

Health Care Laundry...A Higher Standard of Clean

Preventing Contamination of Clean Textiles

By Dan Reisetter

Once health care textiles are laundered, they run the risk of becoming soiled or contaminated throughout each step of the process until they reach the customer. From conveyor belts and folding tables to laundry carts and trucks, care and attention must be given to everything that may come in contact with linens on the clean side of an operation. A good guideline to use is that every surface that touches the laundry must be as clean as the laundry itself.

Through a combination of soil removal, pathogen removal, and pathogen inactivation, contaminated laundry can be rendered hygienically clean. Hygienically clean laundry carries negligible risk to health-care workers and patients, provided that the clean textiles, fabric, and clothing are not inadvertently contaminated before use. Source – CDC Guidelines for Environmental Infection Control in Health-care Facilities 2003

By focusing on cleaning the facility with U.S. Environmental Protection Agency (EPA)-registered disinfecting and sanitizing products, laundries are helping their customers in the fight to reduce the spread of microorganisms and concerns of cross-contamination.

The heightened awareness surrounding the need to reduce the spread of microorganisms is in part due to health care-associated infections, or HAIs, which are defined by the CDC as “infections that patients acquire during the course of receiving treatment for other conditions within a health care setting.”

How to reduce the ever-increasing spread of HAIs is a top priority for health care facilities. Patients may acquire an infection from a variety of sources including when receiving treatment for medical or surgical conditions. HAIs can occur in all care settings, including acute care areas in hospitals, same-day surgery centers, ambulatory outpatient clinics and in long-term care facilities, such as nursing homes.

Health care-associated infections can be transmitted to the patient in many different ways. Common carriers of infectious microorganisms are generally objects that a patient may contact, such as hard surfaces, air, medical devices, water and textiles including curtains or bed linen. The costs to the health care industry as a direct result of HAIs are staggering. Some estimates have shown the total to be as high as \$50 billion annually.¹

To ensure the delivery of hygienically clean textiles, steps must be taken to ensure that the laundry facility is clean. At the [Fifth Decennial International Conference on Healthcare-Associated Infections](#) in March of this year, the CDC reported

that an outbreak of *Rhizopus* likely resulted from contamination related to the linens.² “Hospital linens (sheets, pillowcases, gowns) were the only items common to all the cases.” It should be noted here that this situation is a single occurrence involving opportunistic infections and is not commonly found in healthcare. This was a situation in which all the wrong circumstances occurred providing for the “perfect storm”. Hospitals, nursing homes and acute-care clinics are becoming more aware of the need to evaluate the effectiveness of their laundering programs. Requirements for infection control in the health care industry are rapidly changing as government agencies, industry associations and individual state health boards adopt new more stringent standards. Following a well thought-out facility program is important for any laundry whose priority is delivering a superior hygienically clean product. In truth, laundry is only as clean as the facility in which it was washed.

*Zygomycosis is an invasive fungal infection caused by mucormycetes (formerly zygomycetes), a ubiquitous group of molds including *Rhizopus* species. Infections are rare, usually occur in people with an underlying medical condition, can affect various body sites, and have a case fatality rate of > 50%. Source – CDC Poster on Zygomycosis Outbreak Associated with Hospital Linens*

Laundry Facility Layout

Because cross-contamination can occur easily, the layout of the laundry facility itself should be considered. Separating the soiled side from the clean side with a physical barrier is

*The CDC investigation of this situation concluded that “Hospital linens likely acted as a vector bringing *Rhizopus* in contact with susceptible patients in this outbreak. *Rhizopus* might have contaminated linens at the laundry facility or during delivery to the hospital. Hospital linens should be laundered, shipped, and stored in a manner that minimizes exposure to environmental contaminants.”*

recommended. Restricting employee traffic moving from one part of the facility to another is also important and can be

assisted by physical separation of the clean and dirty side of the plant. While great care and attention to use of the proper personal protective equipment (PPE) is expected, training and enforcement of removing PPE and washing hands before entering the clean side of the facility is a must.

Another key element in facility layout is creating a negative pressure environment, including air movement from the clean side to the soiled side and exhausted outside. CDC references to “maintain the receiving area for contaminated textiles at negative pressure compared with the clean areas of the laundry in accordance with AIA (American Institute for Architects) construction standards in effect during the time of facility construction. Exterior doors should only be left open while in use, taking care to not disrupt airflow within the facility.

Transportation and Storage of Textiles

When it comes to transportation of clean textiles, assuring the hygienic integrity of the product while in transit should be considered. CDC guidance provides that “Clean/sterile textiles and contaminated textiles may be transported in the same vehicle, provided that the use of physical barriers and/or space separation can be verified to be effective in protecting the clean/sterile items from contamination.” Attention should be given here to state regulations prohibiting the transportation of both clean/sterile in the same vehicle or same cart/hamper. Facilities should implement policies addressing the regular sanitization of the interior surfaces of the truck, along with providing drivers a means of sanitizing hands between soiled pickups and clean deliveries further protects the sanitized end product.

