

# National Institute for Trauma Research *Pro Side*

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*Inspiring Quality:  
Highest Standards, Better Outcomes*



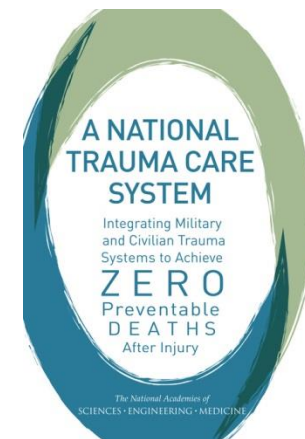
# National Institute . . .

- Trauma
- Trauma Care
- **Trauma Research**
- Trauma and Emergency Care
- Injury and Emergencies
- Emergency and Trauma Care

# 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 . . . ”

*Recommendation #7 of 11*



# Injury -- The magnitude of the problem

- ❖ Leading cause of death age 1-44 years
- ❖ 5<sup>th</sup> Leading cause of death overall
  - ❖ \$676 billion/year
- ❖ 41 million ER visits; 2 million admissions



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The Committee  
on Trauma



# 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
- 1966 National Academy of Science White Paper: “Injury: The Neglected Disease”



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100+years

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50 Years Later — No Change!



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# 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



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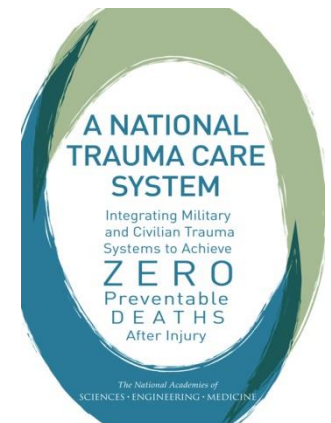


