

The Benefits of Ready-to-Use Wipes

The traditional towel-and-bucket method of environmental cleaning is being replaced in many hospitals by ready-to-use disinfectant wipes. These pre-soaked disposable wipes are increasingly used for the disinfection of near-patient surfaces to prevent the spread of microorganisms and the emergence of nosocomial infections. This report explores the benefits of ready-to-use wipes as well as reviews the key factors that impact wipes' efficacy.

By Kelly M. Pyrek



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The traditional towel-and-bucket method of environmental cleaning is being replaced in many hospitals by the use of disinfectant wipes. Timothy Wiemken, PhD, MPH, CIC, assistant professor of medicine and assistant director of epidemiology and biostatistics at the University of Louisville School of Medicine, says that pre-soaked, ready-to-use disposable wipes are increasingly used for the disinfection of near-patient surfaces to prevent the spread of microorganisms and the emergence of nosocomial infections. Compared to multiple-use towels (bucket method), typical sources of error (e.g. wrong dosage or repeated dipping of already used cloths into the use-solution) can be avoided with disposable wipes.

Wiemken, et al. (2014) studied the value of ready-to-use cleaning and disinfection wipes compared with the traditional towel and bucket method and found that using ready-to-use wipes led to significantly higher compliance, a more rapid cleaning and disinfection process, and potential cost savings. Eight environmental service workers and one nurse participated in the unblinded, randomized study, which was conducted in February 2013. To monitor disinfection performance, six predefined surfaces (sink countertop, bedside table, dresser, medicine cabinet, wall-mounted cabinet, toilet) were marked with a fluorescent dye invisible in daylight. Afterward, the surfaces were disinfected with pre-soaked disposable wipes or by applying the bucket method. 10 minutes after completion, the employee repeated the disinfection of the six sites with the alternate method. Depending on the disinfection performance, test persons scored up to two compliance points per surface (0 = no removal of dye; 1 = partial removal; 2 = complete removal) and could yield a maximum of 12 points. In addition, the time needed for disinfection was measured.

The researchers found that with pre-soaked disposable wipes, the employees' compliance was significantly better (10.6 compliance points) as with the bucket method (8.1 compliance points). Additionally, disinfection with disposable wipes saved considerably time (178.1 seconds vs. 230.9 seconds). The associated cost savings per employee per day was \$38.58.



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Wiemken, et al. (2014) concluded that the use of pre-soaked disposable wipes is advantageous over the bucket method and may improve surface disinfection processes.

“There are many opportunities for error as well as many non-human related issues when using the bucket method,” Wiemken says. “For example, when diluting disinfectant, it must be diluted appropriately. We often run into issues with over- or under-dilution, which drastically affects the effectiveness of the product. More and more data are coming out suggesting that the material of the cloth is critical to ensure that disinfectant actually gets released onto the surface. I know a lot of facilities are still using cotton with quaternary ammonium compounds, which is questionable now. Once the cloth is dipped in the disinfectant, it is typically wrung out, which leaves an undefined amount and concentration of disinfectant on the cloth (not to mention a relatively dry cloth), regardless of the cloth material. There are data suggesting the bucket itself can become contaminated with organisms such as *C. difficile* spores – if this is the case, we may be spreading pathogens around when we think we are disinfecting the area. These types of things scare us quite a bit. We found that it is just easier and more user-friendly to ditch the bucket and go with a ready-to-use system.”

In terms of cost and cross-contamination prevention, ready-to-use disinfectant wipes may be a better method. “We found that environmental services workers tended to throw away the wipe from the ready-to-use system quickly after dropping it on the floor versus the cloth,” Wiemken says. “This may be because they have a small number of cloths on their cart and have to carry around the used cloths for a long time throughout the day. Furthermore, we saw that the ready-to-use wipes were used on smaller areas before being thrown away versus the cloths in the bucket method. The ready-to-use wipes were much wetter than the cloths, so all of this combined allowed for much more active ingredient to remain on the surface for longer, and limited contamination from wiping areas with cloths containing subtherapeutic doses of disinfectant. These were not really mentioned in the paper because we didn’t have a large number of observations, but it is still important information. Since the ready-to-use systems are self-contained, we also don’t run the issue of bucket contamination and subsequent room contamination from the bucket.”

Wiemken adds that, “Costs were also interesting. We based our cost-savings calculations on the number of rooms an employee cleans/disinfects in a typical day, how long it took them with each method, their salary, etc. Although we didn’t account for the increased cost of the ready to use system, the cost savings calculated were pretty dramatic. The most important part of this however, is that the compliance was significantly higher when using the ready to use system (areas were wiped better, cloths changed more often, surfaces were wetter longer, etc.). This substantially decreases the load of organisms on the surfaces. If this increase in compliance prevented only one healthcare associated infection, it would



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likely represent a cost savings for the institution regardless of the time it took to clean the room and the extra cost of the ready to use system. The probability of this being the case is very high as well, since the role of the environment in the transmission of pathogens in healthcare is supported by a fair amount of good data.”

Keri Lestage, PhD, tech solutions group manager for Clorox Healthcare, confirms that cost can be a significant factor in the decision to use wipes. “In theory, a straightforward cost-per-wipe comparison for disinfecting wipes is simple, but in reality, that gives only a very narrow perspective,” she writes in the whitepaper, *How Wet Is Your Disinfecting Wipe and Why Should You Care?*. “Under the new reimbursement models driven by the Affordable Care Act, healthcare facilities face continual pressure to reduce costs while improving the overall quality of care, forcing facilities to take a more holistic and strategic approach to product selection.” She emphasizes that in addition to cost, environmental services professionals should understand the impact of disinfectant wipe wet-contact times, as well as comprehend how much surface area one wipe will cover.

