Efficacy of a Low-Intensity Ultraviolet Radiation Device for Automated Decontamination of Stethoscopes

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Background

- Stethoscopes are potential vectors for transmission of healthcare pathogens because they frequently contact patients’ skin.
- Stethoscopes are not routinely cleaned between patient examinations.
- We tested the efficacy of a low-intensity UV-C device for decontamination of stethoscopes, including those designated for use in isolation rooms.

Methods

- The UV Angel is a small portable device containing a single 3.5 inch long cold cathode UV-C lamp that provides automated 6-minute decontamination cycles to small items (Figure 3).
- The device includes sensors that abort the cycle if motion is detected within the area of UV-C exposure.
- We examined the efficacy of the device against methicillin-resistant Staphylococcus aureus (MRSA), carbapenem-resistant Enterococcus coli, and C. difficile spores inoculated on stethoscopes.
- Log reductions were calculated by comparing recovery from treated surfaces versus untreated controls.
- We also cultured 40 in-use stethoscopes before and after 1 cycle of decontamination.

Results

- Recovery of MRSA and E. coli was reduced by greater than 3.7 logs with 1 6-minute cycle (Figure 1).
- Based on indicator strips, there was no detectable UV-C penetration in areas outside the area of exposure directly beneath the lamp.
- Use of the device significantly reduced aerobic colony counts on in use stethoscopes (p=.002) (Figure 2).

Conclusions

- These findings provide further evidence that low-intensity UV-C could provide a useful means to achieve effective and automated decontamination of small common use objects in healthcare settings.