

Funding Research ■ Changing Practice ■ Creating Awareness



THE CASE FOR TRAUMA FUNDING

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Despite huge advances in medicine and technology, trauma care has in many ways remained in the past century. A soldier wounded in Iraq will receive the same salt solution that was used in Korea. Military doctors in the field have the same problems storing blood today that plagued doctors decades ago. No one yet knows the best way to treat a head injury, and it is still unclear whether drugs can stem internal hemorrhage.

It's critical that we improve the treatment of trauma, and the key to that improvement is research.

TRAUMA AND EMERGENCY CARE

Trauma is a complex disease that involves direct mechanical injury to tissues as well as systemic disturbances of the entire body. The field of inquiry involves many disciplines and cross-cutting themes. Transport and admission of one patient to a trauma center may involve paramedics; trauma and burn surgeons; trauma nurses; personnel from radiology, blood bank, respiratory therapy, rehabilitation and other ancillary disciplines; along with selected physicians from 16 specialties ranging from neurosurgery to OB/GYN.

Unlike many other areas of medical research, trauma is not strictly defined by organ systems or types of conditions. Rather, it is uniquely defined by the urgency and location of treatment. Trauma research needs to be applied in the acute setting, at the scene of injury (pre-hospital EMS or military medic), at the patient's bedside in the hospital (ICU, OR), and during recovery and rehabilitation.

Trauma and emergency care research has its foundation in basic laboratory science. But translational research—the process of applying ideas, insights and discoveries generated through basic scientific inquiry to the treatment or prevention of human disease—is the most active area of this discipline.

Currently targeted urgent subject areas of translational research include: hemorrhage control, resuscitation, coagulation disorders, burn care, elimination of hospital-acquired infections, ventilation management, head injury, and development of technology in all areas of trauma and critical care treatment. Specialty areas for pediatric and geriatric treatment and care exist within all of these research topics. These are areas defined by NTI, but have been pressing research recommendations for almost a decade.^{1,2}

A MAJOR PUBLIC HEALTH PROBLEM

Trauma knows no bounds, cutting across age, race, gender and economic boundaries.

- Each year, trauma accounts for 37 million emergency department visits and 2.6 million hospital admissions and kills three times the number of Americans killed during the entire Vietnam conflict.
- Injury is the leading cause of death for people between the ages of 1 and 44.
- Trauma is the leading cause of death of children in the U.S.
- Among people 65 years and older, falls are the leading cause of injury deaths and the most common cause of nonfatal injuries and hospital admissions for trauma, adding significantly to Medicare costs.
- The combined number of deaths from Operation Iraqi Freedom and Operation Enduring Freedom (OIF/OEF) has surpassed 5,400, and the number of injuries exceeds 37,000.
- The effect of trauma on productive life years lost exceeds that of any other disease.
- The economic cost of 50 million injuries in the year 2000, alone, was \$406 billion.³ This includes estimates of \$80 billion in medical care costs, and \$326 billion in productivity losses.

For the greatest impact, research must be based on the establishment of large-scale, multicenter research collaborations. Multicenter networks enable researchers from the diverse disciplines of trauma and emergency care research to assemble sufficiently large data sets to establish robust research findings. This is the most efficient use of funding to provide fast, meaningful results for the improvement of patient care.

TRAUMA AND EMERGENCY CARE RESEARCH HAS ALWAYS BEEN UNDER-FUNDED

More than 40 years ago a National Research Council (NRC) report, "Accidental Death and Disability," first focused attention on the inadequacy of emergency and trauma care research.⁴ Since the publishing of that NRC report, traumatic injury has surpassed heart disease as the most expensive category of medical treatment. Yet none of the major research programs listed in the Congressionally Directed Medical Research Programs (CDMRP) directly relates to trauma or emergency care.

In 1994, the National Institutes of Health (NIH) convened a task force to study the trauma research needs and gaps and produced the "Report of the Task Force on Trauma Research."⁵ This report recommended doubling funding to trauma research centers, but sufficient funding was never appropriated to carry this out.

Within the context of years of potential life lost (millions of dollars per years of potential life lost per 100,000 population), the NIH support ratio for HIV is \$3.51, for cancer \$1.65, and for trauma, just 10 cents.⁶

Funding for the Peer Reviewed Medical Research Program (PRMRP) established in 1999 and managed by the CDMRP to promote "research directed toward specific health issues relevant to the military forces" totaled \$344.5 million in Congressional appropriations from 1999 to 2006. While trauma is the number one killer of our fighting soldiers, among 247 PRMRP grants awarded between 1999 and 2006, less than a third were related to trauma. The bulk of the grant money went to cancer, chronic illnesses, and infectious diseases.

