North Carolina SPICE Statewide Program for Infection Control & Epidemiology

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 microbiocidal 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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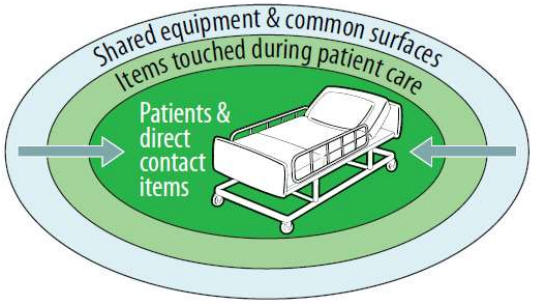
GENERAL ENVIRONMENTAL CLEANING TECHNIQUES



- 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

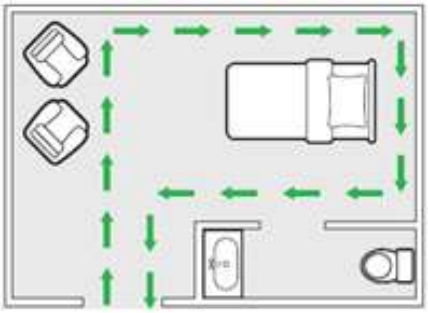

Figure 10. Example of a cleaning strategy for environmental surfaces, moving in a systematic manner around the patient care area

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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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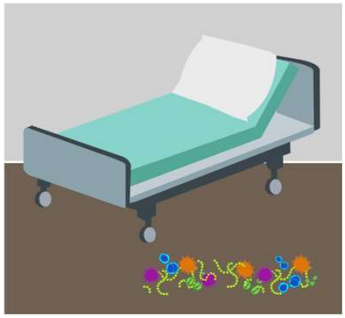
EVALUATION OF HOSPITAL FLOORS AS A POTENTIAL SOURCE OF PATHOGEN DISSEMINATION

- 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

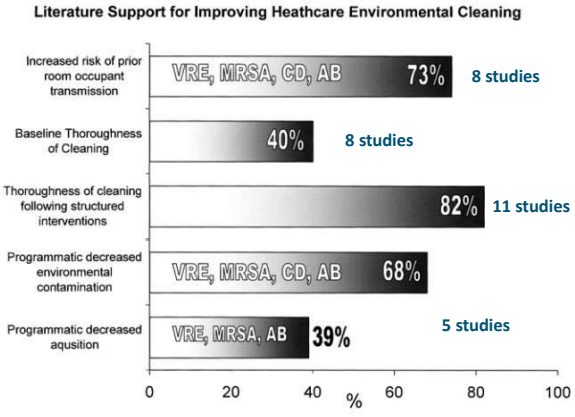

Fig 1. Summary of studies that provide support for improving heath care environmental cleaning practice.

Evaluating hygienic cleaning in health care settings: What you do not know can harm your patients
Philip C. Carling, MD, and Judene M. Bartley, MS, MPH, CIC Boston, Massachusetts, and Detroit, Michigan

Approaches to Programmatic Environmental Cleaning Monitoring

Conventional Program	Enhanced Program
• Subjective visual assessment	• Objective quantitative assessment
• Deficiency oriented	• Performance oriented
• Episodic evaluation	• Ongoing cyclic monitoring
• Problem detection feedback	• Objective performance feedback
• Open definition of correctable interventions	• Goal oriented structured Process Improvement model

Fig 2. A comparison of the elements of conventional hygienic monitoring with enhanced programs.

https://www.ajicjournal.org/article/S0196-6553(10)00406-2/pdf

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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

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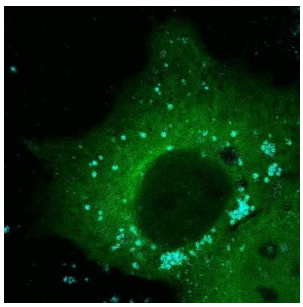
MONITORING THE THOROUGHNESS: CLEANING-DISINFECTION

- 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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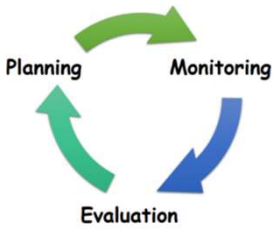
FEEDBACK/TRAINING/MONITORING

- 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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