Research Funding in Trauma

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NASEM Recommendations

“... Strengthen trauma research and ensure that the resources available for this research are commensurate with the importance of injury and the potential for improvement in patient outcomes...”
Injury -- The magnitude of the problem

Leading cause of death for people aged 1-44 years

5th Leading cause of death overall
Injury -- The magnitude of the problem

- Leading cause of death for people aged 1-44 years
- Fifth leading cause of death overall
- More deaths in children than all other causes combined
- More than 130,000 Americans die every year as a result of trauma
- 25% of all life-years lost = more than cancer + heart disease + HIV combined
- Most important problem for our children & our troops
- Health care costs + lost productivity = $676 billion/year
- 41 million ER visits; 2 million hospital admissions.
Injury: 25% of total life loss before age 75

FIGURE 1-2 Leading causes of years of potential life lost before age 75, United States, 2014.
SOURCE: Data retrieved from NCIPC, 2015d.
Injury: Leading cause of death, USA, 2014; age 1-46

**FIGURE 1-1** Leading causes of death, United States: 2014, ages 1-46 years. SOURCE: Data retrieved from NCIPC, 2015b.
Injury: Global health problem as well.
# Federal Research Funding

<table>
<thead>
<tr>
<th>Agency</th>
<th>2016 funding level</th>
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<td>Cost of Injury</td>
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Source: Federation of American Societies for Experimental Biology (FASEB)
# Federal Research Funding

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**Cost of Injury**

676 Billion /

**Source:** Federation of American Societies for Experimental Biology (FASEB)
NIH Research Funding

NIH Appropriations, FY 2003-15

- Actual Dollars
- Sequestration
- Inflationary Losses
- Inflation-adjusted Dollars

Source: FASEB
Mortality rate vs. Funding

Stark & Shah. 2017. JAMA
Manley, Croce et al, WTA 2017
NIH Funding for medical conditions relative to their total disease burden.

- **HIV/AIDS**: +17%
- **Cancer**: +11%
- **Injuries**: -12%
Relationship Between Amount of NIH Funding and Burden of Disease

Condition
- HIV/AIDS
- Cancer
- Drug abuse
- Dental and oral disease
- Diabetes mellitus
- Sexually transmitted diseases
- Tuberculosis
- Kidney disease
- Alcohol abuse
- Parkinson disease
- Multiple Sclerosis
- Perinatal conditions
- Epilepsy
- Schizophrenia
- Peptic Ulcer
- Otitis Media
- Asthma
- Cirrhosis
- Dementia
- Arthritis
- Pneumonia
- Migraine
- Stroke
- Depression
- COPD
- Ischemic heart disease
- Injuries

% of total funding > % of total burden: +16.9%
% of total funding = % of total burden: +11.1%
% of total funding < % of total burden: -11.8%
Not from lack of trying

Coalition for National Trauma Research
National Trauma Institute
American Association for the Surgery of Trauma
Eastern Association for the Surgery of Trauma
Western Trauma Association
Hospital Trauma Life Support - NAEMT
Trauma Evaluation and Management
Development of 2016 NASEM Recommendations

• 2016 National Academies of Sciences Engineering and Medicine (I.O.M)
• Military & Civilian Surgeons
• Fellows of the American College of Surgeons & AAST members
• NASEM is the latest of four such reports to recommend significantly increasing trauma federal research funding
History Repeating Itself

1966
National Research Council’s
Accidental Death and Disability

1965
National Research Council
and Institute of Medicine’s
Injury in America

1970

1975

1980

1985
1990
1995
2000
2005
2010
2015
2020

1994
National Institutes of Health’s
A Report of the Task Force on
Trauma Research

1999
Institute of Medicine’s
Reducing the Burden of Injury

2004
National Highway Traffic Safety
Administration’s Trauma System
Agenda for the Future

2007
Institute of Medicine’s
Hospital-Based
Emergency Care

2016
The National Academies of Sciences, Engineering, and Medicine’s A National Trauma Care System

FIGURE 4-4  Timeline of assessments relevant to civilian trauma research.
50 years later: Same problems. Why?

- Efforts at organized clinic care, not research?
- Lack of investigators?
- “Problem is definitely not one of research dollars...we have plenty of money to fund this research...you have a lack of investigators”
- Dept of Defense viewed at primary funding source?
- CDC has abandoned clinical trauma research funding?
- Policy & Politics driven? Leadership driven?
- Circular reasoning: Inadequate funding to drive research?
Why is this?

- Lack of centralized, organized infrastructure to guide the direction and dispersal of research funding
- Research topics unfocused and not prioritized
- Multicenter trials critical, but very few and underfunded
- Many studies that require a multicenter approach are done as single-center studies, without cohesive use of funds and resources
- Military’s battlefield innovations not reliably transferred to the civilian setting
- Maybe we are counting research spending incompletely or inaccurately?
Military Trauma Research Investment

FIGURE 4-6  Military medical research investment in trauma care, 2005-2013. SOURCE: Adapted from GAO (2013, p. 5).
Military trauma research funding

CSI = Congressional special interests; DHP = defense health program

**FIGURE 4-5** Funding sources for military medical research, 2013. SOURCE: Data from Rasmussen, 2015.
Research Networks do exist

- Resuscitation Outcomes Consortium (ROC)
  - 12 centers in US and Canada
  - Focus on Prehospital research in cardiac arrest and life threatening trauma
  - Funded by NIH/DOD/CIHR/AHA for past 10 yrs
  - SUNSETTING in 2017
Research networks do exist

- Neurological Emergency Treatment Trials Network (22 hubs)
  - Focused on **neurologic emergencies** including **TBI**
  - Funded by NIH for 10 yrs
  - Sunsetting in 2017
Other networks

- SIREN
  - NIH funded, multicenter hub/spoke networks
  - Includes all emergency care issues

- LITES
  - DOD funded
  - Focus on trauma research relevant to military
Congressionally funded (earmarks)

- METRC: orthopedic injuries
- ABA: Burn research
- CNTR: MIMIC (civilian mortality)

Limitations
- Not enduring - requires annual begging (appropriation)
- Funneled through DoD - - - -
• Organized collaboration of key trauma research stakeholder organizations
• Goal to increase quality and quantity of trauma research to improve patient care
• Match research funding to the burden of the health problem
• Stymied at comprehensive funding efforts
Gaps Identified at Implementation Strategy Meeting

- Research funding is not commensurate with the burden of the problem
- No standard definition of trauma research
- No comprehensive research agenda
  - Injury prevention, acute care, rehabilitation, long term outcomes
- No federal home for comprehensive trauma research
- No National Trauma Research Action plan
Thank You!
Ronnie Stewart
Eileen Bulger