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Introduction

- There is increasing interest in use of automated devices for room decontamination in healthcare facilities
- Ultraviolet-C (UV-C) devices are commonly used, but residual contamination is not uncommon after UV-C
- The Altapure ultrasonic room fogging system generates sub-micron droplets of a peracetic acid disinfectant that is active against a wide range of pathogens including spores

Altapure System

- The Altapure system includes an ultrasonic fogging device and air scrubber device plus an optional vent cover (Figure)
- Operation: placed in the center of room, plugged in, vents and door sealed, activation by handheld remote
- Concentrate (22% hydrogen peroxide and 4.5% peracetic acid) converted to submicron droplets containing 0.88% hydrogen peroxide and 0.18% peracetic acid
- 40 minute cycle: 10 minutes fogging, 10 minutes dwell, 20 minutes dehumidification
- 17 healthcare facilities in the U.S. currently use the Altapure System

Methods

- Test organisms: *Clostridium difficile* spores, methicillin-resistant *Staphylococcus aureus* (MRSA), and vancomycin-resistant *Enterococcus* (VRE) in 5% fetal calf serum on glass slides
- Test sites: near (≤ 4 feet), 10-12 feet from device, under bedside table, inside drawer left open, inside drawer left partially open with 2 inch opening space, and on toilet seat
- Interview with Environmental Services personnel from a hospital system using the device routinely for 2 years



Altapure Ultrasonic System Room Fogging Device



Optional Automatic Vent Cover

Results

- For 7 hospital rooms, the system consistently eliminated all pathogens (>5 log reduction) from all sites except inside partially opened drawers
- MRSA persisted in 2 of 7 partially open drawers (reduced by >4 log) and *C. difficile* spores persisted in 1 of 7 (reduced by 1.4 log)
- Interview with facility using the Altapure System
 - 6 systems used in 3 hospitals
 - Each device used up to 6 times per day
 - Operated by existing staff (no new employees)
 - Used for all *C. difficile* rooms and intermittently in high risk areas (e.g., ICUs)
 - No damage to surfaces or safety concerns
 - Monitoring: monthly testing with *Geobacillus stearothermophilus* spores with nearly 100% of tests indicating complete kill of spores

Discussion

- The Altapure system was highly effective in eliminating *C. difficile* spores, VRE and MRSA
- To achieve optimal efficacy, drawers and other enclosed areas must be fully opened to allow entry of the aerosol
- The system has been effectively implemented in hospital settings

Acknowledgement

Supported by the Department of Veterans Affairs. Altapure LLC provided the Altapure Fogging System that was used for testing.