

THE IMPERATIVE TO FUND TRAUMA RESEARCH

// It has been proven in many other major disease categories that research works—it establishes the evidence that improves outcomes and saves lives. Accelerated progress in trauma care requires significant and sustained funding of trauma research. //

— Ronald M. Stewart
Founding Chairman
National Trauma Institute

Traumatic Injury is a Major Public Health Problem

- Each year, trauma accounts for 41 million emergency department visits and 2 million hospital admissions and kills three times the number of Americans killed during the entire Vietnam conflict.
- Trauma is the leading cause of death of children in the U.S.
- Injury is the leading cause of death for people between the ages of 1 and 44.
- 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.
- Operation Iraqi Freedom and Operation Enduring Freedom (OIF/OEF) resulted in 6,817 service member deaths and 52,153 injuries (as of 8/6/14).
- 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. This includes estimates of \$80 billion in medical care costs, and \$326 billion in productivity losses.

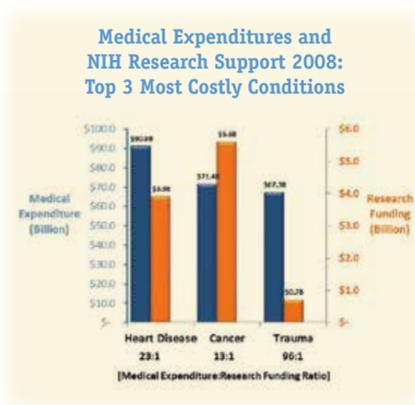
Medicine and technology have advanced considerably in the last decade, and some of the most dramatic innovations can be attributed to the wars in Afghanistan and Iraq. It is clear that war brings an urgency to traumatic injury research. With large numbers of service men and women sustaining similar injuries, military surgeons are compelled to find better treatments; and Department of Defense funding for research and trauma system improvements is more readily available in order to quickly improve survival rates.

Treatment of injury in the civilian setting has been strongly influenced by the battlefield experiences of military trauma surgeons, medics and nurses – who return to civilian practice and bring new techniques with them. Innovations developed during the wars include new tourniquets, new wound dressings, new resuscitation techniques and better methods of damage control surgery that are now saving the lives of injured civilians.

Yet outside of wartime, trauma research receives little attention or funding. Perversely, the waning of war may mean an end to giant leaps forward for trauma treatment.

Progress during times of peace is slow because trauma is a complex disease that involves direct mechanical injury as well as systemic disturbances to the entire body. It encompasses many disciplines and cross-cutting themes – from patient transport to various surgical specialties to rehabilitation.

And trauma is not strictly defined by organ systems or types of conditions like other more easily categorized diseases; rather, it is uniquely defined by the severity and location of injury. These complexities make research more complicated, leaving much to be discovered that could help save lives and reduce disability.



It is clear that traumatic injury takes an extraordinarily heavy toll across civil society, following cancer and heart disease as the third most expensive category of medical treatment. Yet relative to the research support provided for other conditions, trauma remains considerably underfunded.

Reports by the National Research Council (1966), the National Institutes of Health (1994) and the Institute of Medicine (1999 and 2007) have all cited a need for increased funding for

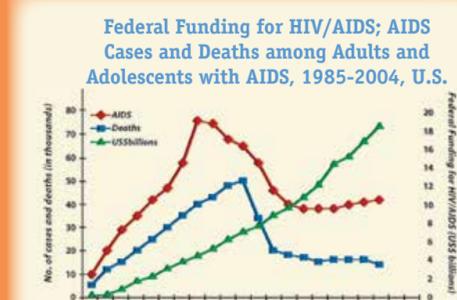
HIV/AIDS Investment Provides Evidence that Research Improves Survival

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

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

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

The National Trauma Institute anticipates a similar reduction in trauma fatalities once significant and ongoing research funding has been achieved.



trauma research, but sufficient funding has never been appropriated to carry it out.

Within the context of years of potential life lost (millions of dollars per years of potential life lost per 100,000 population), for instance, the NIH support ratio for HIV is \$3.51, for cancer \$1.65, and for trauma, just 10 cents. And today, while both the NIH and the Congressionally Directed Medical Research Program (CDMRP) of the Department of Defense fund trauma research, the level of spending does not address the burden of the problem, given its size and impact on our society.

THE NATIONAL TRAUMA INSTITUTE

In the absence of a unified national effort, civilian and military trauma surgeons formed the National Trauma Institute (NTI) in 2006 to address the problem and to provide an instrument to manage research funding and to disseminate research results to the medical community.

The National Trauma Institute, with its connections to both civilian and military medical establishments, is the natural

centerpoint for a national trauma research agenda and the translation of advances between military and civilian communities, whether during war or peacetime. NTI's model of civilian-military partnership is rooted in a long history of medical learning transferral.

NTI advocates for and works toward the establishment of a federally funded national Trauma Clinical Trials Network and a National Trauma Research Repository, both of which will accelerate the development of evidence-based guidelines to improve the treatment of trauma. The organization secures and awards funding for diverse multi-center clinical trials that are required to provide the sound, unbiased scientific evidence that can change practice. NTI is particularly qualified to oversee and manage trauma research that is comprehensive, community-based and planned for all populations.

