WISCONSIN DEPARTMENT of HEALTH SERVICES

Cleaning, Disinfection, and Laundry

Long-Term Care (LTC) Infection Prevention Boot Camp

Vera Pischke, BS, RN, CIC
Infection Preventionist
June 6, 2019

Objectives

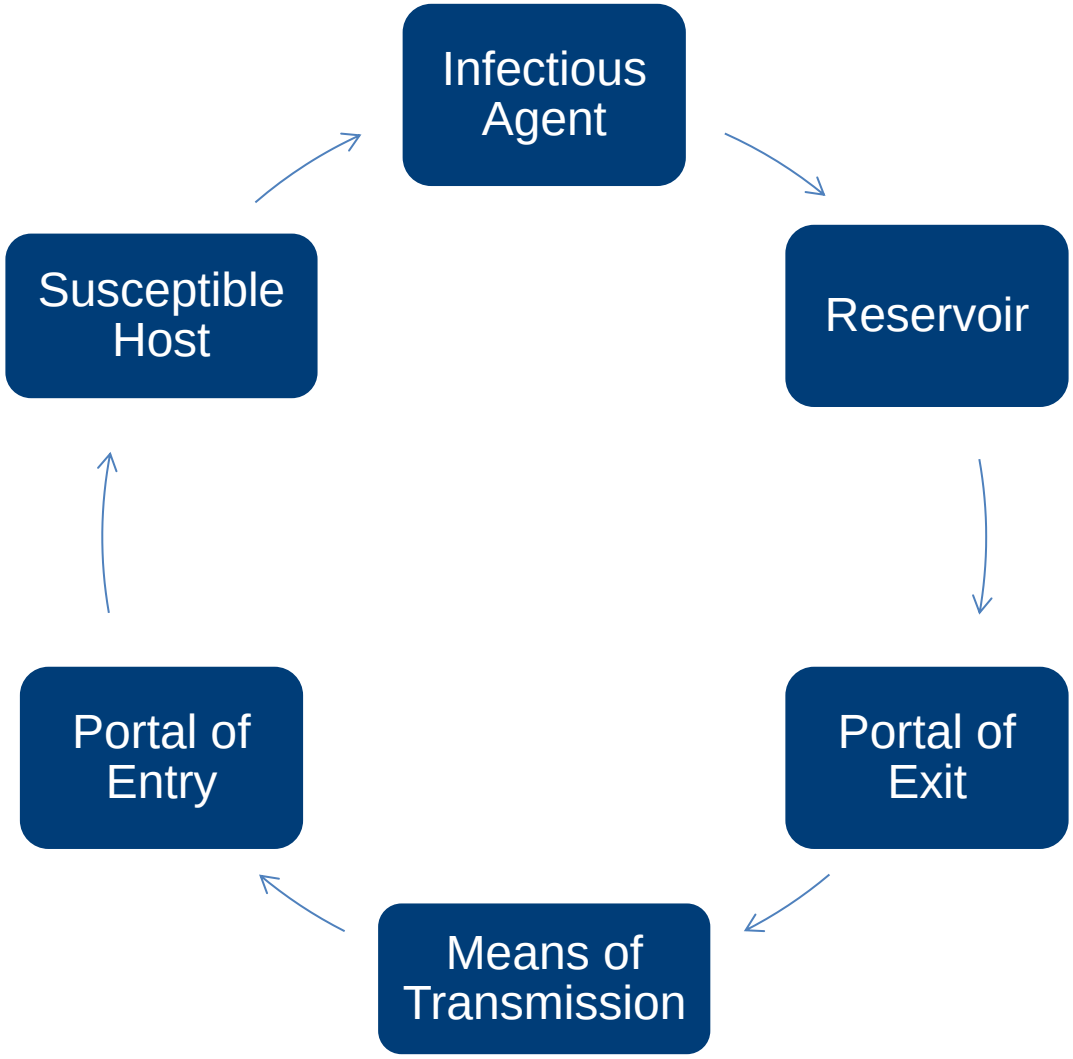
- Review patient care equipment cleaning and disinfection principles for healthcare facilities.
- Review environmental surface cleaning and disinfection principles for healthcare facilities.
- Review laundry requirements for long-term care (LTC).

