

Background

- Ultraviolet-C (UV-C) radiation is effective in killing a wide range of viral and bacterial pathogens, including Clostridium difficile spores
- However, operation of mobile UV-C decontamination devices can be cumbersome and time consuming to deploy
- We tested the efficacy of an automated, wall-mounted UV-C device designed for decontamination of patient restrooms after each use

Objective

• To evaluate the efficacy of a patient activated, low-pressure mercury UV-C room decontamination device against common hospital pathogens

Methods

- The ASEPT.1X system is a UV-C device mounted above the door frame in restrooms that utilizes a door safety monitor as well as motion and infrared sensors to assess if the bathroom is currently or has previously been occupied (Figure 1)
- A 5-minute UV-C decontamination cycle is triggered after each use of the restroom; the cycle is aborted if the door is opened or motion is detected (Figure 1)
- We tested the efficacy of the device against methicillin-resistant Staphylococcus aureus (MRSA), C. difficile spores, and bacteriophages MS2 and Phi X174
- Pathogens were inoculated onto steel discs and exposed to 1, 3, or 6 UV-C cycles (Figure 2)

for Decontamination of Restrooms

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Figure 2. Reduction of organisms after 1, 3, and 6 exposures to





- than 3.4 \log_{10} CFU

Results

• A single 5-minute cycle reduced recovery of MRSA by greater

○ Viruses were reduced by $\geq 1 \log_{10}$ PFU in single 5-minute cycle

• Three cycles of exposure (15 minutes total) were required to achieve a >2 log reduction in C. difficile spores (Figure 2)

• The safety features of the device were effective in preventing UV-C exposure upon room entry (Figure 1)

Conclusions

• Our results suggest that an automated, wall-mounted UV-C device could provide a useful adjunct to manual cleaning of patient bathrooms with minimal added workload for environmental services personnel

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