Every Environmental Protection Agency (EPA)-registered disinfectant product label features a list of organisms the product is approved to kill and the associated contact times –meaning how long the product must remain wet on a surface in order to kill the pathogen in question. “For towel [wipe] products, there is no indication of how much surface area one wipe can cover and still keep the surface wet for the appropriate contact time,” she says. “This is a fundamental question that impacts both compliant usage and cost.”

Lestage also points to the factors impact a wipe’s “wettability,” or the ability of the disinfectant liquid to maintain contact with solid surfaces. Understanding the factors that impact how the disinfectant is released from the wipe will help the savvy consumer choose the most effective product. Let’s explore these factors more closely:

Loading Ratio

Lestage explains that a product’s loading ratio refers to how much disinfectant is added to the dry canister of wipes. The disinfectant-to-wipe ratio will determine how wet each wipe will be. A well-engineered product will have enough disinfectant to fully saturate each wipe, which in turn is what allows the treated surface to remain wet for the entire contact time.

Disinfectant Absorbency and Release

Lestage says that how the disinfectant is absorbed by the wipe and then released onto the surface is a function of both wipe material and disinfectant formulation. For example, the type of fiber used will either enhance or hinder the disinfectant absorption rate, as will the amount and type of surfactant used in the formulation. These properties will play a key role in the wettability, compliance and cost of the product.

Lestage explains further that pre-moistened wipes – wipes that are shipped with the disinfectant already added to the canister – have two distinct advantages over products that require the end user to add the disinfectant solution to a canister of dry wipes:



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- Pre-moistened wipes are engineered to work as a system. EPA-registered pre-moistened wipes manufactured by reputable companies are formulated with disinfectant solutions that work in combination with the wipe's specific non-woven material to ensure the optimal level of saturation to maximize disinfectant absorbency and release.
- There is no guesswork with pre-moistened wipes. Pre-moistened wipes arrive ready to use, eliminating the opportunity for human error. With products that require the end user to saturate a dry canister of wipes, there is a risk that the wipes will be used too soon after the addition of the disinfectant, which does not allow enough time for the disinfectant to wick throughout the entire roll of wipes and results in dry spots.

Beyond the economic implications of surface coverage and the mechanics of disinfectant release for efficient product usage, Lestage says the No.1 reason to understand just how far one wipe will go is product efficacy. "Misuse of disinfectant wipes leads to insufficient disinfection of surfaces, which can put patients and staff at risk for exposure to dangerous pathogens," she says. "No matter what type of disinfecting wipe is used, it is important to remember that the best results are only achieved when they are used correctly. A study published in *Infection Control and Hospital Epidemiology* demonstrated that overused sporocidal wipes can easily transfer *C. difficile* spores from contaminated to clean surfaces, however when used correctly, fresh sporocidal wipes reduced *C. difficile* spores to undetectable

Using Wipes

Ready-to-use wipes can be incorporated into a healthcare facility's overall multi-modal environmental hygiene program for patient rooms. While the following is not meant to be an all-inclusive terminal cleaning procedure, these steps can be integrated into an existing daily or terminal cleaning protocol. Environmental services professionals should wear protective equipment, such as disposable gloves and other items of personal protective equipment (PPE) when performing cleaning activities.



General Surfaces

- Perform hand hygiene, then put on gloves and protective eyewear.
- Use ready-to-use disinfectant wipes on surfaces, being sure to change

wipes often to ensure surfaces remain wet for the time specified on the product label. Discard used wipes in the trash — never reuse or rewet a disposable wipe.



Patient Bed Area

- Use a new wipe on the top and front of the bed's headboard, side rails and between rails. Also wipe the TV remote and nurse-call device and cord.
- Turn down the coated bed mattress. Use a wipe on the bed frame and the back of the coated mattress working from the top and repeating at the bottom. Remember to wipe the sides of the coated mattress and change wipes as needed. Be sure to also wipe both sides of coated pillows. Allow items to air dry.
- Use a new wipe on the top and front panel of footboard. Depending on the footboard type, make sure to wipe between the spaces and grooves.

levels with no transfer of spores to clean surfaces (Cadnum, et al. 2013)."

Wiemken says that the use of the ready-to-use wipes fits in with healthcare institutions' attempt to move toward including disinfectants in their antimicrobial stewardship programs. "With antibiotics, we are concerned with resistance from overuse or misuse," he says. "We need to do the same thing with our disinfectants to ensure we don't start seeing more disinfectant resistant pathogens (as we already have started seeing). Facilitating compliance with the disinfectant use through the ready to use systems is an excellent step in that direction."



High-Touch Areas

- Use wipes on all high-touch areas in room (i.e., desktops, keyboards, bedside tabletop and inner drawer, phone and cradle, armchairs, door and cabinet handles, light switches, closet handles, etc.).
- Use a new wipe on mobile devices such as IV stands, carts, BP monitors and glucometers.
- Use a new wipe on air vents.



Bathrooms

- Begin a terminal bathroom cleaning by giving special attention to the order in which items are cleaned. Start with the highest surface and clean the toilet last.
- Using wipes, clean the sink and counter area, including sink fixtures, under the sink and all pipes.
- Use a new wipe to clean other surfaces of the bathroom, including support bars and shower fixtures. Allow items to air dry.
- Remove gloves and discard in trash.
- Perform hand hygiene.

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