**NIH Funding**  
for medical  
conditions  
relative to their  
total disease  
burden.

*HIV/AIDS +17%*

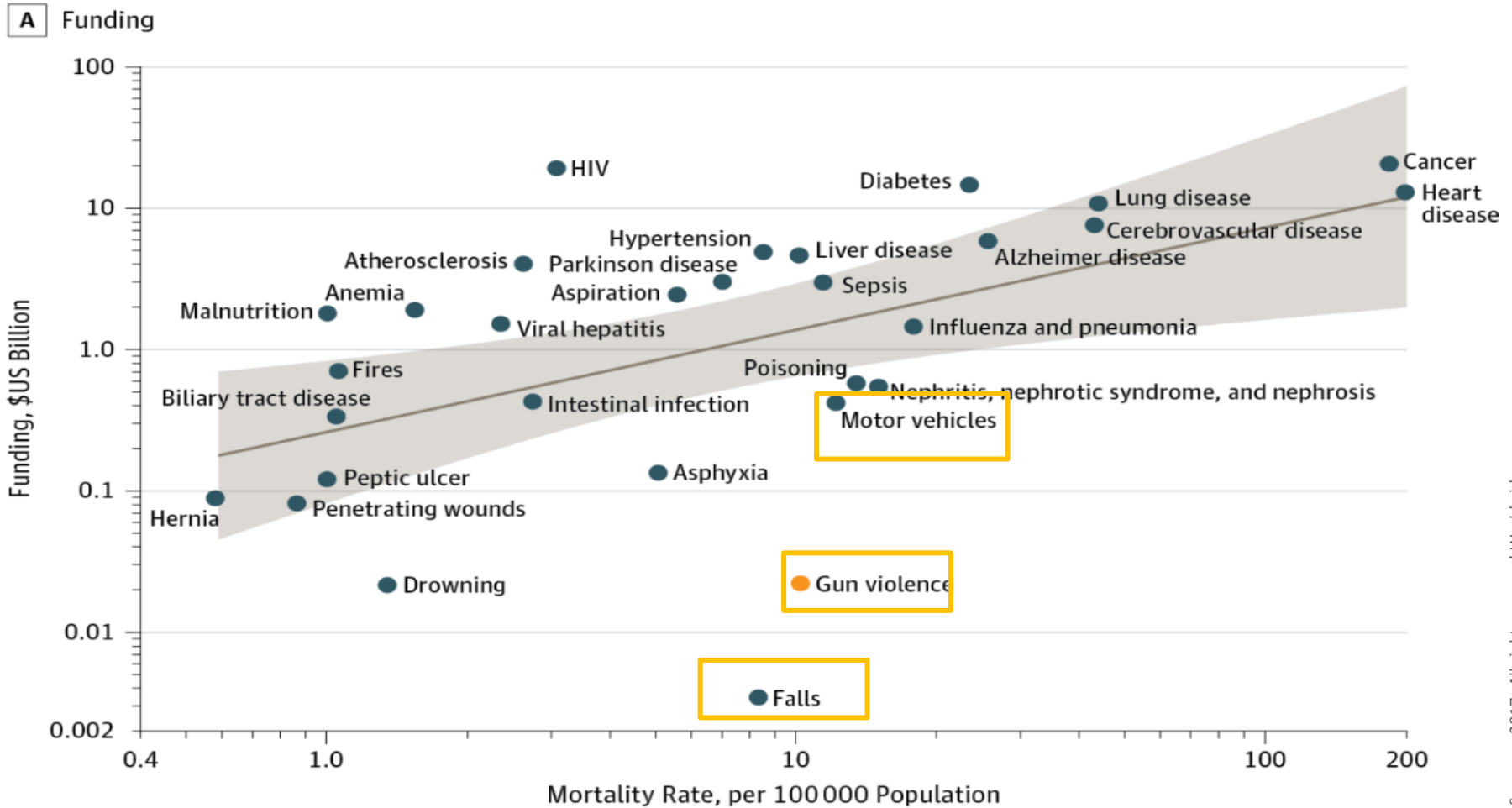
*Cancer +11%*

*Injuries -12%*





# Mortality rate vs. Funding



Stark & Shah. 2017. JAMA  
 Manley, Croce et al, WTA 2017

# NIH funding, by disease (1996)

OPEN ACCESS Freely available online



## NIH Disease Funding Levels and Burden of Disease

Leslie A. Gillum<sup>1</sup>, Christopher Gouveia<sup>1</sup>, E. Ray Dorsey<sup>3</sup>, Mark Pletcher<sup>2</sup>, Colin D. Mathers<sup>4</sup>, Charles E. McCulloch<sup>2</sup>, S. Claiborne Johnston<sup>1,2\*</sup>

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### Abstract

**Background:** An analysis of NIH funding in 1996 found that the strongest predictor of funding, disability-adjusted life-years (DALYs), explained only 39% of the variance in funding. In 1998, Congress requested that the Institute of Medicine (IOM) evaluate priority-setting criteria for NIH funding; the IOM recommended greater consideration of disease burden. We examined whether the association between current burden and funding has changed since that time.

**Methods:** We analyzed public data on 2006 NIH funding for 29 common conditions. Measures of US disease burden in 2004 were obtained from the World Health Organization's Global Burden of Disease study and national databases. We assessed the relationship between disease burden and NIH funding dollars in univariate and multivariable log-linear models that evaluated all measures of disease burden. Sensitivity analyses examined associations with future US burden, current and future measures of world disease burden, and a newly standardized NIH accounting method.

**Results:** In univariate and multivariable analyses, disease-specific NIH funding levels increased with burden of disease measured in DALYs ( $p = 0.001$ ), which accounted for 33% of funding level variation. No other factor predicted funding in multivariable models. Conditions receiving the most funding greater than expected based on disease burden were AIDS (\$2474 M), diabetes mellitus (\$390 M), and perinatal conditions (\$297 M). Depression (\$719 M), injuries (\$691 M), and chronic obstructive pulmonary disease (\$613 M) were the most underfunded. Results were similar using estimates of future US burden, current and future world disease burden, and alternate NIH accounting methods.

**Conclusions:** Current levels of NIH disease-specific research funding correlate modestly with US disease burden, and correlation has not improved in the last decade.

# NIH funding, by disease (1996)

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## NIH Disease Funding Levels and Burden of Disease

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University of California San Francisco, San Francisco, California, United States of America, <sup>3</sup>Department of Neurology, Johns Hopkins University Medical Center, Baltimore, Maryland, United States of America, <sup>4</sup>Department of Health Statistics and Informatics, World Health Organization, Geneva, Switzerland

**Depression, injuries, and COPD were the most underfunded: 3% funds to Injury research; Injury ranked #1 in yrs lost and #2 in DALY & Mortality**

**Background:** An analysis of NIH funding in 1996 found that the strongest predictor of funding, disability-adjusted life-years (DALYs), explained only 39% of the variance in funding. In 1998, Congress requested that the Institute of Medicine (IOM) evaluate priority-setting criteria for NIH funding; the IOM recommended greater consideration of disease burden. We examined whether the association between current burden and funding had changed since that time.