Survival of Microorganisms

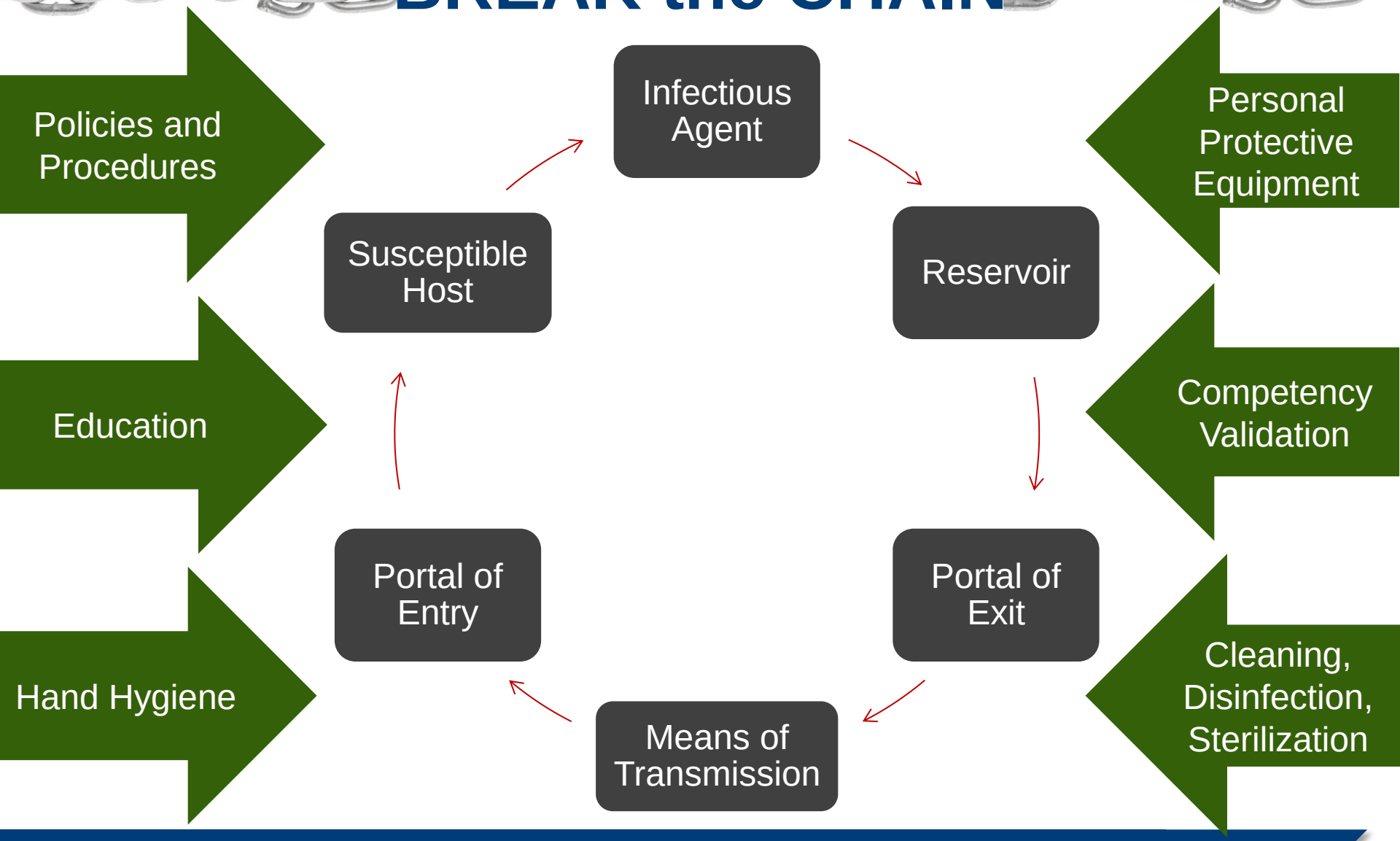
C. difficile spores	≤ 5 months
E. Coli	≤ 16 months
Enterococcus species	≤ 4 months
Norovirus	≤ 7 days
S. aureus	≤ 7 months

Kramer, A., Schwebke, I., and Kampf, G., (2006). How long do nosocomial pathogens persist on inanimate surfaces? A systematic review. BMC Infectious Diseases, 6, 130. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1564025/

BREAK the CHAIN



BREAK the CHAIN



Cleaning is necessary prior to disinfection or sterilization.

Cleaning is the physical removal of visible material (e.g., soil, organic material) from objects through the mechanical action of scrubbing with detergents and surfactants.

Remember…

If it isn't clean, it can't be disinfected or sterilized.

A standardized cleaning process should be established.

