

Comparing Ready to Use Disinfectants with Dilutable Disinfectants for Healthcare Facilities

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Introduction

Dilutable surface cleaners and disinfectants are commonly used for daily and terminal cleaning and disinfection in U.S. hospitals. Although the price tag associated with dilutable disinfectants may seem appealing, hidden costs arising from cross-contamination, quality control issues, and low compliance have all been associated with dilutable product use.¹ Non-compliance and cross-contamination in particular are thought to contribute to hospital-acquired infections (HAIs),² which have been estimated to cost U.S. hospitals an average of \$9.8 billion per year for the five most prevalent HAIs,^{3,4} and up to \$45 billion in overall annual direct medical costs for all HAIs.⁵ Swapping out dilutable cleaners and disinfectants for ready-to-use cleaner-disinfectants may help hospitals achieve consistent, compliant use for hard surface disinfection.

Reusable cotton and microfiber cleaning towels, which are commonly used with dilutable disinfectants, have been shown to harbor viable microorganisms even after laundering

surfaces, can be influenced by two factors: product and protocol. Selection of the right disinfectant product for the right job must be combined with enhanced staff education and standardized cleaning and disinfection protocols to ensure disinfectants products are being properly used to reduce transmission of pathogens in the healthcare environment.

Dilutable products are typically concentrated quaternary ammonium-based liquids that require automated dilution with water, and the use of a cloth, mop, or sponge to apply. Reusable cotton and microfiber cleaning towels, which are commonly used with

dilutable disinfectants, have been shown to harbor viable microorganisms even after laundering, contributing to cross-contamination.⁶

Some dilutable disinfectants are used in conjunction with disposable dry wipes. These systems require the end user to saturate a dry canister of wipes and there is a risk that the product is used too soon after combination. Using a canister of wipes too soon after combination may not allow for the disinfectant to wick throughout the entire roll of wipes and

What are some of the hidden costs associated with dilutable disinfectants?

Cross-Contamination

Cross-contamination, or the spread of pathogens from contaminated to clean

can result in variation in the amount of disinfectant that may be applied to the surface.

Even disposable dry wipes properly saturated with dilutable disinfectants can transfer pathogens when not used properly. In fact, a recent study demonstrated that non-sporicidal wipes and overused sporicidal disinfectant wipes easily transferred *C. difficile* spores from contaminated to clean surfaces.⁷

Compliance

In a recent publication on how to select the ideal disinfectant, Dr. William Rutala and Dr. David Weber, leaders in infection prevention research, cite the “cost per compliant use” as a key consideration when evaluating potential products.⁸ Another study comparing ready-to-use disinfectants with the traditional towel and bucket method found significantly higher compliance with ready-to-use products, suggesting that ready-to-use may be the preferred method for terminal cleaning.¹ This same study reported observed compliance issues with dilutable disinfectants, including improper dilution, rag reuse, rag double dipping, and inadequate rag saturation, all of which have been linked to higher *C. difficile* incidence rates in U.S. hospitals.⁹

Quality Control

Dilutable products require proper mixing and use to effectively disinfect hard surfaces.¹⁰

Achieving consistent dilution and towel saturation leaves room for human error that can lead to quality control issues.¹ Dilution systems also require regular maintenance and testing to ensure proper performance, and environmental factors such as hard water can adversely affect the performance of dilutable systems.¹¹

On the other hand, ready-to-use disinfectant wipes are engineered and tested as a system of disinfectant liquid with non-woven material to ensure appropriate wipe saturation and maximize disinfectant absorbency and release. Therefore, they can consistently deliver the proper concentration of active ingredients to the surface.

Compatibility

When working with any liquid disinfectant product, it is important to select a cloth/wipe material that is compatible with the disinfectant since the antimicrobial activity of some disinfectant chemistries can be affected by certain materials, like cotton cloths or disposable cellulose-based wipes.¹²

Using cotton cloths with quaternary ammonium-based disinfectants, which are the most common type of dilutable product, may result in inadequate transfer of disinfectant to hospital surfaces.¹³ Microfiber, which is the preferred vehicle for applying dilutable quaternary ammonium-based disinfectants, has variable performance after repeated washes.¹⁴

Observed compliance issues with dilutable disinfectants include improper dilution, rag reuse, rag double dipping, and inadequate rag saturation, all of which have been linked to higher *C. difficile* incidence rates in U.S. hospitals

Time

Dilutable disinfectant solutions require proper dilution and must be prepared on a daily basis, a process which recent evidence has shown to be very time consuming. In a 2015 study published in the *American Journal of Industrial Medicine* where researchers monitored healthcare worker cleaning and disinfecting tasks in five hospitals over a two year period, the authors found that hospital housekeepers spent an average of 42 minutes per shift mixing chemical products.¹⁵

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A recent study comparing ready-to-use products with traditional dilutable disinfectants for terminal cleaning found that employees spent an average of 3.8 minutes per patient room when using dilutable products, as compared to only 3.0 minutes when using ready-to-use disinfectants.¹⁵ This translates to a cost savings of \$38.58 per employee per day when using ready-to-use products.

The authors also reported that ready-to-use products kept surfaces wet for longer periods of time when compared to the traditional towel and bucket method. For compliant disinfectant product usage, surfaces need to remain wet for the appropriate contact time. If the disinfectant product evaporates too quickly, it will not remain in contact with microorganisms for the necessary kill/contact time and hence the desired antimicrobial effect will not be achieved.

Conclusion

Ready-to-use disinfectants eliminate the need for laundering, reducing the chance of cross-contamination, and minimizing employee time

spent on disinfection procedures. Pre-moistened disinfectant wipes enable consistent, compliant product application while also minimizing turnover time.

Clorox Healthcare offers a robust portfolio of ready-to-use disinfectant wipes and ready-to-use disinfectant liquids with different disinfectant chemistries, product forms and sizes to ensure that end-users have a range of options that are tailored to their specific infection control needs.

For more information on ready-to-use cleaners & disinfectants for your facility, visit CloroxHealthcare.com



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