**Methods:** We analyzed US funding in 2001 for 99 of the 100 most common measures of disease burden. Data were obtained from the World Health Organization's Global Burden of Disease study and national databases. We assessed the relationship between disease burden and NIH funding dollars in univariate and multivariable log-linear models that evaluated all measures of disease burden. Sensitivity analyses examined associations with future US burden, current and future measures of world disease burden, and a newly developed NIH accounting method.

**Results:** In univariate models, the association between disease-specific NIH funding levels correlated with the burden of a measure in DALYs ( $p=0.001$ ), which accounted for 33% of funding level variation. No other factor predicted funding in multivariable models. Conditions receiving the most funding greater than expected based on disease burden were AIDS (\$2474 M), diabetes mellitus (\$390 M), and perinatal conditions (\$297 M). Depression (\$719 M), injuries (\$691 M), and chronic obstructive pulmonary disease (\$614 M) were the most underfunded. Results were similar using estimates of future US burden, current and future world disease burden, and alternative NIH accounting methods.

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# How would an NIH Institute Help?

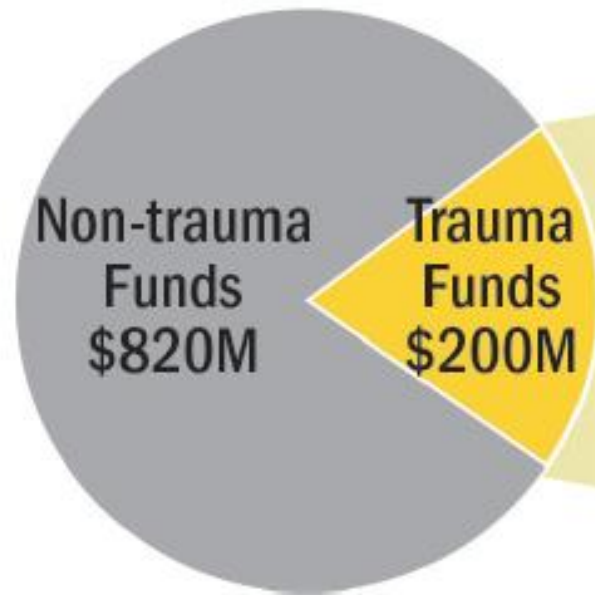
- **What we have done for over 50 years has not worked**
- It is getting worse
- Civilian and military trauma needs and concerns are both important, yet different
- DoD not a reliable source for civilian trauma research
- CDC has disavowed itself of funding trauma research
- Current NIH Institutes do not have an interest (focus?) on comprehensive injury related questions.
- Current trauma research networks do not take into account suicide, homicide, or gun violence in research agenda

# Why is this?

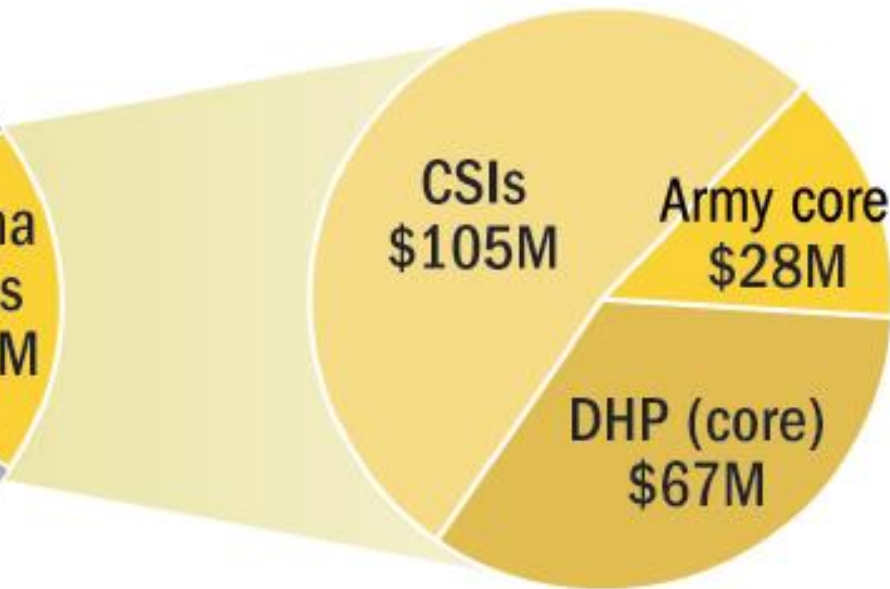
- Lack of centralized, organized infrastructure to guide the direction and dispersal of research funding
- Research topics unfocused and not prioritized
- Multicenter trials critical, but very few and underfunded
- Many studies that require a multicenter approach are done as single-center studies, without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

