/D recommend-ations	Product used in your facility for C/D	Who is responsible for C/D it?	How often is it cleaned /disinfected?
Endotracheal tubes				
Ear cleaning equipment, ear curettes, otoscope tips				
Breast pump accessories				

 **Important to know!**
What is the difference between disinfection and sterilization?

Sterilization methods of critical items

Sterilization Methods	Where is it done in your facility?	Example(s) of medical device
Steam sterilization		
Hydrogen peroxide gas plasma		
100% Ethylene oxide (ETO)		
Chemical sterilant		
Flash sterilization		

Important to know!
Describe the process for managing single use items? Identify some single use items in your facility. E.g. breast pump equipment, AV fistula clamps, patient eye shield for CT scan, EEG hats.

Important to know!
What is best practice for the storage of reprocessed medical devices?

Tour of Key Reprocessing Areas

There are specific departments within facilities which perform the majority of the cleaning, disinfection and sterilization of medical devices. These departments include the Medical Device Reprocessing (MDR), the Operating Room (OR) and the Endoscopy Department. It is important that you become familiar with these areas. Have your manager contact the manager of these departments and arrange a tour. Below are things you need to look for and ask about.

MDR Tour

MDR Tour	Notes on Your Experience
• Workflow contaminated to clean and then sterile • Follow an item/tray through decontamination, cleaning, and sterilization • Tray of surgical instruments versus a bed pan	
Ask to see the following: • Bowie Dick Test • Biological indicators • Chemical indicators • Physical indicators • Documentation and recording of indicators • What is the process when there is a positive indicator?	

MDR Tour	Notes on Your Experience
Review the pasteurization process	
Review the use of an a) ultrasonic cleaner b)washer disinfector	
Does the MDR have policies and procedures?	
Where do they keep manufacturers recommendations?	

Usual Practices	Notes on Your Experience
Does the area have dedicated hand hygiene sinks?	
PPE used • Gloves • Gowns • Face protection	
Observe Hand hygiene practices	

OR Tour

Operating Room (OR) Tour	Notes on Your Experience
Mentor should: Identify a key contact in the OR and arrange a tour	
Discuss with your contact if any reprocessing is being done in the OR	
Are the items cleaned in the OR prior to being sent to MDR? If yes, by whom and where?	
Is flash sterilization being done in OR? How often? Which equipment?	

Operating Room (OR) Tour	Notes on Your Experience
Identify reprocessing policies	
Observe the reprocessing practices of medical devices in the OR (it may be cleaning only)	

Usual Practices	Notes on Your Experience
Does the area have dedicated hand hygiene sinks?	
PPE used • Gloves • Gowns • Face protection	
Observe Hand hygiene practices	

Endoscopy Unit Tour

Endoscopy Tour	Notes on Your Experience
Mentor should identify key contact in department and arrange a tour	
Are any scopes being reprocessed in other departments?	
Follow one endoscope from the patient through reprocessing to storage	
Identify the policy for reprocessing the scopes • Date of policy/procedure • Is IPC department consulted on the policies/procedures	
Do staff have access to manufacturers recommendations?	

Usual Practices	Notes on Your Experience
Does the area have dedicated hand hygiene sinks?	
PPE used • Gloves • Gowns • Face protection	
Observe Hand hygiene practices	

Transportation and Handling of Contaminated Medical Equipment/Devices

	Notes on Your Experience
How is contaminated equipment transported to the • Reprocessing department or reprocessing area? • Within facilities (department to department)? • Between facilities (vehicle transport, staff training certification for transportation of hazardous goods)?	
Does the way devices are transported meet best practice standards?	
Do the policies and procedures include information on transportation of contaminated equipment or medical devices?	

Storage of Reprocessed Medical Equipment/Devices

Notes on Your Experience	
Where are sterile items stored?	
Are items stored in a way that meets the best practice standards?	
Review policy/procedure regarding the storage of sterile equipment.	

Documentation and Reporting

Documentation	Comments/Recommendations
Does your facility have a policy for reprocessing reusable medical devices?	
Does you facility have a policy on the management of single use devices?	

Additional Notes

PICNet
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A program of the Provincial Health Services Authority

PICNet welcomes your comments and feedback on these modules.
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