Carts should be specific to the clean or dirty side of an operation and not used for both. Disinfection of carts on a regular schedule and clear identification of carts used for soiled or clean linen also reduces the risk of contamination. Further, clean textiles stored in carts for (common areas) periods of time should be covered to prevent exposure to common traffic. Both the Association for Professionals in Infection Control (APIC) and the CDC suggest that protection of the stored textiles is recommended until the items are distributed for patient use. This guidance is provided for all aspects of clean laundry transport and storage, from the laundry facility to the hospital hallways and storage areas.

Specific guidance is not provided by the CDC with regard to static (non-cart) linen storage areas. However, common sense suggests these areas be cleaned and disinfected with an EPA-registered product on a regular schedule. Airflow in storage

Clean, uncovered/unwrapped textiles stored in a clean location for short periods of time (e.g., uncovered and used within a few hours) have not been demonstrated to contribute to increased levels of health-care-acquired infection. Such textiles can be stored in convenient places for use during the provision of care, provided that the textiles can be maintained dry and free from soil and body substance contamination. Source – CDC Guidelines for Environmental Infection Control in Health-care Facilities 2003

areas should also be managed to prevent additional cross-contamination from the soiled side of the plant, ventilation, etc.

In regard to the clean textile inventory, using a first-in-first-out (FIFO) strategy is good business sense. However, there is no specific guidance or evidence to support that FIFO has any impact positive or negative on infection control provided that storage areas are regularly disinfected.

Facility/Equipment Cleaning and Disinfection

A good cleaning program works from the ground up, starting with the floors. Every floor surface, from the lobby to the wash aisle, should be cleaned regularly and disinfected. Likewise,

Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate written schedule for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area. All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials. Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning. Source – OSHA Bloodborne pathogens regulations 29 CFR 1910.1030(d)(4)

belts and mechanical surfaces that come in contact with clean laundry should be cleaned. Keeping restrooms clean can also be a tough challenge, but is an equally important element in a complete facility cleaning program.

When selecting a hard surface disinfectant, be sure to take into account the instructions on proper use of the product. The EPA registers hard surface disinfectant products and ensures that, when used according to the label, the corresponding efficacy claim can be achieved.

Pests are vectors for serious illnesses, from staphylococcus to salmonella to meningitis to Lyme disease, and pose a serious threat to infection control in any health care setting³. Laundry operations need to establish a pest elimination program to minimize the spread of pathogens. Keeping your facility free of insects, rodents and other pests will also have a positive impact on your reputation – both with customers and your employees.

Employee Hygiene and Protection

Encouraging employees to wash their hands regularly is another key to reducing cross contamination. During the laundering process, employees’ hands can touch the product –

and pass along soils and contaminants – as often as any other surface. Hand hygiene keeps employees healthier and limits the spread of disease in the workplace.

To minimize the risks associated with disease transmission, hands should be washed when entering the clean linen side of the facility, after glove removal, after restroom use, before eating and whenever visibly contaminated or soiled. Proper soap and water and hand sanitizer - when water isn't available - should be readily accessible and available for employees to use. Care and attention to the cleanliness of employee apparel on the finishing side of the laundry is also important to the hygienic integrity of the end product.

When working with soiled textiles, employees should be trained in the proper use of PPE, for their protection as well as others around them. When sorting or handling soiled linens, care should be taken to not agitate the laundry and aerosolize potential pathogens, which can then be more easily spread.

There is no requirement for hospitals to identify source of soiled textiles. Even linens from a hospital room with a patient known to be infected with a drug-resistant organism such as MRSA (Methicillin-Resistant Staphylococcus Aureus) do not require segregation for special processing. Organisms such as MRSA have developed resistance to the effects of antibiotics, not germicides. The entire wash process, agitation, chemicals, heat etc. is equally effective for removing soil and microorganisms. However, universal/standard precautions require that laundry personnel should assume soiled linen is contaminated with pathogens and take the proper precautions accordingly.

Assuring that hygienically clean textiles remain clean should be of utmost importance to every laundry facility. By implementing programs and practices that prevent cross-contamination and reduce the spread of potentially infectious diseases, a facility may avoid costly consequences. The environment a textile is in during its progression from the wash aisle to the customer is as important as the process of laundering the linen. Containment is the key; protect clean textiles by covering or wrapping, maintaining separation between soiled and clean linens, work to reduce contamination and, above all, maintain the cleanliness of the facility.

Your laundry is only as clean as the facility in which it was washed.

- 1) Washington Post (July 2005).
- 2) Zygomycosis Outbreak Associated with Hospital Linens (Jonathan Duffy, MD, MPH, CDC March 2010).
- 3) Pennsylvania Health Care Cost Containment Council.



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