Background

- Mobile ultraviolet (UV) light room decontamination devices are commonly used as an adjunct to standard cleaning in healthcare facilities.
- However, the devices are expensive and can be difficult to transport.
- The MoonBeam-3 (Daylight Medical) is a relatively low cost UV device with 3 adjustable heads that is compact and portable (i.e., the device weighs 39 pounds and can be carried by one person).

Objective

- To evaluate the efficacy of the MoonBeam3 compared to the Tru-D room decontamination device against methicillin-resistant Staphylococcus aureus (MRSA) and Clostridium difficile spores in 5% fetal calf serum on steel disk carriers.

Figure 1. MoonBeam3 remote cover & base unit (A), adjustable lamps (B), remote cover outside of room (C).

Methods

- MRSA and C. difficile spores in 5% fetal calf serum were inoculated on steel disk carriers.
- The carriers were placed at various locations in hospital rooms and irradiated for 3 or 10 minutes for MRSA and C. difficile, respectively.
- Reduction in MRSA and C. difficile spores were compared after irradiation with Moonbeam or Tru-D.
- For the MoonBeam3, we also evaluated efficacy when one cycle was run at each side of the bed (3 minutes per cycle for MRSA; 10 minutes per cycle for C. difficile) and in the bathroom.
- We assessed the efficacy of the MoonBeam-3 in patient rooms with one 10-minute cycle run at each side of the bed and in the bathroom.

Results

- Although less effective than the Tru-D in the orientation tested, the MoonBeam-3 was very effective in closer proximity to the device and in bathrooms.
- Operation of the device at 2 locations in hospital rooms resulted in improved reductions at distal locations in the room.
- Given the potential advantages of the device in terms of cost and portability, further testing is warranted to assess efficacy in real-world settings.

Table 1. Mean CFU values of organisms recovered before and after treatment in patient rooms with 2 10-minute cycles with the MoonBeam-3

<table>
<thead>
<tr>
<th>Organism</th>
<th>Average CFU's Recovered</th>
<th>Total Sites</th>
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<tbody>
<tr>
<td></td>
<td>Near composite</td>
<td>For composite</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>9.8 (1.8)</td>
<td>13.0 (2.0)</td>
</tr>
<tr>
<td>C. difficile*</td>
<td>0.0 (0.0)</td>
<td>0.0 (0.0)</td>
</tr>
<tr>
<td>Total Aerobes</td>
<td>11.5 (10.5)</td>
<td>12.0 (12.0)</td>
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</tbody>
</table>

* C. difficile spores cultured by broth enrichment

Acknowledgement

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