

Climate Change & Wounds: A Call for Action from the AAWC Health Equity Task Force

authors: Laura Swoboda DNP, APNP, FNP-C, FNP-BC, CWOCN-AP, WOCNF, FAANP; Maria Goddard MD, CWS, MAPWCA; Shannon Clayton PhD
Health Equity Task Force, AAWC



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Introduction

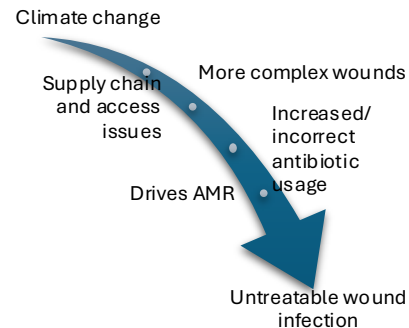
Climate change presents significant, multi-faceted challenges to effective wound care globally, affecting everything from injury prevalence to treatment efficacy.

Extreme weather events and associated environmental changes increase the incidence of trauma, burns, and complex wounds, while simultaneously compromising infrastructure vital for healthcare delivery and supply chains.

Rising temperatures and altered precipitation patterns impact pathogen virulence and distribution, complicating infection management and increasing the risk of antimicrobial resistance in wound infections.

Furthermore, climate-related population displacement and resource scarcity disproportionately affect vulnerable populations, creating barriers to consistent wound management and follow-up care.

This poster reviews key direct and indirect pathways through which climate change disrupts the continuum of wound care and further emphasizes the urgent need for antimicrobial stewardship.



Extreme Weather Events

Floods

- Flooding is the most frequent and deadly natural disaster worldwide.
- Climate change is driving more severe and frequent flood events.
- Dermatological conditions are among the most common post-flood health problems, including both infectious and noninfectious diseases.
- Floodwaters contaminated with sewage increase infection risks.
- Post-tsunami wound infections are often polymicrobial, with gram-negative bacteria as leading pathogens.

Wildfires

- Wildfire frequency and severity are steadily increasing due to climate change.
- Burns, smoke-related injuries, and trauma contribute to acute and chronic wound burdens.

Biodiversity Change & Emerging Wound-related Diseases

Changing Disease Patterns

- Climate-driven ecosystem shifts change patterns of trauma, infection, and chronic wounds.
- Insect bites and stings, and parasitic infestations such as scabies and cutaneous larva migrans, are expected to increase.
- Natural disasters increase the risk of trauma, leading to more contaminated and complex wounds.

Wound Infections in Coastal Regions

- Traumatic wounds sustained during natural disasters show higher infection rates and severity.
- Vibrio infections increasingly occur outside typical seasons and can arise without direct seawater exposure.

Expanding Fungal Threats

- Climate change enhances fungal virulence, dispersal, geographic range, and host susceptibility.
- Novel or adapted fungal species are emerging, threatening wound care, biodiversity, and even food security.

Vector-borne Disease Expansion

Mosquito-borne Diseases

- Dengue, Zika, chikungunya are moving 4.7 km northward and 6.5 m upward in elevation each year.
- With range expansion, insect bites, secondary bacterial infections, and ulceration are likely to increase.

Tick-borne Diseases

- The North American Lyme disease vector (*Ixodes scapularis*) has spread roughly 40 km per year in the northeastern United States.
- The northern and elevational limits of *Ixodes ricinus* in Europe are expanding similarly.
- These shifts track the local “velocity” of climate change and are constrained by the thermal limits of their ectothermic vectors.
- As tick ranges expand, tick-bite lesions, secondary infections, and associated wound complications become more common.

Direct Effects on Wound Healing

Heat and Wound Biology

- Heat exposure can delay normal wound-healing phases and worsens diabetes, PAD, and other vascular drivers of chronic wounds.

Heat Edema (clinical focus)

- Heat-induced vasodilation shifts fluid into dependent limbs, causing generalized and dependent edema (e.g., swollen feet/hands after standing or sitting in heat).
- Consequences include venous stasis dermatitis, edema blisters, venous leg ulcers, and infection, with older adults and people with lipedema at higher risk.
- Edema is pro-inflammatory, raises tissue pressure, reduces perfusion/oxygenation, and is painful, limiting mobility and healing.



Microvasculature, Infection, and Therapies

- Increased endothelial permeability and edema reduce wound oxygenation and increase cellulitis.
- Heat boosts skin blood flow and transdermal/topical drug delivery, changing efficacy and safety, and activates heat shock proteins that may contribute to skin carcinogenesis

Supply Chain Strain

Extreme weather disrupts

- Staffing availability and patient access
- Facility infrastructure
- Supply of wound care products and medications
- These disruptions compound infection control challenges & antimicrobial stewardship efforts.

Key Findings

Climate change–related factors impair the skin’s ability to maintain homeostasis, leading to diverse cutaneous diseases, worsening wound-related conditions and healing, and disproportionately burdening vulnerable and marginalized populations with health, economic, and social consequences.