

Burn Wound Infection

BURN WOUNDS ARE A PERSISTENT GLOBAL PROBLEM

486,000 people seek care for burns each year in the US, leading to 40,000 hospitalizations¹

11 million burns are treated globally each year²

INFECTION IS THE LEADING CAUSE OF DEATH AFTER BURN INJURY³

>65%

of burn mortality is attributable to infection³

BIOFILM-SPECIFIC INFECTION INCREASES MORTALITY⁴

60%

of all burn victim deaths are due to biofilm-specific infection⁴

Burn wounds become infected quickly

- Patients' burn wounds rapidly attract a range of pathogens from their own skin and contaminated environmental surfaces
- Burns are quickly colonized by gram-positive bacteria, principally *S. aureus*⁵
- Within a few hours to a few days, wounds are further colonized by gram-negative bacteria, principally *P. aeruginosa* and *A. baumannii*⁴

Biofilm complicates burn wound infections

- Bacteria in biofilm form can be 100- to 1000-times more resistant to antibiotics than planktonic or free-floating bacteria⁴
- In vitro studies have shown that once biofilm is established, silver has limited benefits⁶
- While current therapies attempt to inhibit bacterial growth in burn wounds, no standard of care exists for treatment of biofilm infection

Electricity delivered by JumpStart dressings combats biofilm infection in burn wounds.^{6,7}

TREAT FIRST- AND SECOND-DEGREE BURNS WITH

JumpStart

Antimicrobial Wound Dressing
Powered By V.Dox™ Technology

Published studies demonstrate JumpStart dressing's ability to:

- Kill a broad-spectrum of microbes, including multidrug-resistant and biofilm-forming bacteria⁸⁻¹⁰
- Disrupt established biofilm infection^{7,9}
- Prevent biofilm from forming^{7,9}



References

1. Burn Incidence Fact Sheet. American Burn Association. Accessed May 4, 2023. <https://ameriburn.org/who-we-are/media/burn-incidence-fact-sheet/> 2. Peck MD. Epidemiology of burn injuries globally. www.uptodate.com. February 9, 2021. 3. Lachiewicz AM, Hauck CG, Weber DJ, Cairns BA, van Duin D. Bacterial infections after burn injuries: impact of multidrug resistance. *Clin Infect Dis*. 2017;65(12):2130-2136. doi:10.1093/cid/cix682 4. Thomas RE, Thomas BC. Reducing biofilm infections in burn patients' wounds and biofilms on surfaces in hospitals, medical facilities and medical equipment to improve burn care: a systematic review. *Int J Environ Res Public Health*. 2021;18(24):13195. doi:10.3390/ijerph182413195 5. Church D, Elsayed S, Reid O, Winston B, Lindsay R. Burn wound infections. *Clin Microbiol Rev*. 2006;19(2):403-434. doi:10.1128/CMR.19.2.403-434.2006 6. Chan RK, Nuutila K, Mathew-Steiner SS, et al. A prospective, randomized, controlled study to evaluate the effectiveness of a fabric-based wireless electroceutical dressing compared to standard of care treatment against acute trauma and burn wound biofilm infection [published online April 11, 2023]. *Adv Wound Care (New Rochelle)*. 2023;10.1089/wound.2023.0007. doi:10.1089/wound.2023.0007 7. Barki KG, Das A, Dixith S, et al. Electric field based dressing disrupts mixed species bacterial biofilm infection and restores functional wound healing. *Ann Surg*. 2019;269(4):756-766. doi:10.1097/SLA.0000000000002504 8. Kim H, Makin I, Skiba J, et al. Antibacterial efficacy testing of a bioelectric wound dressing against clinical wound pathogens. *Open Microbiol J*. 2014;8:15-21. doi:10.2174/1874285801408010015 9. Banerjee J, Das Ghatak P, Roy S, et al. Silver-zinc redox-coupled electroceutical wound dressing disrupts bacterial biofilm. *PLoS One*. 2015;10(3):e0119531. doi:10.1371/journal.pone.0119531 10. Kim H, Izadjoo MJ. Antibiofilm efficacy evaluation of a bioelectric dressing in mono- and multi-species biofilms. *J Wound Care*. 2015;24 Suppl 2:S10-S14. doi:10.12968/jowc.2015.24.Sup2.S10