Develop and implement policies and procedures:

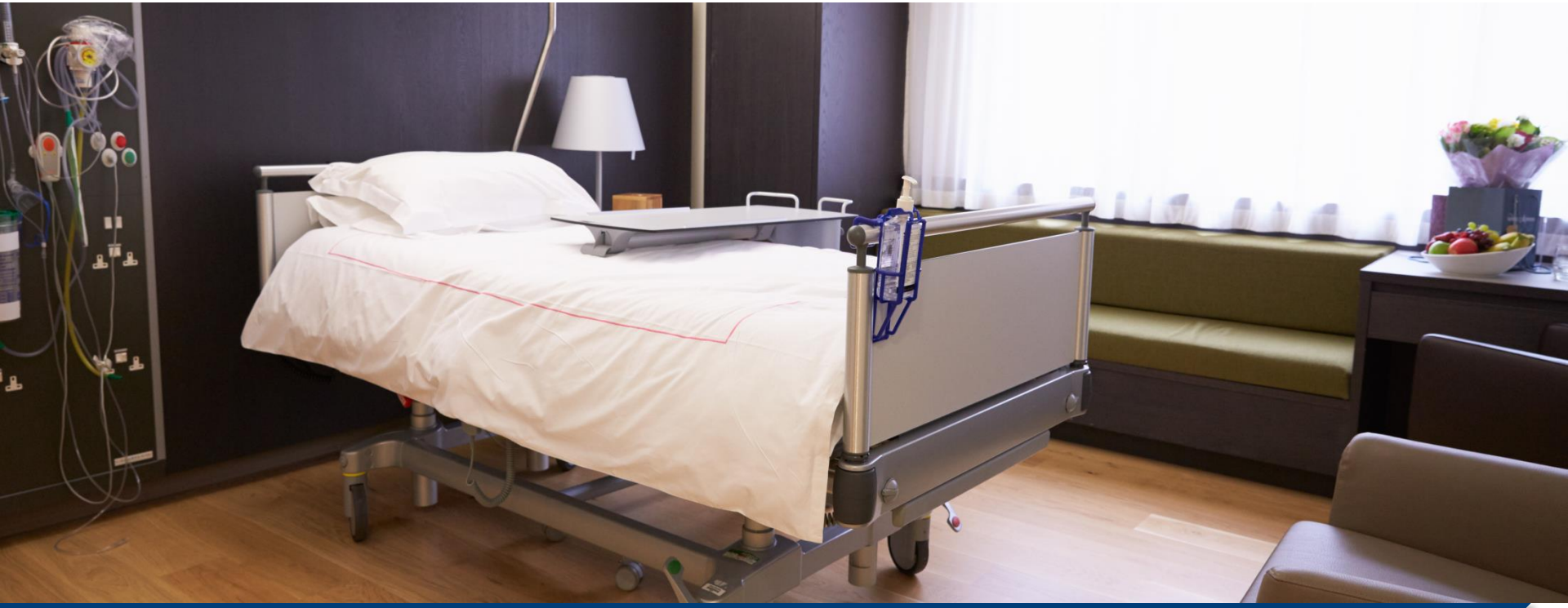
- Which equipment requires cleaning and disinfection?
- Which product should be used for each piece of equipment?
- What personal protective equipment (PPE) should be worn when using each cleaning product?
- What is the contact/wet time for each cleaning product?

A standardized cleaning process should be established.

- Provide education and competency training for all personnel who clean patient care items:
  - Upon hire
  - Annually
  - During outbreaks or other concerns
- Conduct regular cleaning process audits (e.g., annually, semi-annually, quarterly, etc.).

Which patient care items need to be cleaned?

- Is the medical device reusable or single use?
- Is the device used for a single patient or multiple?



Single use items do not need to be cleaned.

Use a single use device once and then discard it (e.g., needles, syringes, urinary catheters).

Single patient reusable items require routine cleaning.

Clean and disinfect these items on a routine basis and when they are visibly soiled (e.g., urinal, bedpan, toothbrush, nail clippers, etc.).

Multi-patient reusable equipment requires cleaning after each use.