Further, NTI organizes and sponsors national investigator and educational meetings and has experience in establishing data registries and awarding research grants for translational projects. NTI targets studies that will lead to rapid, clinically meaningful results and then quickly disseminates these results to the national medical community.

The National Trauma Institute's work has just begun: more can and must be done. Even a 5% reduction in trauma deaths, injuries and economic burden would save 9,000 lives, prevent 1.5 million injuries and reduce the nation's healthcare burden by \$20 billion...EVERY YEAR.

NTI Accomplishments

Since its establishment in 2006, the National Trauma Institute has become the nation's leading voice for trauma research funding. With an agenda focused solely on advancing the field of traumatic injury care, NTI has:

- Developed an active national Board of Directors comprising physicians from the fields of trauma, emergency medicine, orthopedics and neurosurgery
- Developed a national Science Committee that to date has evaluated nearly 200 research pre-proposals and made awards of \$3.8 million
- Funded 16 studies in 35 cities and 22 states – from examining use of the ventilator bundle in the ICU to weighing the efficacy of iron supplementation for critically ill patients to understanding the mechanism for traumatic coagulopathy, all NTI-funded studies have explored priority issues in the field of trauma
- Successfully advocated for an additional \$10 million in the FY 12 Department of Defense budget for non-compressible hemorrhage studies
- Successfully advocated for a \$5 million addition to the Department of Defense budget for a National Trauma Research Repository, which will aggregate and standardize research study data for broader use
- Managed the Endovascular Skills for Trauma and Resuscitative Surgery (ESTARS) communications platform, a program to build skills in the management of vascular injuries among general trauma surgeons
- Managed \$7.6 million from the Texas Emerging Technology Fund and matching federal funds to develop and achieve FDA approval for a wireless vital signs monitor, with a consortium that included private industry, academic and military institutions
- Generated and/or managed a total of \$39.8 million since its establishment

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TRAUMA RESEARCH INFRASTRUCTURE NEEDS

Together with a coalition of like-minded organizations representing professionals in the surgical and emergency medicine fields, the National Trauma Institute advocates at the federal level for a robust trauma research infrastructure—including a National Trauma Research Repository and a Trauma Clinical Trials Network—that will support rapid advances in traumatic injury treatment that can save lives.

National Trauma Research Repository

Like data registries and other medical databases, a clinical research repository aggregates and standardizes research study data so it can be shared for broader use. Research repositories support secondary analysis through a co-mingling of individual studies with common elements.

A research repository also includes in-depth and detailed clinical information, provides additional informational services, uses a consistent identifier system and engages experts to review the data and ensure its quality.

Once established, the National Trauma Research Repository will provide the means for storage, compilation and analysis of trauma research data, providing a great deal more data than investigators are able to collect on their own and a much faster route to the large datasets required to draw conclusions to improve trauma care.

Research Repositories:

- Promote the publication of new research with effective use of existing data
- Enable replication of findings through re-analysis of pooled data files
- Enable meta-analysis using individual patient data
- Reinforce the principle of open scientific inquiry
- Encourage the development of different theoretical perspectives, especially in an interdisciplinary setting
- Provide additional value at little cost, optimizing the use of financial and human resources
- Minimize the need to recruit individuals for research studies, as fewer studies can potentially answer more questions



Trauma Clinical Trials Network

Clinical Trials Networks are research partnerships among multiple medical centers that result in consolidated resources, focused priorities and, often, medical breakthroughs. A federally funded Trauma Clinical Trials Network will accelerate the development of evidence-based guidelines for improved treatment of trauma.

Clinical Trials Networks:

Coordinate priorities – Addressing prioritized research gaps saves time and money spent on redundant and unnecessary studies.

Consolidate effort – A steady funding stream ensures that multiple researchers and institutions spend less time chasing grants.

Provide a higher return on investment – Sharing data is an opportunity to expand the significant investment of the clinical trial beyond its original goals at minimal cost.

Result in studies with higher statistical significance – Multi-site studies enable medical centers to combine patient populations to enroll enough subjects to conduct studies with significant statistical power.

Increase investigator quality – Coordinated studies are conducted using best practices and seasoned investigators; emerging investigators are exposed to superlative role models.

Validate findings – Studies encompass different regions and demographics, representing a cross-section of the population; so clinical outcomes have wider acceptance.

Advance patient safety – Network resources can be used to coordinate timely and comprehensive safety reviews of adverse event data within and across studies.

Encourage scientific collaboration – Multiple center participation fosters input on key clinical and scientific questions and allows for collaboration among centers with different areas of expertise.

Decrease health care costs – Networks standardize effective treatments and improve health outcomes; thus, costs are lowered.



Funding Research • Changing Practice • Creating Awareness

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The National Trauma Institute is a 501 (c)3 tax-exempt nonprofit organization formed in 2006 by leaders of America's trauma organizations. With the support and participation of the national trauma community, NTI advocates for increased trauma research funding and manages multi-site trauma research programs. The organization also provides research, grant preparation and study management services to agencies, academic institutions and research organizations.

NTI's research priorities span the continuum of care from pre-hospital to recovery and rehabilitation. Priorities are reviewed and updated regularly to assure clinical relevance and address the areas of most pressing need.

NTI is a national coordinating center for trauma research funding and an approved federal contractor.

References to the source material for this publication can be found at nationaltraumainstitute.org/sources

THE CASE FOR NATIONAL TRAUMA RESEARCH FUNDING

