

UVC light kills wound bacteria

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Ultraviolet (UVC) light can eradicate wound-infecting bacteria on mice increasing both survival and healing rates, according to a paper in the July 2012 issue of *Antimicrobial Agents and Chemotherapy*. The light did not damage the animals' skin or delay wound healing, says principal investigator Michael R. Hamblin, of the Massachusetts General Hospital, and the Harvard Medical School, Boston, MA.

[Skin infections](#) range from the superficial, to the life threatening, which are rare except among [immunocompromised patients](#). However, "...these infections are becoming worrisome due to bacterial resistance to conventional antibiotics," the researchers write.

Unlike with antibiotics, bacteria probably cannot develop complete resistance to UVC light, "although it is possible that variants with enhanced DNA repair systems may emerge," the investigators note, adding that only four times more radiation would be needed to decimate *Deinococcus radiodurans*, a species that is famous for its radiation resistance, than in the case of *E. coli*.

In the study, the investigators infected the mice with bioluminescent strains of gram-negative *Pseudomonas aeruginosa*, and *Staphylococcus aureus*, the former "noted for its invasive properties in mouse wound models," according to the report. The dimming of the bioluminescence—down to near zero—indicated the fate of the infective bacteria. The mice were exposed to UVC light 30 minutes after inoculation.

For both bacteria UVC treatment reduced bacterial contamination of wounds by 10-fold compared to untreated mice. In addition, treatment increased the survival rate of mice infected with *P. aeruginosa* and the [wound healing](#) rate in mice infected with *S. aureus*.

"These results suggested that UVC light may be used for the prophylaxis of cutaneous wound infections," write the researchers.

More information: T. Dai, B. Garcia, C.K. Murray, M.S. Vrahas, and M.R. Hamblin, 2012. UVC light prophylaxis for cutaneous wound infections in mice. *Antim. Agents Chemother.* 56:3841-3848.

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