



Improving Outcomes and Efficiency in Infection Prevention

Recent studies have demonstrated that the environment plays a role in the transmission of healthcare-associated infections (HAIs). Environmental surfaces and patient care equipment are important reservoirs for pathogens. Contaminated surfaces increase the risk of transmission to patients either through their direct contact with contaminated surfaces, or by contaminating the hands of healthcare workers who then transfer these pathogens to patients or other surfaces. This evidence supports the need to improve cleaning and disinfection of environmental surfaces and patient care equipment. Steps to help accomplish this are multi-factoral. Some recommendations to this are as follows:

- 1) Selection of the right tools and products
- 2) Streamlining workflow
- 3) Training and reinforcement tools
- 4) Validation
- 5) Assurance

Selection of the right tools and products:

The selection of the right tools and products are one of the essential components for effective disinfection. Since healthcare facilities prefer to use evidence on which to base their decisions and practices, it is important to outline key decision criteria that can be used to select the optimal disinfectant for a facility.

Recently, Drs. Rutala and Weber published guidance considerations in the *Infection Control and Hospital Epidemiology* (Vol. 35, No. 7 (July 2014), pg. 855-865), for healthcare facilities to use when selecting a disinfectant.

1. Kill claims for the most prevalent healthcare pathogens
2. Fast kill times and acceptable wet-contact time to ensure proper disinfection of non-critical surfaces and patient care equipment
3. Safety
4. Ease-of-use
5. Other Factors such as training and support provided by manufacturers and total cost

When reviewing these criteria, an understanding of the key pathogens of concern at your facility will help you evaluate which disinfectant(s) are best for your facility. It may also be necessary to use task oriented disinfectants for harder-to-kill pathogens, while focusing on less hazardous products for the majority of your daily cleaning and disinfection tasks.



When reviewing disinfectants, an important consideration is the kill time, or contact time. If a product evaporates too quickly, it will not remain in contact with the microorganism for the necessary kill/contact time. Fast kill times are important because they provide confidence that pathogens are killed before the disinfecting solution dries. Selecting the right product helps to ensure that staff is compliant with cleaning and disinfection protocols that can reduce the risk of HAIs and readmissions.

The third consideration of products is safe use and handling. Reports and studies have highlighted that staff is less likely to use products that they consider hazardous to their health or the health of patients. There is also the added benefit of keeping disinfectants at the point of care so they can be used when and where they are needed, limiting the level of contamination in the environment of care.

The EPA uses results from toxicity studies to determine hazard ratings of disinfectants in six areas: Acute Oral (ingestion), Acute Dermal (skin), Acute Inhalation, Primary Eye Irritation, Primary Skin Irritation and Dermal Sensitization. Products are categorized into one of four levels of toxicity for each of these areas. Category IV is the least toxic category, requiring no PPE or precautionary text. By enabling the use of a product with lower risk, staff may be more willing to use it, which facilitates more consistent use, while reducing the risk of worker related injuries and the cost of PPE. Products with this category level rating can be safely left in patient care environments. Staff should not have to compromise safety for efficacy.

Products that are easy to use will help in assuring compliance by staff and may also be used by patients and visitors to create a more desirable environment. To facilitate proper use, disinfectants should be available in multiple and convenient forms and should be composed of a durable substrate that will not easily tear, fall apart or dry out quickly.

It is also important to look at the overall cost of any cleaning and disinfection program versus the cost of the disinfectant solution alone. The overall cost calculation should include a variety of factors such as labor time to set up and use the product, laundering costs (if applicable) and the cost of non-compliance (i.e.; not disinfecting due to safety concerns, inaccessibility of product, or lack of time) and the risks and costs associated with increased HAIs.

In summary, there are many criteria in selection of the right product for your facility. The items outlined above can help you in the selection of the right tools and products.



Streamlining Workflow

Ensuring that surfaces and equipment are cleaned frequently enough to prevent the spread of pathogens is critical to creating a safe environment of care.

