



ENVIRONMENTAL SERVICES: PRACTICE TIPS

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<https://spice.unc.edu/>

<https://spice.unc.edu/ask-spice/>

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ROLE OF THE PHYSICAL ENVIRONMENT

- ▶ The physical environment plays a role in the spread of infection
- ▶ Environmental Services' role is to reduce the spread of infection in the physical environment by properly and thoroughly cleaning and *disinfecting* the physical environment

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ENVIRONMENTAL SERVICE PROGRAM COMPONENTS

- ▶ Some one designated to oversee
- ▶ Be a member of the infection prevention committee
 - ▶ Standing or ad hoc member
 - ▶ Report on a routine basis
- ▶ Standardized protocols/procedures for cleaning and disinfection
 - ▶ Identify the person responsible
 - ▶ Frequency
 - ▶ Method (product, process)
 - ▶ Detailed SOP
- ▶ Processes in place for monitoring, and feedback of findings



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ENVIRONMENTAL CLEANING AND DISINFECTION

- ▶ Require routine and targeted cleaning of environmental surfaces as indicated by the level of patient contact and degree of soiling
 - ▶ Proximity to the patient and frequently touched surfaces
 - ▶ Spills of blood and OPIM
- ▶ Select EPA-registered disinfectants that have microbicidal activity against the pathogens most likely to contaminate the patient-care environment
- ▶ Follow manufacturers' instructions for proper use of cleaning and disinfection products

<https://www.cdc.gov/hicpac/pdf/core-practices.pdf>

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GENERAL ENVIRONMENTAL CLEANING TECHNIQUES

► Visual preliminary site assessment:

- Recognize that patient status could pose a challenge to safe cleaning
- Identify the need for additional PPE
- Identify the presence of clutter or obstacles that could pose a challenge to safe cleaning
- Identify the presence of broken or non-intact surfaces that may need to be reported to supervisor



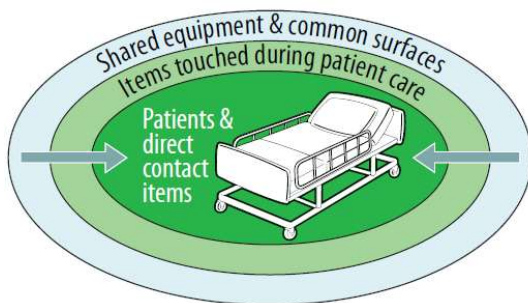
<https://www.cdc.gov/hai/prevent/resource-limited/cleaning-procedures.html>

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GENERAL ENVIRONMENTAL CLEANING TECHNIQUES



- Clean to Dirtier to avoid spreading dirt and microorganisms:
 - Start with shared equipment and common surfaces
 - Surfaces touched during patient care (outside of patient zone)
 - Surfaces and items directly touched by the patient
 - Clean general patient care areas before cleaning areas under transmission-base precautions
- Proceed from High to Low (Top to Bottom)- prevent dirt and microorganisms from dripping or falling and contaminating clear areas:
 - Bed rails before bed legs
 - Environmental surfaces before floors (clean last).

<https://www.cdc.gov/hai/prevent/resource-limited/cleaning-procedures.html>

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GENERAL ENVIRONMENTAL CLEANING TECHNIQUES

- ▶ Methodical, Systematic Manner to avoid missing areas-left to right or clockwise

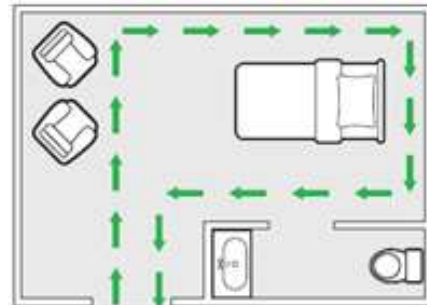


Figure 10. Example of a cleaning strategy for environmental surfaces, moving in a systematic manner around the patient care area

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GENERAL ENVIRONMENTAL CLEANING TECHNIQUES

▶ Best practices for environmental cleaning of surfaces:

- ▶ Fresh cleaning cloths at the start of each cleaning session
- ▶ Change when no longer saturated or have dried out
- ▶ Change between each patient zone (ICU for example)



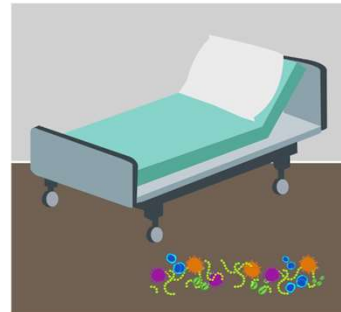
- Never double-dip cleaning cloths into portable containers (e.g., bottles, small buckets) used for storing environmental cleaning products (or solutions).
- Never shake mop heads and cleaning cloths—it disperses dust or droplets that could contain microorganisms.
- Never leave soiled mop heads and cleaning cloths soaking in buckets.