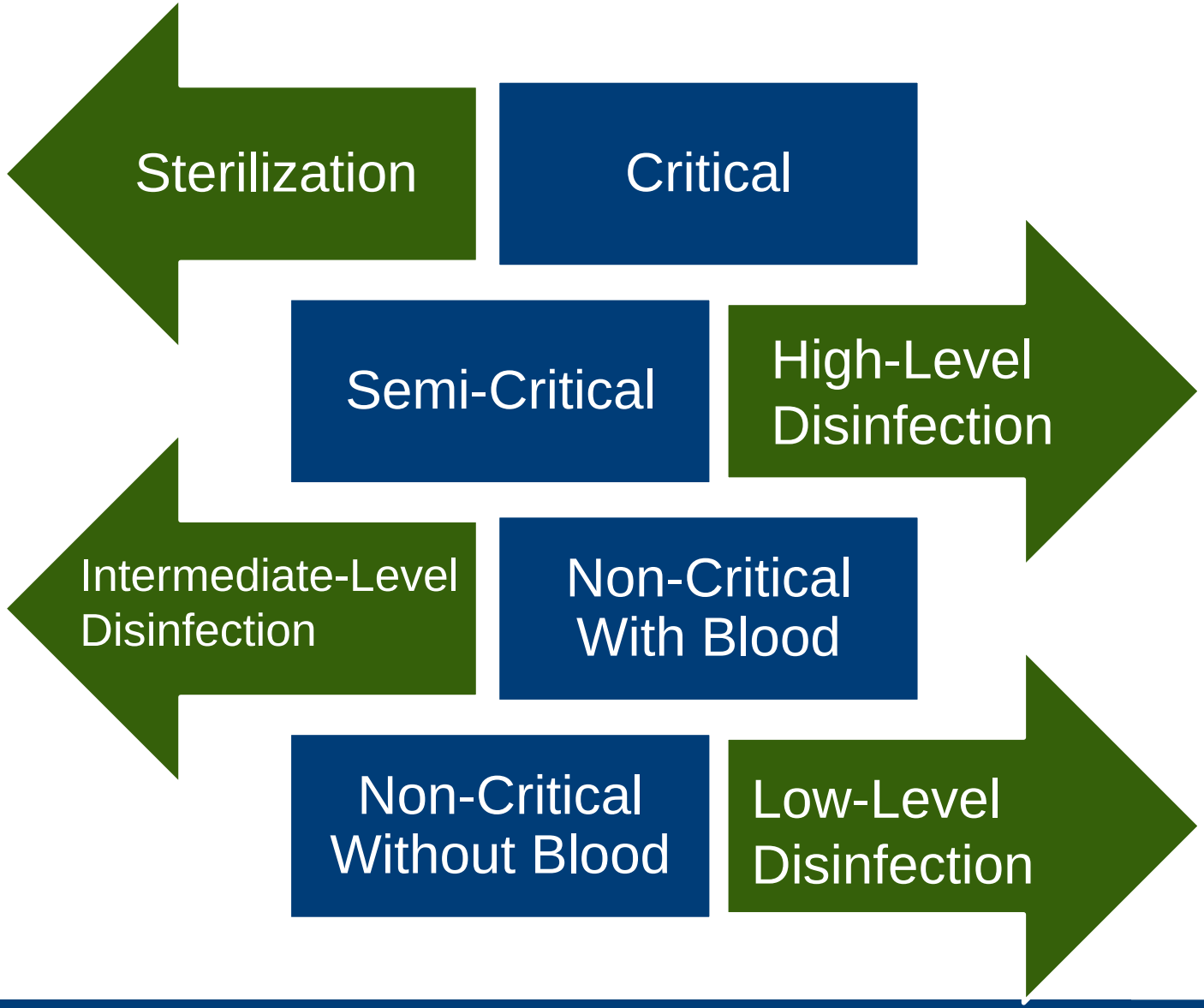
Reusable, multi-patient equipment can be used for more than one resident if reprocessing is done properly after each use (e.g., blood pressure cuff, nebulizer, etc.).

Reprocessing = cleaning followed by disinfection or sterilization.

How does it need to be cleaned?

The manufacturer's instructions for use (IFU) provide directions on reprocessing items after patient use to render them safe for reuse.

Spaulding Classification



Semi-critical equipment requires high-level disinfection (HLD).

Semi-critical equipment contacts mucous membranes or non-intact skin (e.g., endoscope, speculum, podiatry equipment).

Semi-critical equipment requires HLD.

- HLD destroys all microorganisms except high numbers of bacterial spores.
- HLD is not performed in most LTC facilities.

Consultants use equipment that can require HLD or sterilization.

- In these cases, reprocessing does not occur in the LTC facility (LTCF).
- The LTCF needs adequate space to separate clean and dirty equipment.

Consultants use equipment that can require HLD or sterilization.

The LTC facility is responsible for verifying:

- Policies and procedures for reprocessing the consultant's equipment.
- Sufficient quantity of equipment to provide care.
- Clean and dirty equipment separated appropriately.
- Proper containment and transport of contaminated equipment.

Non-critical items require intermediate or low-level disinfection.