Studies demonstrate that good daily cleaning and disinfection can reduce the pathogen load on high touch surfaces, reducing the risk for patients, and reducing the risk that these pathogens will be transferred to the hands of healthcare workers. Since there is little time to complete this task on a daily basis, ensuring your environmental services team has the best possible products to complete this process efficiently is key.

Patient care activities that involve blood, feces or other body fluids, may create significant environmental contamination. Instituting cleaning and disinfection processes at the point of care can reduce contamination, and lessen the risk that these pathogens can move throughout the facility.

Finally, terminal cleaning is a critical step to ensure that the room or area is well cleaned before another patient is admitted. Ensuring that all high touch surfaces are well cleaned, potentially through the implementation of a cleaning validation program is very important. Many facilities are also considering the implementation of additional tools to help reduce the risk for the incoming patient.

Determine a team approach to cleaning and disinfection which includes cleaning of high-touch environmental surfaces daily, and as needed, will keep contamination to a minimum.

- Review best practices across your facility, and engage vendors and evidence to help guide practices
- Consider optimal scenarios of cleaning and disinfection, to streamline practices, following a workflow, and ensure adequacy of time to do the job.
- Define roles and responsibilities using tools and checklists

Training and Reinforcement Tools

Once the workflow is defined, standardized training and reinforcement tools for the staff will help ensure compliance. Good training tools outline what should be done along with why it should be done. These tools should specifically outline of the procedures, including which products to use on surfaces, how to properly apply these products, and which surfaces should be cleaned and disinfected along with frequencies. When using disinfectants, it is important to adhere to the manufacturer's label instructions, ensuring that contact times are achieved.



The combination of product and practice results in effective surface disinfection, which reduces patient risk and improves outcomes. Reinforcement tools, such as wall charts, checklists, infographics, videos, and application guides should be made available for your staff.

- Clearly communicate and train staff on their roles during implementation
- Provide ongoing communication vehicles to continually reinforce

Validation

Cleaning and disinfection of surfaces is important, and as with any important process, it should be measured. Studies have demonstrated that staff will respond to constructive feedback and improve compliance when consistent and objective measurement data is provided. Consistent feedback and a continual focus on improvement are critical to drive improvements in compliance.

Simple programs with fluorescent marking systems or ATP monitoring, along with consistent feedback, and real-time reporting have helped facilities improve.

- Determine a process to measure compliance throughout your facility
- Measure outcomes, communicate feedback, and stay focused toward success

Assurance

The healthcare environment is very complex with the combination of sick patients, busy staff, a high level of patient care activity and an ongoing stream of visitors. Because of this, even in the best situations, there is risk that surfaces may not be cleaned as effectively. Several studies have demonstrated persistent contamination of environmental surfaces despite the use of traditional cleaning and disinfection methods. This has led to widespread acceptance that there is a need to address traditional cleaning processes along with a need to assess the use of additional disinfectant technologies.

For added assurance, many facilities are now looking at no-touch disinfection systems, such as ultraviolet-C devices, to augment their manual cleaning processes. These systems have demonstrated the ability to be highly effective against vegetative pathogens and spores. It should be noted that these adjunct technologies are not a substitute for manual cleaning and disinfection, but instead are being used in addition. The use of the combined systems — manual cleaning plus no-touch disinfection — has been shown to reduce the environmental bioburden, and may help to address the inadequacies and inconsistencies in manual cleaning processes and implementation, reducing the risk of HAIs.



There are many factors to consider when selecting the best technology in UV-C disinfection. Understanding your facility needs, such as allowed turnover time and when and where the units will be deployed is important when determining the amount of devices needed. Different designs offer different benefits, and facilities should consider cycle times, usability and the overall cost of the devices (capital cost as well as operating cost) when selecting a device to ensure the best return on investment. In the battle against HAIs, this technology can help facilities enhance the strength of their environmental hygiene program, promote safety and satisfaction for patients and help minimize the financial burden of lengthy patient stays or readmission.

Improved cleaning and disinfection of environmental surfaces and patient care equipment can help improve patient outcomes, reimbursements, and brand image. Incorporating these five steps can help facilities achieve positive results.