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EVALUATION OF HOSPITAL FLOORS AS A POTENTIAL SOURCE OF PATHOGEN DISSEMINATION

- ▶ Effective disinfection of contaminated surfaces is essential to prevent transmission of epidemiologically-important pathogens
- ▶ Efforts to improve disinfection focuses on touched surfaces
- ▶ Although floors contaminated, limited attention because not frequently touched



Koganti et al. ICHE 2016. 37:1374; Deshpande et al. AJIC 2017. 45:336.



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EVALUATION OF HOSPITAL FLOORS AS A POTENTIAL SOURCE OF PATHOGEN DISSEMINATION

- ▶ Floors are a **potential** source of transmission because often contacted by objects that are then touched by hands (e.g., shoes, socks)
- ▶ Non-slip socks contaminated with MRSA, VRE



Mahida, J Hosp Infect. 2016;94:273



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RECOVERY OF NONPATHOGENIC VIRUSES FROM SURFACES AND PATIENTS ON DAYS 1, 2, AND 3 AFTER INOCULATION OF FLOOR NEAR BED

- ▶ Found that a nonpathogenic virus inoculated onto floors in hospital rooms disseminated rapidly to the footwear and hands of patients and to high-touch surfaces in the room
- ▶ The virus was also frequently found on high-touch surfaces in adjacent rooms and nursing stations
- ▶ Contamination in adjacent rooms and in nursing station(s) suggest HCP contributed to dissemination after acquiring the virus during contact with surfaces or patients
- ▶ Studies needed to determine if floors are source of transmission



Koganti et al. ICHE 2016. 37:1374



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PRIVACY CURTAINS

- Cleaned when visible soiled
- After use in contact isolation room
- On some routine basis
- Improved Hydrogen Peroxide (IHP) 1.4% reduced microbial load by 96.8 %



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IDEAL PRODUCTS

GENERAL IDEAL PROPERTIES

- ▶ General ideal properties
- ▶ Nontoxic
- ▶ Easy to use
- ▶ Acceptable Odor
- ▶ Solubility
- ▶ Economical/Low cost

FOR DISINFECTANTS

- ▶ Broad spectrum
- ▶ Rapid action
- ▶ Remains wet
- ▶ Not affected by environmental factors
- ▶ **Material compatibility**
- ▶ Persistence
- ▶ Cleaner
- ▶ Nonflammable
- ▶ Stability

