



## AT THE FOREFRONT

U.S. Army advancements in burn care and regenerative medicine have significant potential for changing the standard of care, not only for Soldiers, but for the general population, as well. Recent breakthroughs include using a spray-on skin that harnesses the body's natural ability to heal itself and is applied to a burn wound to generate functional skin, and the Burn Navigator, a decision-assist system for use in managing fluid resuscitation in severely burned patients.

### NEW SKIN GROWTH PROCEDURE

Traditional treatment for skin care on burn patients has been to use autografts, which involves taking healthy skin from another part of the body to use at the damaged location. Serious issues, such as infections and blood loss, can arise when a patient has a large burned area that requires skin grafts. Also, if more skin needs to be harvested, the donor site must completely heal before it can be reharvested. Other options, such as temporary use of skin grafts from cadavers or artificial skin, can lead to complications, such as the body rejecting it.

A new skin growth procedure is currently in Phase III clinical trials by the Armed Forces Institute of Regenerative Medicine and the U.S. Army Institute of Surgical Research. This spray-on skin works by taking a small biopsy from the patient's skin and incubating it in a cocktail of enzymes for about 20 minutes. The incubated skin is then harvested to extract a substance that contains keratinocytes - the body's natural regenerative cells that promote healing. Then, the keratinocytes are suspended in a solution that is sprayed on a wound, where it then multiplies and creates new skin.

"There is no need for harvesting donor sites or using cadaver skin," said Lt. Col. Kevin Chung, M.D., and medical director of the burn intensive care unit at the U.S. Army Institute of Surgical Research. "This is not just a solution for the combat wounded, but also a solution for the rest of world."

### BURN RESUSCITATION TECHNOLOGY

The Burn Navigator or Burn Resuscitation Decision Support System - Mobile, an algorithm-based decision-assist system, generates recommendations for IV fluid rates to improve fluid balance during the initial 48 hours after a burn. This helps care providers avoid complications associated with inadequate or excessive resuscitation strategies.

## BURN CARE INNOVATION IS SAVING SOLDIERS' LIVES.

"If you give a patient too much or too little fluid, the results can be fatal," said Jose Salinas, Ph.D., and Research Task Area program manager for Comprehensive Intensive Care Research, part of the U.S. Army Institute of Surgical Research.

"An additional benefit of the system is that it's not only a decision-support system; it's also a graphical interface of the trends of how the patient is doing," said Salinas. "So even without the decision support part of it, medical providers can look at the display and see how the patient is progressing and use that to help better manage the burn patients."

Since its FDA clearance, the Burn Navigator is slated to be used by the Army at Combat Support Hospitals, which support overseas contingency operations.

### RESEARCH THAT SAVES LIVES

U.S. Army physicians with an interest in innovative burn care play a key role in the advancement of research. This opportunity allows them to not only provide essential assistance to our nation's warriors, but also to develop as health care professionals in a supportive and highly resourced environment.

The Army's work in burn care is one example of the numerous innovations you'll find as part of our team. Across many different disciplines, we're leading the way - while offering physicians opportunities to explore specific areas that interest them and grow their careers.

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