Non-critical equipment contacts intact skin (e.g., blood pressure cuffs, stethoscopes, rehab equipment).

Non-critical items with visible blood require intermediate-level disinfection.

- An EPA-registered hospital disinfectant with tuberculocidal activity should be used for these items.
- This level of disinfection destroys vegetative bacteria, mycobacteria, most viruses, and most fungi, but does not kill bacterial spores.

Non-critical items with no visible blood require low-level disinfection.

- An EPA-registered hospital disinfectant with HBV and HIV activity, but no tuberculocidal claim, should be used for these items.
- This level of disinfection destroys vegetative bacteria, and some fungi and viruses, but not mycobacteria or spores.

When using a one-step cleaner and disinfectant:

1. Read the IFU carefully.
2. Follow the instructions exactly or disinfection will not occur.

EPA-Registered Hospital Disinfectants

https://www.epa.gov/pesticide-registration/list-b-epas-registered-tuberculocide-products-effective-against-mycobacterium

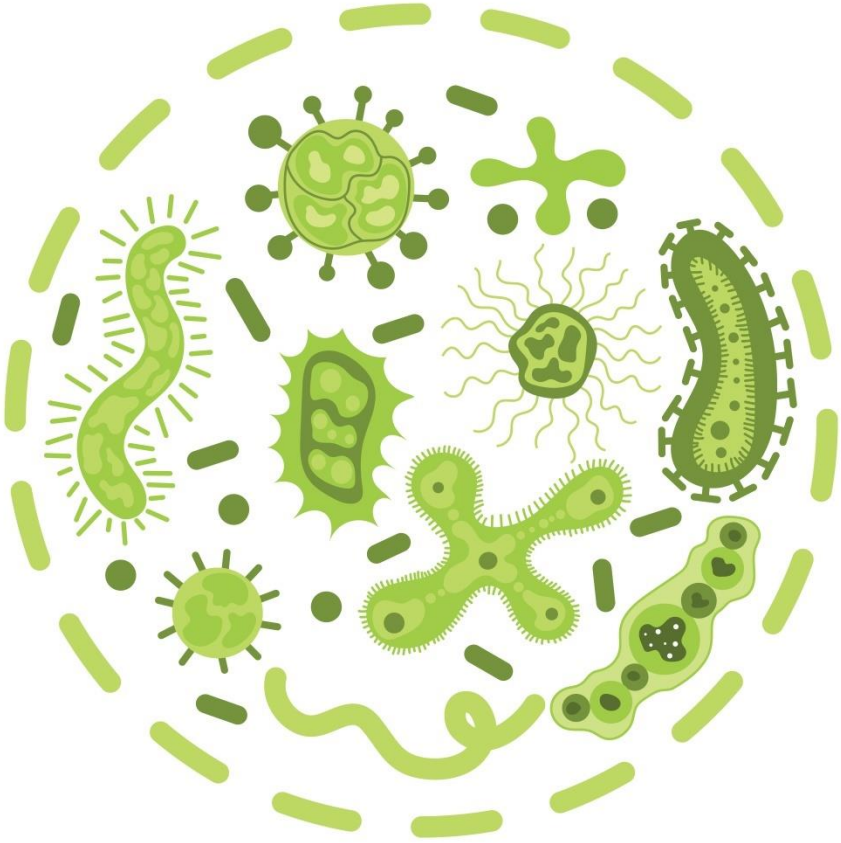
EPA-Registered Hospital Disinfectants

- List B: EPA Registered Tuberculocide Products Effective Against *Mycobacterium tuberculosis*
- List C: EPA's Registered Antimicrobial Products Effective Against Human HIV-1 Virus
- List D: EPA's Registered Antimicrobial Products Effective Against Human HIV-1 and Hepatitis B Virus
- List E: EPA's Registered Antimicrobial Products Effective Against *Mycobacterium tuberculosis*Human HIV-1 and Hepatitis B Virus
- List F: EPA's Registered Antimicrobial Products Effective Against Hepatitis C Virus
- List G: EPA's Registered Antimicrobial Products Effective Against *Norovirus*
- List H: EPA's Registered Antimicrobial Products Effective Against Methicillin Resistant*Staphylococcus aureus (MRSA)* and Vancomycin Resistant *Enterococcus faecalis* or *faecium* (VRE)
- List J: EPA's Registered Antimicrobial Products for Medical Waste Treatment
- List K: EPA's Registered Antimicrobial Products Effective Against Clostridium difficile Spores(PDF)

When selecting a disinfectant, consider…

Microbiocidal Activity

The organisms affected by the product will be listed on the label.



