

Environmental Impact

Good environmental cleaning practices reduce the risk of nosocomial infections

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Environmentally sourced pathogens cause a range of nosocomial infections in patients and residents of health care facilities. While nosocomial infections are common in both long-term care and acute care facilities, there are some significant differences in their nature.

Long-term care residents arriving from acute care facilities are often infected with resistant organisms when they arrive. Some infected people pass back and forth between facilities, making it difficult to be sure where infections were acquired. Infected patients shed pathogens into the environment, presenting a risk of infection to the next occupant of the space, and placing other individuals in the long-term care facility at risk.¹

Setting-Specific Challenges

Both acuity and environmental conditions differ in each type of long-term care facility. LTAC or rehabilitation facilities are typically similar to acute care hospitals in layout and facilities. But residential and elder care facilities often have additional environmental challenges. Soft porous materials, such as carpeting and furniture, provide protective environments that harbor bacteria and are challenging to clean. This is especially true in facilities where residents' personal possessions are a significant portion of the room contents.

Housekeeping must take great care to avoid damaging personal possessions, while still eliminating all residual pathogens.² Many commonly used cleaning agents, such as bleach, can damage materials and are incompatible with many finishes.

Semi-private or shared rooms present additional challenges in preventing horizontal transmission. While most guidelines recommend isolating infected residents, room limitations reduce the potential to comply.^{3,4}

Cohorting is often cited as a possible solution to insufficient isolation. This may, however, result in cross infection of different strains of the same pathogen, or

transmission of other pathogens from residents not recognized as carriers.⁵

One guideline recommends placing infected individuals with residents at low risk for infection, for instance placing patients with urinary tract infection with residents with no indwelling catheters.

People with Alzheimer's disease present a particular challenge when infected. The principles of isolation are often difficult to follow, especially when the resident exhibits confusion and a failure to understand or follow basic instructions. The need for social interaction restricts the ability to isolate these residents.

Many infectious agents of concern are passed through the fecal/oral route. The presence of incontinent residents, particularly those who are anally incontinent, presents an additional challenge in preventing horizontal transmission.⁶

The contamination of the environment with fecal matter increases the cleaning challenge for the environmental services personnel. Common sources of bacteria include *Legionella*, MRSA, *C. difficile*, norovirus, VRE, *Acinetobacter* and other resistant Gram-negatives including KPC and ESBL producers.⁷

Various publications have shown that the longer an infected resident is in a room, the more extensive the pathogen contaminants will be in the environment.⁸ By definition then, long-term care rooms can be expected to have more contamination than rooms in acute care facilities.

Minimize Infections

While resident rooms are cleaned daily, the infrequency of terminal cleaning is a concern,¹ especially in common areas. Many facilities allow infected individuals, especially asymptomatic people, to mix with the general population in common areas, which are often overlooked for cleaning.

Decontaminating the environment is one way to prevent vertical transmission, especially if the resident room can be disinfected. Currently, the CDC recommends that as part of a terminal clean for *C. difficile*, the patient room is cleaned with bleach or an EPA-registered sporicidal product. While several authors have shown intensive cleaning with bleach to be effective in reducing *C. difficile* rates, many items commonly found in resident rooms cannot be cleaned using sporicidal products such as bleach.^{3,9}

It has also been shown that even enhanced manual disinfection does not always eradicate pathogens.¹⁰

Thus, in addition to manual disinfection methods, there are a number of no-touch systems that have been demonstrated to produce a better level of terminal disinfection.^{9,10} Use of no touch systems requires careful allocation of resources and proper program management. Targeting rooms vacated by infected individuals has been shown to be the

most effective method of reducing rates.⁹ Common areas can be decontaminated overnight when they are not occupied.

Resources for long-term care facilities are often limited, but a sound investment in appropriate and targeted cleaning methods can help to reduce nosocomial infections and save overall operating costs. It will also improve the experience of facility residents.

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Additional Resource

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