

# Using UV Light to Disinfect Textiles

**William Oldenhoff, DVM, DACVD**

*LeadER Animal Specialty Service*

*Cooper City, Florida*

## In the Literature

Bentley JJ, Santoro D, Gram DW, Dujowich M, Marsella R. Can ultraviolet light C decrease the environmental burden of antimicrobial-resistant and -sensitive bacteria on textiles? *Vet Dermatol*. 2016;27(6):457-e21.

## FROM THE PAGE ...

Proper environmental disinfection is important to prevent bacteria transmission. Whereas hard surfaces are relatively easy to disinfect, textiles present a unique challenge. Not all fabrics can be laundered, and some antibacterial sprays are not safe for fabrics. This study was the first to investigate whether ultraviolet light C (UVC; wavelengths 100-280 nm) is effective for disinfecting textiles. UVC damages bacterial DNA, which renders the bacteria unable to replicate. UVC has already been used to purify drinking water, sterilize operating rooms, and disinfect air flowing through HVAC (heating, ventilation, air-conditioning) units.

Microfiber, cotton, and polyester cloth swatches were inoculated with methicillin-resistant and -sensitive *Staphylococcus aureus* (MRSA and MSSA, respectively), *S pseudintermedius* (MRSP and MSSP, respectively), *Pseudomonas aeruginosa*, or *Escherichia coli*. The cloths were then exposed to either UVC (at 13 mJ/cm<sup>2</sup>, 54 mJ/cm<sup>2</sup> or 270 mJ/cm<sup>2</sup>), a commercial quaternary ammonium spray, or both UVC (270 mJ/cm<sup>2</sup>) and the commercial spray.

The lowest tested UVC doses (13 mJ/cm<sup>2</sup> and 54 mJ/cm<sup>2</sup>), the highest tested UVC dose (270 mJ/cm<sup>2</sup>), and the combined UVC and spray produced a >90% reduction in colony-forming units (CFUs), a >99% CFU reduction, and a 100% CFU reduction, respectively, against all bacterial strains on all surfaces. For several textiles, UVC actually performed more favorably than the spray. Bleach (8.25%) was used as a positive control and produced a 100% CFU reduction.

## ... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** UVC is an effective way to disinfect textiles. Combined UVC and quaternary ammonium spray use is as effective as undiluted bleach.
- 2** Forms of UVC delivery include wands, overhanging lamps, and portable UVC systems that disinfect rooms. UVC wands and lamps are relatively affordable, but more advanced devices may be cost-prohibitive. It is hoped costs will decrease with time.
- 3** Quaternary ammonium sprays are also effective disinfection tools; however, this study suggested that UVC may be a better disinfecting agent when dealing with gram-negative species.