When selecting a disinfectant, consider…

Contact Time

Longer contact (wet) times may require repeat application, but are needed to kill microorganisms.

When selecting a disinfectant, consider…

Safety

What PPE is required?

Is special ventilation needed?

When selecting a disinfectant, consider…

Ease of Use

Is it a ready-to-use product or is dilution required?

Are the directions easy to understand?

When selecting a disinfectant, consider…

Cost

When selecting a disinfectant, consider…

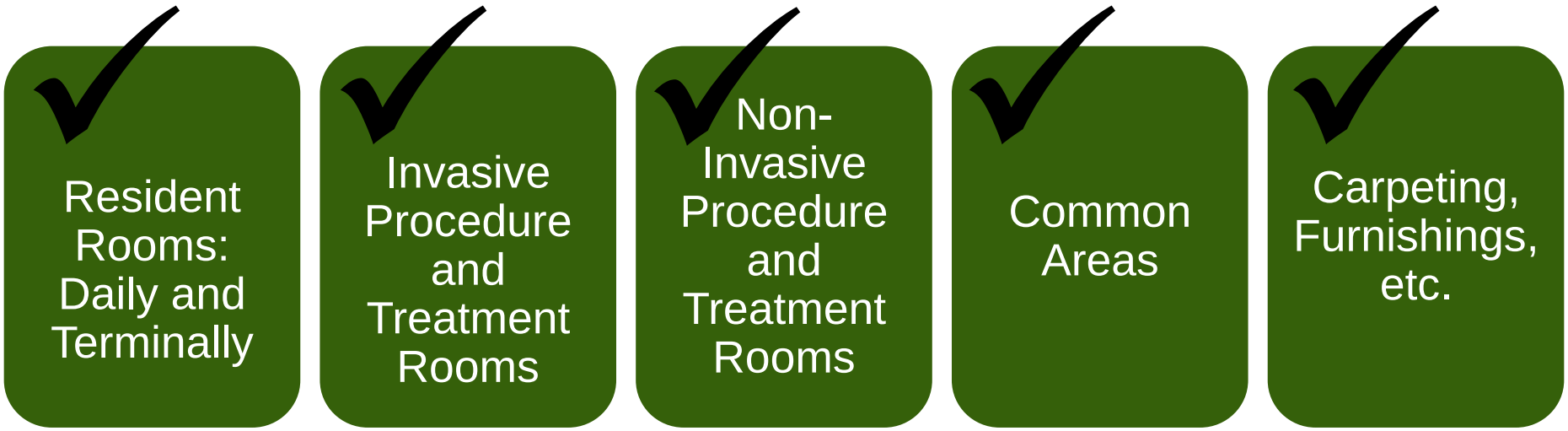
Other factors, including:

- Compatibility with surfaces and items being cleaned.
- Ability to follow the manufacturer's IFU.

Which environmental surfaces need to be cleaned?

- Frequently touched (i.e., high-touch surfaces)
- Minimally touched

Environmental Cleaning



A standardized cleaning process should be established.

Develop and implement policies and procedures:

- Daily cleaning checklist
- Terminal cleaning checklist
- Cleaning order
- Product decisions and use (i.e., IFU)
- PPE needed
- Product contact/wet time

A standardized cleaning process should be established.

Cleaning should be done:

- Starting top to bottom.
- Starting cleanest to dirtiest.
- Preventing recontamination.
- Focusing on high-touch surfaces (e.g., call light, bed rails, toilet handle, toilet seat, handrails, sink handles).

A standardized cleaning process should be established.

- Provide education and competency training for all personnel who do environmental cleaning:
  - Upon hire
  - Annually
  - During outbreaks or other concerns
- Conduct cleaning process audits periodically (e.g., annually, semi-annually, quarterly).

Guidelines for Environmental Infection Control in Health Care Facilities (2003)

E. Environmental Services

E.I. Cleaning and Disinfecting Strategies for Environmental Surfaces in Patient Care Areas

