



Source: U.S. Army ([https://www.army.mil/article/152515/innovative\\_treatments\\_offer\\_hope\\_for\\_burn\\_victims](https://www.army.mil/article/152515/innovative_treatments_offer_hope_for_burn_victims))

## HDIAC Success Story

### Burn Injury Wound Healing Solutions

[www.hdiac.org](http://www.hdiac.org)

<b>Customer:</b>	U.S. Army Institute of Surgical Research (USAISR)
<b>Challenge:</b>	One major challenge facing U.S. Army combat medics, nurses, and doctors is the treatment of burn wounds. If not treated effectively, these injuries can result in infection, inadequate fluid resuscitation, drug-resistant biofilms, and other complications that can degrade a warfighter's health after sustaining an injury. To address these gaps, USAISR requested information on emerging technologies for use as advanced wound dressing to prevent infection, stabilize burn wound casualties, and improve morbidity and survivability during prolonged field care.
<b>Approach:</b>	HDIAC's Medical Subject Matter Experts and analysts researched, identified, and analyzed emerging capabilities related to burn wound healing, infection prevention, and wound estimation. HDIAC found that using carbon nanohorns for storing therapeutics (e.g., ibuprofen, resolvin, rapamycin) and controlling their release as part of a smart-bandage could be a promising solution for preventing inflammation and lessening pain. HDIAC also found the application of apyrase and collagen/keratin hydrogels to be effective in infection prevention and wound healing, as these function as an artificial skin layer while the patient's dermal layer regenerates. Finally, HDIAC identified additional capabilities for rapid burn depth/damage estimation, which could provide first responders with critical data to assist in the planning and execution of therapeutic strategies.
<b>Value:</b>	HDIAC's cost-effective research saved USAISR considerable resources and will assist USAISR in its selection of new research that will focus on the optimization and integration of burn wound treatment solutions into prolonged field care. These new research initiatives will promote improved burn wound treatment methodologies across other DoD medical research and development elements—ultimately resulting in improved survivability for warfighters suffering from burn wounds and injuries.

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