A COMPREHENSIVE APPROACH TO
SURFACE
DISINFECTION

## Supplemental Ultraviolet Light Technologies

By Kimberly E. LaFreniere, PhD

Today few would argue that the environment plays a role in the transmission of many health care pathogens including *C. difficile*, MRSA, VRE and others. Manual cleaning and disinfection with EPA-registered hospital products has long been the front-line defense for the reduction of pathogenic organisms on environmental surfaces in health care facilities. Environmental Services (EVS) personnel are tasked with the incredibly important process of cleaning and disinfecting the patient environment and are the unsung heroes of infection prevention.

Yet, hospital staff face a myriad of challenges when performing manual environmental cleaning and disinfection processes, often leading to suboptimal results. Gaps in the cleaning and disinfection processes have given rise to the development of novel technologies, such as ultraviolet (UV) light, that supplement manual environmental hygiene practices.[1]

Consider the following evidence-based facts about the health care environment:

- **Validation that environment plays a role:** Environmental contamination has been demonstrated to play a role in acquisition
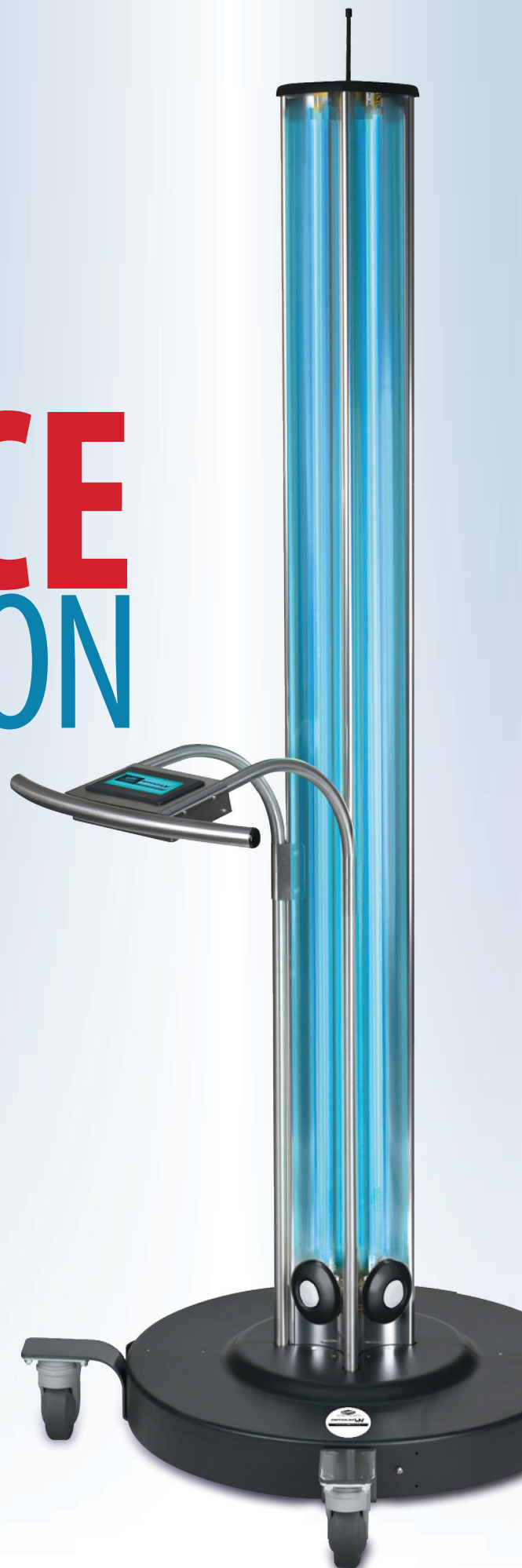
> **Many health care facilities tend to supplement with a UV device in high-risk areas such as patient rooms, patient bathrooms, operating rooms, intensive care units, oncology units, burn units and radiology.**

of infection with MRSA, VRE, *C. difficile*, *Pseudomonas aeruginosa*, *Acinetobacter* species and Norovirus.[2,3]

- **Disinfection practice is sub-optimal:** Studies have shown that staff is only cleaning and disinfecting about 30 percent to 50 percent of the surfaces that should be cleaned, which include toilet hand holds, light switches, door knobs, bedside rails, nurse call buttons and patient telephones.[4,5]
- **Pathogens survive up to months:** Studies have found that both Gram (+) and Gram (-) bacteria can survive for months on dry surfaces; respiratory viruses can survive for days, and gastrointestinal viruses for more than a week.[6]
- **In hospitals, previous occupancy increases risk:** It has been shown that patients are at higher risk of acquiring an HAI when their room was previously occupied by an infected patient.[7]

Given that an HAI can cost a facility up to $45,000,[8] a more comprehensive approach to surface disinfection may be necessary. The adoption of UV surface treatment technology may be a cost-effective intervention.

Best practices

UV devices should be used to supplement – not to replace – standard hospital cleaning and disinfection protocols. Many health care facilities tend to supplement with a UV device in high-risk areas such as patient rooms, patient bathrooms, operating rooms, intensive care units, oncology units, burn units and radiology. As a general guideline, UV devices can be deployed in any room where the door can be closed and the room can be vacated.

All health care facilities strive to obtain the best patient outcomes. By taking a more comprehensive approach to surface disinfection and deploying UV devices or other novel technologies after thorough manual cleaning and disinfection, facilities can be more confident that they are doing everything possible to provide a better environment for their patients. ●
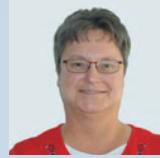
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How do you choose which technology is right for you?

By Tamara Almquist, Sr. Director EVS and SCS, Geisinger Health System

- **Research the literature.** Don't believe the claims from the first company you speak with without doing your own research.
- **Demo the product.** You will want to involve your Infection Control Department and your Safety and Industrial Hygiene department in the demo; they might have questions you wouldn't think to ask.
- **Weigh the pros and cons.** Look at things like safety of operation, PPE required, special training required, and room turnaround time.

- **Check efficacy claim.** Before you commit to a contract, run some biological tests.
- **Negotiate your contract with more than price in mind.** Get a Warranty. UV light requires bulb replacement, and I recommend quarterly QC testing by the manufacturer or distributer.
- **Negotiate spare equipment.** If this technology becomes a part of your policies, you will need to provide the service, even when your machine is down.