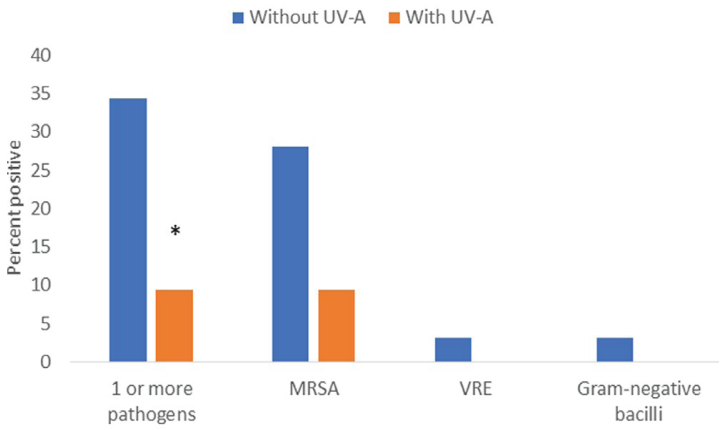
Study Overview:

Efficacy of an ultraviolet-A lighting system for continuous decontamination of health care–associated pathogens on surfaces

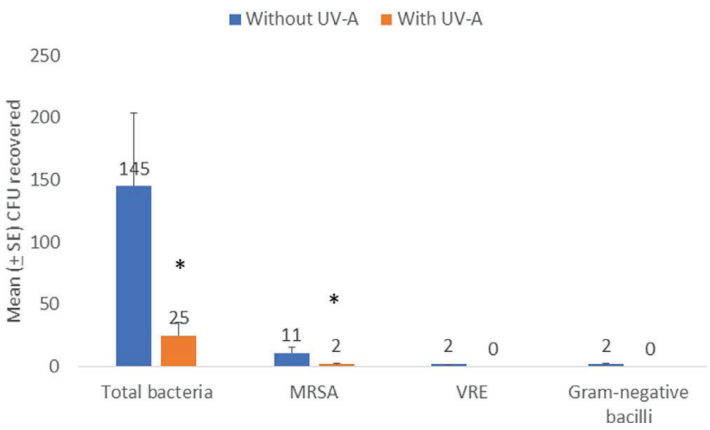
Abstract:

We found that ultraviolet-A (UV-A) light exposure resulted in a modest reduction in recovery of methicillin-resistant Staphylococcus aureus (MRSA), Candida auris, bacteriophage MS2, and bacteriophage Phi X174, but not Clostridioides difficile spores, on steel disk carriers. Four hours of UV-A exposure from a ceiling light fixture resulted in a significant reduction in pathogenic microorganisms recovered from in-use medical equipment. These findings suggest that UV-A could be useful as a means to provide continuous low-level decontamination of surfaces in health care facilities.

Graph A



Graph B



NOTE: Graphs above showcase the percent recovery of pathogenic microorganisms from in-use medical equipment before versus after exposure to ultraviolet-A light from the ceiling light fixture for 4 hours. The asterisk indicates P < .05. Error bars indicate SEM. MRSA, methicillin-resistant Staphylococcus aureus; UV-A, ultraviolet-A; VRE, vancomycin-resistant enterococci.

Key Findings:

- Reduction of microorganisms with 365nm UVA at 3 W/m^2 via inoculated steel Disc.
- Greater than 1 log10 (90%) reduction of MRSA and bacteriophage MS-2 with a single 8-hour treatment
- 0.7 log10 (80%) reduction of Candida auris with a single 8-hour treatment
- Reduction of pathogens on in-use medical equipment (see graphs A and B)
- Significant reduction in the frequency of recovery of pathogens from medical equipment with a single 4-hour exposure
- Significant reduction of mean CFU of total bacteria and MRSA recovered with a single 4-hour exposure

Full Publication

Livingston SH, Cadnum JL, Benner KJ, Donskey CJ (2020) Efficacy of an ultraviolet-A lighting system for continuous decontamination of health care-associated pathogens on surfaces. Am. J. Infect. Control 48: 337-339.
https://www.ajicjournal.org/article/S0196-6553(19)30746-1/pdf