#	Recommendation	Category
E.I.A.	Select EPA-registered disinfectants, if available, and use them in accordance with the manufacturer's instructions. (EPA: 7 United States Code [USC] § 136 et seq)	IB, IC
E.I.B.	Do not use high-level disinfectants/liquid chemical sterilants for disinfection of either noncritical instrument/devices or any environmental surfaces; such use is counter to label instructions for these toxic chemicals. (FDA: 21 CFR 801.5, 807.87.e)	IB, IC
E.I.C.	Follow manufacturers' instructions for cleaning and maintaining noncritical medical equipment.	II
E.I.D.	In the absence of a manufacturer's cleaning instructions, follow certain procedures.	
E.I.D.1.	Clean noncritical medical equipment surfaces with a detergent/disinfectant. This may be followed with an application of an EPA-registered hospital disinfectant with or without a tuberculocidal claim (depending on the nature of the surface and the degree of contamination), in accordance with disinfectant label instructions.	II
E.I.D.2.	Do not use alcohol to disinfect large environmental surfaces.	II
E.I.D.3.	Use barrier protective coverings as appropriate for noncritical equipment surfaces that are • * touched frequently with gloved hands during the delivery of patient care; • * likely to become contaminated with blood or body substances; or • * difficult to clean (e.g., computer keyboards).	II
E.I.E.	Keep housekeeping surfaces (e.g., floors, walls, and tabletops) visibly clean on a regular basis and clean up spills promptly.	II
E.I.E.1.	Use a one-step process and an EPA-registered hospital disinfectant/detergent designed for general housekeeping purposes in patient-care areas when • * uncertainty exists as to the nature of the soil on these surfaces [e.g., blood or body fluid contamination versus routine dust or dirt]; or • * uncertainty exists regarding the presence or absence of multi-drug resistant organisms on such surfaces.	II

Guidelines for Environmental Infection Control in Health Care Facilities (2003)

E.II. Cleaning Spills of Blood and Body Substances

#	Recommendation	Category
E.II.A.	Promptly clean and decontaminate spills of blood or other potentially infectious materials. (OSHA: 29 CFR 1910.1030 §d.4.ii.A)	IB, IC
E.II.B.	Follow proper procedures for site decontamination of spills of blood or blood-containing body fluids. (OSHA: 29 CFR 1910.1030 § d.4.ii.A)	IC
E.II.B.1.	Use protective gloves and other PPE appropriate for this task. (OSHA: 29 CFR 1910.1030 § d.3.i, ii)	IC
E.II.B.2.	If the spill contains large amounts of blood or body fluids, clean the visible matter with disposable absorbent material, and discard the contaminated materials in appropriate, labeled containment. (OSHA: 29 CFR 1910.1030 § d.4.iii.B)	IC
E.II.B.3.	Swab the area with a cloth or paper towels moderately wetted with disinfectant, and allow the surface to dry. (OSHA: 29 CFR 1910.1030 § d.4.ii.A)	IC
E.II.C.	Use EPA-registered hospital disinfectants labeled tuberculocidal or registered germicides on the EPA Lists D and E (products with specific label claims for HIV or hepatitis B virus [HBV]) in accordance with label instructions to decontaminate spills of blood and other body fluids. (OSHA 29 CFR 1910.1030 § d.4.ii.A memorandum 2/28/97; compliance document CPL 2-2.44D [11/99])	IC
E.II.D.	An EPA-registered sodium hypochlorite product is preferred, but if such products are not available, generic versions of sodium hypochlorite solutions (e.g., household chlorine bleach) may be used.	
E.II.D.1.	Use a 1:100 dilution (500–615 ppm available chlorine) to decontaminate nonporous surfaces after cleaning a spill of either blood or body fluids in patient-care settings.	II
E.II.D.2.	If a spill involves large amounts of blood or body fluids, or if a blood or culture spill occurs in the laboratory, use a 1:10 dilution (5,000–6,150 ppm available chlorine) for the first application of germicide before cleaning.	II

Critical Cleaning Concepts

- Follow each product's instructions for use.
- Never "top off" bottles with additional product.
- Wipe surfaces in a manner to prevent recontamination (i.e., clean to dirty).
- Remember, if it isn't clean, it can't be disinfected/sterilized.

Failure to follow a standardized process can spread pathogens.

Common deviations include:

- Improper cleaning prior to disinfection.
- Insufficient contact/wet time.
- Incorrect or lack of proper PPE.

CDC LTC Infection Prevention (IP) Assessment Tools

Cleaning and disinfection policies should:

- Include handling of equipment shared among residents (e.g., blood pressure cuffs, rehab therapy equipment).
- Ensure reusable medical devices (e.g., blood glucose meters, wound care equipment, podiatry equipment, dental equipment) are cleaned and reprocessed appropriately before use on another patient.

CDC LTC Infection Prevention (IP) Assessment Tools

Cleaning and disinfection policies should:

- Verify adequate supplies and space to follow appropriate cleaning and disinfection procedures if external consultants (e.g., wound care nurses, dentists, podiatrists) provide services in the facility.

