It's All on the Surface

Establishing Protocols for Cleaning and Disinfecting Environmental Surface Areas

Consider a typical patient care area in your facility. Now think about how many times patients, clinicians, housekeeping staff, visitors, maintenance staff, and others enter and exit this area and touch its surfaces—countertops, desks, bed rails, doorknobs, and so forth. What if these individuals have dirty, contaminated hands? Imagine the potential for transmission of dangerous pathogens.

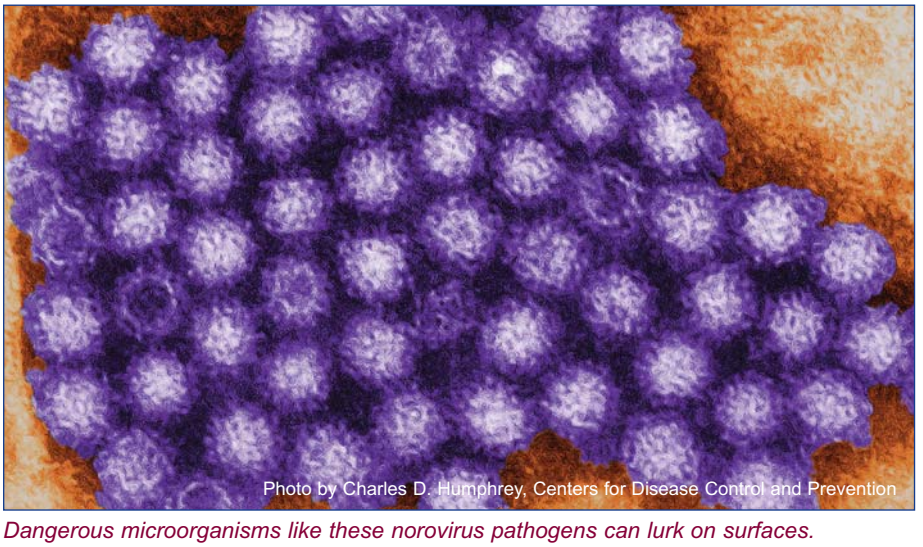
Although the role of environmental surfaces in disease transmission in health care facilities is limited,[1] these surfaces can serve as reservoirs for certain microorganisms that can cause infections in patients and health care workers. Some pathogens—such as norovirus, hepatitis B virus, and *Clostridium difficile*—can remain active on environmental surfaces for prolonged periods, and as a result outbreaks associated with these pathogens have been reported. For example, norovirus outbreaks in the health care setting have been linked to staff members who touched contaminated surfaces and did not subsequently wash their hands. One norovirus outbreak at a tertiary care center required the organization to close patient care units and disinfect the environment to stop the outbreak, which lasted three months, caused illness in 90 patients and 255 health care workers, and cost an estimated $650,000.[2]

According to the Centers for Disease Control and Prevention (CDC), cleaning and disinfecting environmental surfaces in health care facilities is fundamental in reducing the potential contribution of those surfaces to the incidence of health care–associated infections (HAIs).[2] Other safety-focused organizations, including The Joint Commission, the World Health Organization (WHO), and the Association for Professionals in Infection Control and Epidemiology (APIC), also stress the importance of effective surface cleaning.

To ensure regular and appropriate surface cleaning, organizations should have protocols for different areas of the organization and the environmental surfaces within those areas. These protocols should outline activities to effectively reduce the bioburden on environmental surfaces and lessen the likelihood that those surfaces could serve as sources for pathogenic agents. Such protocols should also help create an attractive healing environment for patients, residents, visitors, health care personnel, and

Avoiding Cross-Contamination

Certain equipment and supplies, such as rags, mops, and buckets, are designed to help clean environmental surfaces, but they can be vehicles for pathogenic transmission if they are not regularly cleaned and/or replaced. If, for example, a staff member uses a rag on a doorknob contaminated with gram-negative bacilli and then carries that same rag over to clean the hand rails on the bed, the rag may become a source of transmission for infection. Similarly, if after use a bucket is not properly cleaned, the next time the bucket is used, it may transmit organisms when cleaning other patient rooms. Therefore, cleaning equipment such as mop heads and rags should be discarded or cleaned, and dirty water should be changed frequently to prevent cross-contamination. It is important for users to properly clean cleaning tools when they are finished using them, including drying out any buckets or containers.



Dangerous microorganisms like these norovirus pathogens can lurk on surfaces.

others.[3] Following are some topics that organizations should keep in mind when designing, implementing, and monitoring such protocols.

Involving Multiple Disciplines

Although responsibility for cleaning efforts in a health care organization typically falls to the environmental services or housekeeping staff, environment of care personnel should be aware of and involved in the creation of environmental surface cleaning protocols. In fact, developing comprehensive protocols may necessitate creating a multidisciplinary team to examine the issue of environmental cleaning; assess risks for particular areas, patients, and circumstances; and identify interventions that respond to those risks. Members of such a team may include infection preventionists, environmental services staff, environment of care personnel, and clinicians.

