Challenge
Improve the efficacy and efficiency of fluid resuscitation for burn patients.

Solution
The Burn Navigator, a medical device employing a rugged and portable Panasonic Toughbook® H2 handheld tablet PC equipped with custom software, provides advanced decision support to medical staff caring for burn patients.

Result
Caregivers, including those at the Army Burn Center, now use the Burn Navigator to provide optimal fluid therapy to each patient right at the patient’s bedside. A clinical study1 found that use of the Burn Navigator led to a 34% relative decrease in patient mortality rate.

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1. Arcos revolutionizes Burn care with Panasonic Toughbook tablet PCs

Burn Navigator improves clinical outcomes for injured soldiers and other patients

Toughbook H2
Solutions for Government
The reason we chose Panasonic was that the Toughbooks were favored most by the nurses we spoke with—the people who would be using our devices at the bedside. And we needed a platform that was rugged enough to withstand the hot, humid environment of a burn ICU.

—Chris Meador, CEO and cofounder of Arcos Inc.

A major burn injury is a devastating and severe form of trauma, requiring complex, comprehensive and continuous care. A critical part of this treatment is the administration of fluids intravenously within the first 24 hours. For a soldier hurt on the battlefield in a remote area, providing this initial care is all the more challenging.

Fluid management for burn patients requires medical staff to assess urine output and other factors on an hourly basis and adjust fluid amounts accordingly, to ensure patients are not being over or under hydrated. The approach most commonly used requires manual titration of fluid that may result in human error, potentially leading to suboptimal outcomes.

Arcos Inc., a Houston-based medical technology provider, is changing that. Its new Burn Navigator device employs a Panasonic Toughbook® H2 rugged handheld tablet PC equipped with custom software to provide decision support for the care of burn patients, including injured soldiers. With the Burn Navigator’s software loaded onto the durable and lightweight Toughbook H2, medical staff can efficiently provide the optimal therapy in a combat situation or right at patients’ bedside. Its impact is significant—a clinical study found that use of the Burn Navigator led to patients being removed from a ventilator up to 2.5 days sooner and a 34 percent relative decrease in patient mortality rate.

The Burn Navigator uses an advanced algorithm that learns how each patient responds to fluid therapy each hour. The algorithm, based on years of medical research, uses fluid in and out trend data to predict the fluid rate for the next hour that will best achieve the urine output target range for the patient. This optimizes fluid delivery and minimizes potential complications that can result from the delivery of too much or too little fluid post injury. The Burn Navigator also provides resuscitation graphs that help nurses and doctors quickly assess the patient’s status and create a tailored care plan.

The Burn Navigator recently received airworthiness clearance from the U.S. Army, allowing it to be used in combat situations. Chris Meador, CEO and cofounder of Arcos Inc., explained that the military has been engaged in helping design the system, with the goal of developing a mobile burn support device to help care for casualties in the critical first few hours as they’re being evacuated from remote areas.

Institutions using the Burn Navigator include the Army Burn Center, part of the Army Institute of Surgical Research located at San Antonio Military Medical Center. As the sole Department of Defense center specializing in burn care for combat casualties, beneficiaries and civilian emergencies, the Army Burn Center is recognized as a leader in innovative, state-of-the-art medical care for burns. The Burn Navigator also is in use at The University of Texas Medical Branch at Galveston.

RUGGED AND PORTABLE TOUGHBOOK H2 PLATFORM

Fully-rugged at just 3.5 lbs., the Toughbook H2 handheld tablet PC is the ideal platform for the Burn Navigator. In addition to being MIL-STD-810G certified and capable of handling drops up to 6 feet, the Toughbook H2 has a fully-sealed, IP65-certified design, with no fan vents or exposed ports. This makes disinfection easy and reduces the risk of potentially pathogenic microorganisms being spread from patient to patient.

“The reason we chose Panasonic was that the Toughbooks were favored most by the nurses we spoke with—the people who would be using our devices at the bedside,” Meador said. “And we needed a platform that was rugged enough to withstand the hot, humid environment of a burn ICU.”

Meador said it takes less than an hour for medical staff to be trained on the Burn Navigator.

FUTURE APPLICATIONS

Dr. Stephan Wexler, Chief Medical Officer at Arcos, said they are also looking at using the Burn Navigator as a system for first responders in the civilian community.

“It would be especially useful in emergencies where there are multiple people with significant burn injuries, and not enough healthcare providers to help take care of them,” said Dr. Wexler. “We want to be able to help get the patients the initial care they need while following best practices, and this would really make a difference in the results.”

Arcos also is working on a second system for trauma patients, which uses a Toughbook H2 to control an infusion pump that administers blood or fluids to patients.