

Disinfectant wipes are appropriate to control microbial bioburden from surfaces: use of a new ASTM standard test protocol to demonstrate efficacy

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ABSTRACT

High-touch environmental surfaces (HTES) are being recognized increasingly for their potential to spread pathogens in healthcare and other settings. Decontamination of HTES is almost always either by a disinfectant spray and wipe procedure or by wiping with a disinfectant pre-soaked wipe (DPW). However, products marketed for this purpose are rarely tested using conditions simulating their field use, and the label claims of environmental surface disinfectants seldom include wiping action. Additionally, during routine wiping, DPW may dislodge localized contamination on HTES and transfer it to neighboring areas being wiped, posing a substantial threat to the spread of pathogenic bacteria. Accelerated Hydrogen Peroxide[®] (AHP[®]) has been proven to decontaminate surfaces without transferring acquired contamination to clean surfaces. Unlike most disinfectant technologies, AHP is a very good cleaner, as well as fast acting bactericidal and virucidal agent which simplifies the cleaning protocol for both Environmental Services and Clinical Staff increasing protocol compliance.

BACKGROUND

The lack of appropriate test protocol for measuring the activity of antimicrobial wipes has been recognized by the Royal College of Nursing, and therefore the three-stage test protocol was redesigned to measure the activity of antimicrobial wipes in combination with the purpose-built Wiperator, recently recognized as an

ASTM International Standard, now referred to as E2967-15. The three-stage test has been used to measure the activity of disinfectant, sporicide, and detergent containing wipes.

STUDY

This study reports on the efficacy of five types of commercially-available DPW, including AHP[®], against two types of common vegetative bacterial pathogens (*Staphylococcus aureus* and *Acinetobacter baumannii*) using ASTM Standard E2967-15 in three independent laboratories. Wipes were tested based on their ability to decontaminate a surface with 10 seconds of wiping, without transferring the pathogens to a clean surface.

RESULTS

The results of the study demonstrated that the repeatability and reproducibility limits did not remain constant between the different wipes used. This was to be expected as the wipes tested had different materials and formulations. All of the commercial DPW that were tested achieved a >4log (99.99%) reduction in colony-forming units of *Staphylococcus aureus* and *Acinetobacter baumannii* with 10 seconds of wiping. AHP[®] was able to produce at least a 7.0 log reduction (99.99999%) of both test bacteria from the surface following wiping. Additionally, AHP[®] was the only DPW that was able to prevent the transfer of bacteria to another surface.

STUDY CONCLUSION

Microbial decontamination of environmental surfaces by wiping is subject to many variables, and failure to standardize them properly during testing of wipes may give inconsistent data. This newly introduced standard method represents a significant advance in assessing DPWs for microbial decontamination of HTES and aid in making more relevant and reliable claims on marketed DPWs. Furthermore, as DPWs are increasingly being used in healthcare facilities, the disinfectant's ability to decontaminate a surface effectively without contaminating cleaned surfaces should be considered.

REFERENCE

Sattar SA, Bradley C, Kibbee R et al. (2015). Disinfectant wipes are appropriate to control microbial bioburden from surfaces: use of a new ASTM standard test protocol to demonstrate efficacy. 91(4):319-25.