Portable UV Device Disinfects Personal Items, Small Areas

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May 24, 2016

ATLANTA — A portable ultraviolet (UV) device can be used to effectively disinfect hospital rooms contaminated with multidrug-resistant organisms, according to new research.

The *MoonBeam3* (Daylight Medical) disinfection device is small, affordable, and portable, "which means you can buy more of these units and have one or more on every ward of the hospital," said Curtis Donskey, MD, from the Louis Stokes Cleveland Veterans Affairs Medical Center.

The current gold standard for UV disinfection — the *Tru-D* robot (SmartUVC) — is large, heavy, and expensive.

"The theory is that if you have more of them, you can increase the frequency of use. It's very likely to fit logistically into a routine in the hospital setting," Dr Donskey told *Medscape Medical News*. "Our environmental services envision using it in bathrooms as an adjunct to disinfecting bathrooms traditionally."

Hospitals are placing increasing emphasis on reducing hospital-acquired complications and infection because the Centers for Medicare and Medicaid Services are no longer providing reimbursement for hospital-acquired infection.

Although mobile UV decontamination devices have been around for nearly 10 years, they are now becoming an adjunct to standard cleaning in many healthcare facilities. A study presented last year at ID Week showed that a UV cleaning machine reduced multidrug-resistant organisms by 30%.

For their study, Dr Donskey and his colleagues compared the effectiveness of MoonBeam3 and Tru-D. The results were presented here at the Society for Healthcare Epidemiology of America Spring 2016 Conference.

They found that the smaller device is as effective as the larger one for reducing the recovery of methicillin-resistant *Staphylococcus aureus* (MRSA) isolates within 3 feet and *Clostridium difficile* spores within 2 feet.

Operating the MoonBeam3 at two locations in the room resulted in a reduction in MRSA isolates of more than 3.3 log at all sites tested, and a reduction in *C difficile* spores of

more than 1.7 log.

In the bathroom, the MoonBeam3 effectively reduced both MRSA isolates and *C difficile* spores by more than 2 log at all sites tested.

Table. Log Reduction in MRSA Colony-Forming Units Recovered After a 3-Minute Cycle

Location	MoonBeam3	Tru-D
Head of bed	2.5	4.0
Tray	4.2	3.8
Bed	1.6	3.5
Chair	1.5	3.5
Sink	0.2	1.2
Corner	0.0	0.75

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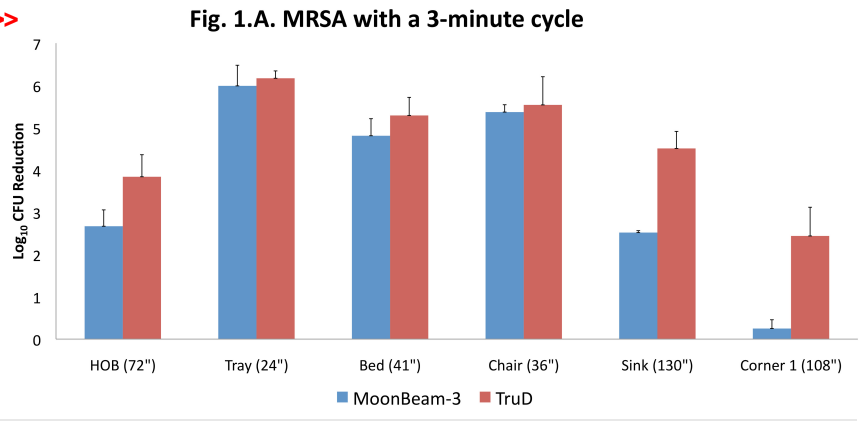

Given the potential advantages of the device in terms of cost, Moonbeam3 is a viable alternative to cover more ground in a hospital. It really comes down to logistics, Dr Donskey explained.

Currently there are two Tru-D machines in the 210-bed facility where he works: one for the hospital and one for the nursing home. With four floors to navigate, getting the Tru-D where it needs to go can be cumbersome. "First you have to locate the machine, then you have to wheel it onto the elevator, and then there's an hour in the room," he said.

The MoonBeam3 costs less than one-tenth the price of the larger machine. Plus, it's portable, which makes it much easier to store, transport, and get into small spaces. "The beauty of this machine is that you can get the lamps really close to what you want to disinfect," Dr Donskey said. "At close range, even a few minutes of exposure can be very effective. You can't do that with the Tru-D."

Effective for High-Touch Items

In a separate study, Dr Donskey and his colleagues tested MoonBeam3 on high-touch personal items in a long-term care facility. The items tested — such as wheelchairs, hats, blankets, books, and teddy bears — were not amenable to decontamination with liquid disinfectant.

Patients left their rooms for 10 minutes while the researchers ran the UV device.

Of the 53 items cultured from 13 rooms, 28 (53%) were contaminated with MRSA before the UV cleaning. A mean of 18 MRSA colonies was recovered from those 28 items (range, 1 - 303 colonies).

After 5 minutes of UV exposure, the mean number of MRSA colonies was reduced to 1 (P = .01). The percentage of contamination was reduced from 53% before cleaning to 17% after cleaning (P = .0002).

"For 5 minutes with a small portable UV light, this is significant," said Heba Alhmidi, MD, also from the Cleveland Veterans Affairs Medical Center, who presented the study. "Perhaps if we do 10 minutes, we may be able to eliminate MRSA colonies altogether."

"We have a program called 7-up," said Mohamed Yassin, MD, PhD, from the University of Pittsburgh.

"When a patient hits 7 days in the ICU and leaves for testing, they get the UV light disinfectant in immediately. When the patient gets back to bed, the environment is better," he told *Medscape Medical News*.

"I could see this machine on every nursing station," Dr Yassin said. But "we would have to make sure it is systemically used."

Dr Donskey, Dr Alhmidi, and Dr Yassin have disclosed no relevant financial relationships.

Society for Healthcare Epidemiology of America (SHEA) Spring 2016 Conference. Presented May 18, 2016.