CDC LTC IP Assessment Tools

Written cleaning and disinfection policies should include:

- Routine and terminal cleaning and disinfection of resident rooms.
- Routine and terminal cleaning and disinfection of resident rooms using contact precautions (e.g., *C. difficile)*.
- High-touch surface cleaning and disinfection in common areas.

CDC LTC IP Assessment Tools

Written cleaning and disinfection policies should include:

- Provide appropriate personnel job-specific cleaning and disinfection training and competency validation upon hire.
- Verify contracting company provides appropriate training if environmental services are contracted.
- Monitor and document cleaning and disinfection procedure quality routinely.

Guidelines for Environmental Infection Control in Health Care Facilities (2003)

G. Laundry and Bedding

G.II. Laundry Facilities and Equipment

#	Recommendation	Category
G.II.A.	Maintain the receiving area for contaminated textiles at negative pressure compared with the clean areas of the laundry in accordance with AIA construction standards in effect during the time of facility construction. (AIA: 7.23.B1, B2)	IC
G.II.B.	Ensure that laundry areas have handwashing facilities and products and appropriate PPE available for workers. (AIA: 7.23.D4; OSHA: 29 CFR 1910.1030 § d.2.iii)	IC
G.II.C.	Use and maintain laundry equipment according to manufacturers' instructions.	II
G.II.D.	Do not leave damp textiles or fabrics in machines overnight.	II
G.II.E.	Disinfection of washing and drying machines in residential care is not needed as long as gross soil is removed before washing and proper washing and drying procedures are used.	II

Top of Page

G.III. Routine Handling of Contaminated Laundry

#	Recommendation	Category
G.III.A.	Handle contaminated textiles and fabrics with minimum agitation to avoid contamination of air, surfaces, and persons. (OSHA: 29 CFR 1910.1030 § d.4.iv)	IC
G.III.B.	Bag or otherwise contain contaminated textiles and fabrics at the point of use. (OSHA: 29 CFR 1910.1030 § d.4.iv)	IC
G.III.B.1.	Do not sort or prerinse contaminated textiles or fabrics in patient-care areas. (OSHA: 29 CFR 1910.1030 §d.4.iv)	IC

CMS Infection Control: Laundry Handling

Determine whether staff handle, store, and transport linens appropriately, including:

- Using standard precautions (i.e., gloves) and minimal agitation for contaminated linen.
- Holding contaminated linen and laundry bags away from clothing/body during transport.

CMS Infection Control: Laundry Containment

- Bag and contain contaminated linen where it is collected.
- Sort and rinse it only in the contaminated laundry area.
- Double-bag linen only if the bag exterior is visibly contaminated or wet.

CMS Infection Control: Laundry Transport

- Transport contaminated and clean linen in separate carts.
- Clean and disinfect contaminated carts before moving clean linen into them if separate carts are not possible.
- Transport clean linen using methods that ensure cleanliness.

CMS Infection Control: Laundry Rooms

- Determine whether staff:
  - Maintain and use washing machines and dryers per the manufacturer's IFU.
  - Use detergents, rinse aids/additives, and follow laundering directions per the manufacturer's IFU.
- Request evidence of maintenance log or records if there are concerns.

CMS Infection Control: Laundry

- Mattresses, pillows, bedding, and linens should be maintained in a good, clean condition (Refer to F584).
- If a laundry chute is in use, laundry bags should be closed with no loose items.

Questions?

Vera Pischke, BS, RN, CIC
Infection Preventionist
Wisconsin HAI Prevention Program
608-284-1157
vera.pischke@wi.gov

Resources

CDC Environmental Cleaning Toolkit
https://www.cdc.gov/hai/pdfs/toolkits/environ-cleaning-eval-toolkit12-2-2010.pdf

CDC *Guidelines for Environmental Infection Control in Health Care Facilities (2003)*
https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html

CDC Infection Prevention and Control Assessment Tool for LTCFs
https://www.cdc.gov/infectioncontrol/pdf/icar/ltcf.pdf

National Nursing Home Quality Improvement Program
Appropriate Cleaning/Disinfection of Equipment and the Environment
https://www.nhqualitycampaign.org/files/EnvironmentalCleaning_Assessment.pdf

CDC Nursing Home and Assisted Living Resources
https://www.cdc.gov/longtermcare/prevention/index.html

CMS/CDC Nursing Home Infection Preventionist Training
https://www.train.org/cdctrain/training_plan/3814

CDC *Guide to Infection Prevention for Outpatient Podiatry Settings*
https://www.cdc.gov/infectioncontrol/pdf/Podiatry-Guide_508.pdf