Understanding the Essentials of Germicidal UV Light

Infection Control Today, 2015

ABSTRACT

Healthcare facilities wanting to supplement their existing environmental hygiene strategies are exploring how ultraviolet light can bolster manual cleaning and disinfection practices. Experts emphasize that a comprehensive multi-modal approach to environmental cleaning is imperative and that the technology should be an adjunct intervention to routine manual cleaning and disinfection protocols. As Barbut (2015) emphatically states, "The new no-touch methods for room disinfection supplement, but do not replace daily cleaning".

BAKGROUND

While patient rooms are regularly cleaned and disinfected using manual techniques, evidence suggests that the adequacy of cleaning is often suboptimal, particularly when the focus is only on those surfaces perceived to be high-risk or frequently contacted (high-touch). As well, when cleaning, sufficient wet contact time between the surface and disinfectant is needed to ensure adequate disinfection, but is not always achieved. Inadequate cleaning using manual techniques prompted the development of no-touch systems that can decontaminate objects and surfaces in the patient environment.

Understanding Germicidal UV Light UV light works primarily by inactivating the DNA or RNA in microorganisms. It is important to recognize that UV light technology decontaminates microorganisms when they are in a direct line of sight of the UV device. This may require more than one placement of a UV device in an area with many hard-to-reach surfaces. UV efficacy is also dependent on a number of variables. As stated in the CDC's Guideline for Disinfection and Sterilization in Healthcare Facilities (2008), "UV radiation has several potential applications, but unfortunately its germicidal effectiveness and use is influenced by organic matter; wavelength; type of suspension; temperature; type of microorganisms; and UV intensity". It is for these reasons that UV light technologies can supplement and complement infection control protocols but should not replace manual cleaning and disinfection. Considerations When Evaluating and Purchasing UV Disinfection Devices Consider introducing UV light disinfection devices into intensive care units and other high-infection risk patient care areas understanding that these technologies do not obviate the need for other infection control practices. Like bringing in any new technology or product, creating a phased-in implementation approach that includes staff training to ensure understanding of the technology and its implications for other aspects of infection control ensures consistent infection prevention protocols. Training staff for proper terminal cleaning, robotic cleaning, and infection prevention practices are key to a successful infection prevention program. Lastly, clinical literature of UV device evidence of effectiveness should be monitored as currently the evidence base is limited by weak study designs, lack of consensus around important concepts (such as cleanliness thresholds), and reliance on nonclinical outcomes.

CONCLUSION

Contaminated surfaces in healthcare facilities may contribute to the transmission of pathogens implicated in nosocomial infections emphasizing the importance of

effective infection prevention programs. UV light disinfection devices complement infection prevention programs but does not replace the need for manual cleaning and disinfection, thus utilizing a multi-modal approach.

REFERENCE

Use of a daily disinfectant cleaner instead of a daily cleaner reduced hospital-acquired infection rate. AJIC 43 (2015) 141-6