<https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants>



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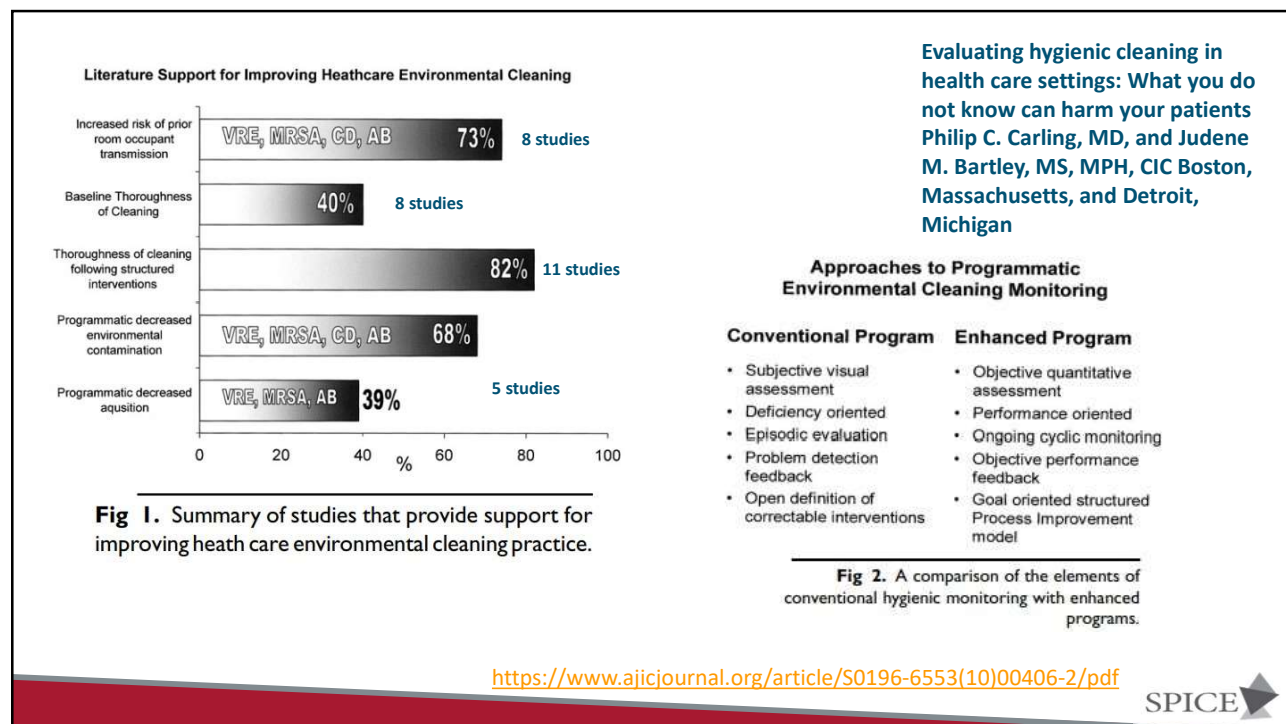
ENHANCED DISINFECTION TECHNOLOGY

- ▶ A patient admitted to a room previously occupied by a patient colonized or infected with one of the key healthcare associated pathogens (e.g., MRSA, VRE, *C difficile*, *Acinetobacter* spp) has a higher risk for acquiring one of these pathogens than a patient admitted to a room whose previous occupant was not colonized or infected.

[https://www.ajicjournal.org/issue/S0196-6553\(16\)X0012-0](https://www.ajicjournal.org/issue/S0196-6553(16)X0012-0)



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MONITORING THE THOROUGHNESS: CLEANING-DISINFECTION

- ▶ Visual inspection
- ▶ Microbiologic methods
- ▶ Adenosine-triphosphate (ATP) assays
- ▶ Fluorescent markers

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MONITORING THE THOROUGHNESS: CLEANING-DISINFECTION

► Direct Practice Observation:

- Monitoring individual ES staff performance and compliance with cleaning protocols

► Visual Inspection:

- Patients primarily use this approach-presence of dust, or organic debris on surfaces
- Not a reliable indicator of microbial contamination

► Microbiologic Methods:

- Costly and pathogen specific
- No accepted criteria for defining a surface as clean using microbiologic methods.

[https://www.ajicjournal.org/article/S0196-6553\(15\)01125-6/fulltext](https://www.ajicjournal.org/article/S0196-6553(15)01125-6/fulltext)



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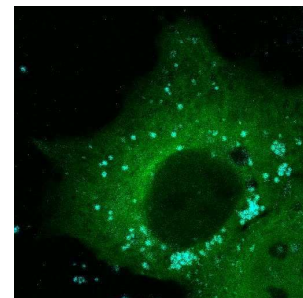
MONITORING THE THOROUGHNESS: CLEANING-DISINFECTION

► Adenosine-triphosphate (ATP) assays

- ATP systems measure organic debris as well as viable bacterial counts
- Read out scales vary between systems
- ? Impact of bleach disinfectants on the use of ATP

► Fluorescent markers

- Use of a fluorescent gel to mark surfaces prior to room cleaning
- Fluoresces when exposed to an ultraviolet light.
- Thoroughness of the cleaning is monitored
- Immediate feedback



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FEEDBACK/TRAINING/MONITORING

- ▶ Regular feedback and training is essential to the success of the Environmental Services colleague.
- ▶ Monitor individual routinely (weekly/monthly)
- ▶ Training Annually on job-specific topics
- ▶ Feedback of data to other stake holders (IPCC for example)-Use of a Heat Map
 - ▶ More frequently as trends emerge with Quality checks



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