



### SMART Burn Team

The Burn Special Medical Augmentation Response Team (B-SMART) responds to both domestic and international disasters, especially in cases of terrorism and weapons of mass destruction. The team's mission provides world-class medical augmentation in burn and trauma triage, resuscitation, treatment and evacuation. The B-SMART is based on and evolved from the Institute's flight teams. Since the flight teams inception in 1951, the Burn Flight Teams have transported over 2500 burn patients in the conduct of their worldwide mission.

### Vision

To be the Department of Defense's premier Combat Casualty Care Research, Trauma, Burn, and Critical Care Center in support of the medical needs of the warfighter and our beneficiaries.



### Facilities

USAISR is a state of the art facility of over 140,000 square feet with a multidisciplinary staff of over 250 personnel, both military and civilian, including surgeons, anesthesiologists, pathologists, nurses, microbiologists, physiologists, biochemists, veterinarians, and technical and administrative support personnel.

### Historical Overview

The Institute of Surgical Research, originally named the Surgical Research Unit was established in 1943 to evaluate the role of the newly discovered antibiotics in the treatment of war wounds. The unit was stationed at Halloran General Hospital, Staten Island, New York.

The Institute became a permanent unit and moved to Brooke General Hospital, Brooke Army Medical Center, Fort Sam Houston, Texas in 1947, and had assigned 12 personnel. In addition to the study of antibiotics, the unit was also charged with the study of innovative new surgical techniques and developments. In 1949, the unit's mission was expanded to encompass the study of thermal injury due to concern regarding the large number of possible casualties generated by nuclear weapons. The advent of improved grafting procedures and continued use of antibiotics in new applications grew with this mission.

In May 1953, the unit became a Class II activity of the Surgeon General. The unit was assigned to Headquarters, United States Army Medical Research and Development Command in September of 1958. Research flourished, with the Institute evaluating the use of plasma extenders, grafting and preservation of blood vessels, and the use of an "artificial kidney", among other forward thinking medical research initiatives. As the "Army's Burn Unit," this unit has served as a prototype and model for burn units all over the world. During this time, it was also a premier dialysis research center serving South Central Texas and neighboring states.

As part of the Army Medical Department reorganization in March 1994, the Institute became a subordinate command of the Medical Research and Materiel Command, itself a major subordinate command of the newly formed Medical Command (MEDCOM), and in 1996, the Institute moved to its current location adjacent to the newly constructed Brooke Army Medical Center. At this time the research focus of the mission changed from thermal injury to the full spectrum of combat casualty care. In April 2002, the Institute was placed under operational control of the Commanding General of Brooke Army Medical Center. In April of 2003, the ISR Burn Center and BAMC's Trauma and Critical Care Service were combined to form the DoD's only Trauma Division, under the direction of the Commander, USAISR.

The Institute of Surgical Research is a highly decorated and celebrated unit. The Institute has been involved in humanitarian missions to foreign countries such as the USSR in 1989, Guam in 1997 and Honduras from 1999 to present. The unit utilized its expertise by caring for burn casualties from every conflict since WWII to the present Operation Iraqi Freedom, including the 1979 Marine Base fire in Camp Fuji, the 1983 bombing in Beirut, and the Pope AFB paratroopers plane crash in 1994 as well as dozens of other medical emergencies.

The Institute has grown from a 12 person staff to over 250 military and civilian personnel who support the Combat Casualty Care Research, burn/trauma and critical care missions.

# United States Army Institute of Surgical Research

Located at  
**Brooke Army  
Medical Center**



### Mission

To provide requirements driven combat casualty care medical solutions and products for injured soldiers from self-aid through definitive care across the full spectrum of military operations; provide state-of-the-art burn, trauma, and critical care to DoD beneficiaries around the world; and provide Burn Special Medical Augmentation Response Teams.

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## Combat Casualty Care

The Institute's Combat Casualty Care research mission encompasses six basic research areas: Hemostasis, Resuscitation, Bone Injury, Soft Tissue Injury, Trauma Informatics, and Clinical Trauma. These six areas concentrate on saving soldiers' lives, preventing loss of viable tissue, and returning soldiers to duty as soon as medically possible.



**Hemostatic Dressings**

In hemostasis research, the Institute is developing new hemostatic field dressings and tourniquet use for compressible bleeding, intracavitary agents to stop non-compressible bleeding, injectable drugs to enhance or restore hemostatic function, and new devices to stop severe internal bleeding.



In resuscitation research, the Institute is evaluating when, how, and what kind of resuscitation fluids to use on the battlefield and attempting to standardize treatment by the medic and reduce the amount of fluid the medic has to carry without compromising care.

In the field of bone injury, the Institute is studying bone antimicrobial external fixator pins, antimicrobial bone replacement material, and wound irrigation techniques and devices to reduce the morbidity of combat injuries.



**One-handed Tourniquet**

For soft tissue injury, the Institute is investigating antimicrobial polymer bandages, an improved field tourniquet, and antibiotics for far-forward use to reduce the impact of tissue injuries and enable the soldiers to continue on their mission.



**Lower Body Negative Pressure (LBNP) research model to investigate Hemorrhagic Shock**

In trauma informatics research, the Institute is evaluating what to measure and how to develop the medical monitoring devices capable of providing critical real-time information about the severity of wounds and risks of mortality in order to assist the medic in determining the best strategies and priorities for remote trauma triage of injured soldiers on the battlefield.



**Special Medical Emergency Evacuation Device (SMEED)**

In clinical trauma research, the Institute is examining a variety of combat casualty care problems in trauma/burn patients including those described in the other five research areas to improve treatment and reduce morbidity and mortality. The guiding strategy for the Institute's research program is to take the clinical problems identified on the battlefield into our research laboratory for further investigations and solutions, and then validate those solutions in our clinical setting before they are returned to the battlefield as medical doctrine.

## Trauma Division



The Trauma Division is the core of BAMC's ACS verified Level 1 Trauma Center. The Burn Center and Trauma and Critical Care Service make up DoD's only Trauma Division. The Burn Center comprises 8 Intensive Care and 12 Step-down beds, with the capability to expand to 40 beds. It is the military's only burn center and is recognized worldwide for its contributions to improved burn survival. The center admits over 300 patients a year with significant burns. Additionally, burn flight teams ensure safe military aeromedical transfer of patients from the initial hospitalization site to Fort Sam Houston. The Trauma and Critical Care Service is comprised of 20 Surgical Critical Care beds and is the largest SICU in DoD, admitting over 1200 trauma patients annually. The Trauma Division's staff provides clinical training programs for physicians, nurses and allied health professionals and supports clinical trauma research programs. The Division also offers the DoD's only one year fellowships in Trauma Research or Surgical/Critical Care.