When developing protocols, the team should consider consulting the CDC's "Guidelines for Environmental Infection Control in Healthcare Facilities," which are recommendations of the CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). (A copy of the guidelines can be downloaded from http://www.cdc.gov/ncidod/dhqp/gl_environinfection.html.)

Outlining What to Clean and How to Clean It

The fundamental goal of cleaning protocols is to describe what areas of the care environment must be cleaned and how they should be cleaned. When determining the cleaning activities in a particular area, organizations should consider two categories of environmental surfaces: items that need to be cleaned frequently and items that need less frequent cleaning. (See "Two Categories of Environmental Surfaces," above.)

In most cases, routine cleaning is sufficient to prevent the spread of infection.[1] Routine cleaning involves the use of a detergent—typically soap or another medical-grade disinfectant—and helps maintain a standard of cleanliness. When cleaning, staff members should follow manufacturers' instructions for the cleaning product, including how long it should be left on the environmental surface. Also, manufacturers' instructions should be followed when preparing the cleaning product for use—if applicable—to ensure the product's effectiveness.[1]

When describing cleaning techniques, organizations should be sure to note that the use of friction to physically remove visible dirt, organic material, and debris is critical to cleaning efforts.[5] In fact, the degree of scrubbing involved in cleaning is probably the most critical element in determining whether cleaning and disinfecting are ultimately effective.[1] In other words,

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Two Categories of Environmental Surfaces

When determining the cleaning activities in a particular area, organizations should consider the following two categories of environmental surfaces.

Items That Need to Be Cleaned Frequently

Items that need to be cleaned frequently have a high degree of handling and risk of cross-transmission. These can include horizontal surfaces as well as "high touch" surfaces, including the following:

- Doorknobs in patient rooms and bathrooms
- Bed rails
- Tray tables
- Bedside tables (including drawers)
- Chairs
- Light switches near the entrances to patient rooms and bathrooms
- Telephones
- TV remotes
- Call buttons
- Toilet seats
- Flush handles
- Sinks
- Bathroom hand rails
- Blood pressure cuffs
- Knobs or handles on medical equipment (for example, x-ray machines or cardiac monitors)[4,5]

Items That Need Less Frequent Cleaning

Items that need less frequent cleaning are handled less frequently and are not likely sources of infection.[1] These can include the following:

- Floors
- Walls
- Window sills
- Curtains
- Lights
- Ventilation grilles[1,4]

Although it is unlikely that floors will cause the spread of infection, they should be immediately cleaned if they are visibly soiled.[5]

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merely disinfecting a soiled area will not get it clean. Any visible soil must first be removed before disinfection can take place. (See "Avoiding Cross-Contamination," page 6.)

Using Proper Personal Protective Equipment

Any individual engaging in cleaning activities should wear personal protective equipment (PPE), such as masks and gloves. This equipment provides protection from a variety of risks, including contamination from infectious pathogens left on surfaces and equipment, protection from sharps and other injuries, and protection from harsh chemicals used in cleaning. Such PPE also prevents the transmission of infections to other areas of the organization.

Protocols should outline what type of PPE should be worn during cleaning activities and ensure that staff members are familiar with and know how to use the designated PPE. Organizations should also ensure that they have sufficient quantities of designated PPE that are easily accessible by staff members who need them.

Defining Cleaning Schedules

Any cleaning protocols should define cleaning schedules to ensure that all areas of the facility are cleaned appropriately and in a timely fashion. These schedules should meet the needs of the different areas of the facility. For example, patient rooms should be cleaned at least daily and when a patient is discharged. An operating room or other invasive procedure room should be thoroughly cleaned before the first patient of the day and recleaned after each subsequent patient.[5]

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Selecting Appropriate Cleaning Products

There are many choices of cleaning products for use in health care organizations. Typically, the main criteria for selecting a registered cleaning agent are cost, safety, product–surface compatibility, and acceptability by environmental services staff.[2] Disinfectants used for environmental cleaning should be chosen carefully through collaboration between environmental services, infection preventionists, environment of care and safety personnel, and purchasing staff. Individuals involved in this effort should have knowledge of terms associated with environmental cleaning, the products used for maintaining the health care environment, and the differences between types and uses of antiseptics, disinfectants, and disinfectant-detergents.

It is also important that individuals charged with selecting appropriate cleaning products review the specifications for product use provided by the manufacturers. Organizations should talk with chemical suppliers and ask them to provide product data sheets or labels that include evaluation criteria such as dilution ratios, minimum exposure time required to kill contaminants, stability of dilution, and potential to harm or damage environmental surfaces.[2] To further help with choosing cleaning products, organizations may want to consult outside resources—including the CDC and APIC—for information. EC News

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