A 2006 Institute of Medicine Report also discussed the lack of trauma and emergency care research funding and recognized the need for a multi-disciplinary approach.⁷ In recent years, some areas of trauma research (traumatic brain injury, post-traumatic stress disorder, and orthopedic trauma) have received federal funding. However, this funding is narrowly focused and does not cover the vast majority of trauma-related medical conditions.

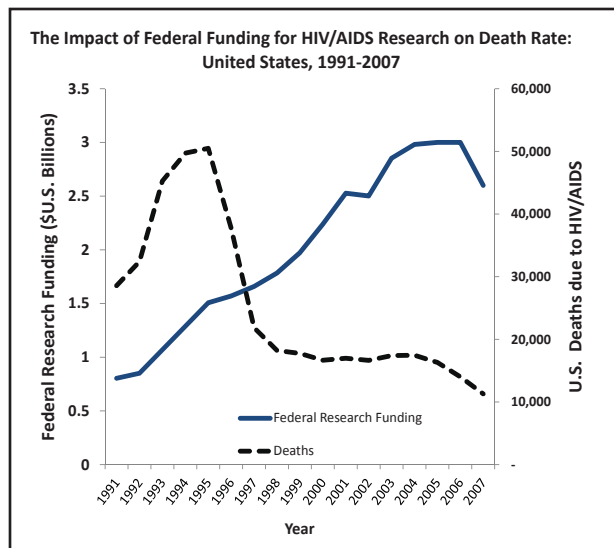
Importantly, all of these reports have pointed out the lack of a centralized, organized infrastructure to guide the direction of study and the dispersal of funds.^{4,5,7,8,10}

FUNDING FOR HIV/AIDS Evidence that Research Improves Survival

Since 1981, the first year the HIV epidemic was officially recognized, federal funding for HIV/AIDS research has increased significantly.

From FY 1995 to FY 2004, federal HIV/AIDS research funding increased by 97%, from \$1.5 billion to \$3.0 billion. Funding for prevention (\$638 million in FY 1995 to \$933 million in FY 2004) significantly heightened public awareness.

CDC programs and a brochure titled "Understanding Aids" that went to every residential address in the United States increased basic knowledge about HIV transmission and prevention, reducing risky behavior within populations at risk for infection.



The extraordinary success of the federal HIV research program has resulted in a significant decline in the morbidity and mortality from this disease over the last 10 years.⁹ Today, fewer than 15,000 people a year die from the disease—compared to 179,000 who die from trauma injury.

NTI anticipates a similar reduction in trauma fatalities once significant and ongoing research funding has been achieved.

The National Trauma Institute (NTI) now exists to address this problem and to provide a centralized clearinghouse for research funding, and for dissemination of research results to the medical community.

THE NATIONAL TRAUMA INSTITUTE IS HERE TO COORDINATE EFFECTIVE TRAUMA RESEARCH

Historically, trauma research was clinically focused on treatment of injury and was strongly influenced by advances in trauma treatment learned from battlefield experiences. Learning from their experiences over the last several years in Iraq and Afghanistan, medics, nurses and physicians are using new tourniquets, new wound dressings, new resuscitation techniques, better methods of damage control surgery, and innovative CT scans to save the lives of military personnel and civilians injured in mass casualties.

NTI, with its connections to both civilian and military medical establishments, is the natural starting point to translate these battlefield innovations to civilians at home. No single trauma center admits enough critically injured patients to support the type of randomized, controlled research projects needed to provide substantiated support for steady, rapid and substantial improvements to medical care.

In addition to fostering connections between military and civilian doctors, NTI is also beginning to fund the diverse multi-center trauma trials that are required to provide the sound, unbiased scientific evidence that can change clinical practice. NTI is particularly qualified to oversee and manage trauma research that is comprehensive, community-based and planned for all populations, incorporating the unique needs of children and the elderly.

NTI has experience in establishing data registries and awarding research grants for translational projects, targeting those that will lead to fast, effective outcomes and then disseminating these results to the national medical community within one to three years. NTI organizes and sponsors multiple national investigator and educational meetings each year, including its Annual Trauma Symposium attended by more than 1,000 practitioners and leaders in military and civilian trauma.



References:

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⁶NIH Estimates of Funding for Various Research, Condition, and Disease Categories (RCDC). [Online]. Available: <http://report.nih.gov/rcdc/categories/> [accessed June 22, 2009]. 2009.

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