# Military trauma research funding

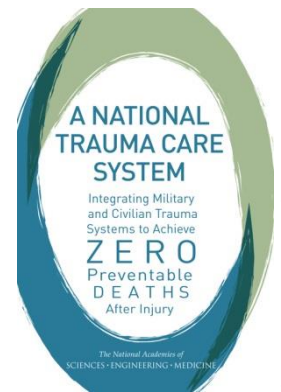
Military Medical Research Investment, 2013



Type of Trauma Funding

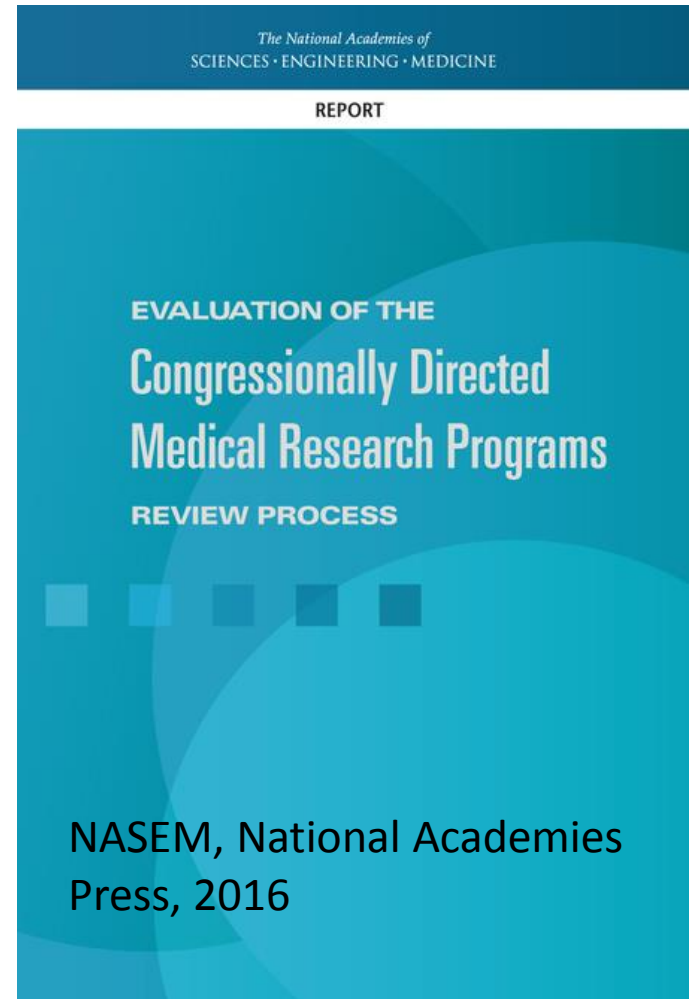


CSI = Congressional special interests; DHP = defense health program



# Congressionally Directed Medical Research

- DoD second to NIH in research funding
- 50% goes to the Congressionally Directed Medical Research Programs (CDMRP).
- Mission: foster innovative approaches to medical research in response to the needs of its stakeholders—the U.S. military, their families, the American public, and Congress.
- Research is performed by other government and nongovernmental organizations
- This report evaluates the CDMRP peer review process, its coordination of research priorities with NIH and the Department of Veterans Affairs, and provides recommendations on how the process for reviewing and selecting studies can be improved.



# Military Trauma Research Investment





# How would an NIH Institute Help?

- Steady, reliable source of funding
- Prioritize research initiatives and questions
- Motivate and train future investigators
- Remove/lessen political influence on research agenda
- Nationally centralized IRB
- Nationally coordinated community consent
- Adequately funded core for adequately sized clinical trials
- Informed and attuned study sections
- Transparent funding priorities and allocation process

# National Institutes of Health (27 units)

- **20 Institutes**
  - **1** Library of Medicine
  - **6** Centers
- Director: Dr. Francis Collins
  - 2009; was Genome Inst. Head
- National Cancer Institute – 1937
- Nat. Inst. Minority Health & Disparity 1993
- Nat. Inst. Biomed Imaging & Bioeng. 2000

NCI	NEI	NHLBI
NHGRI	NIA	NIAAA
NIAID	NIAMS	NIBIB
NICHD	NIDCD	NIDCR
NIDDK	NIDA	NIEHS
NIGMS	NIMH	NIMHD
NINDS	NINR	NLM
CC	CIT	CSR
FIC	NCATS	NCCIH
OD	<b>NITR</b>	<b>NITEM</b>

# Federal Research Funding

Agency	2016 funding level
NIH	32.0 Billion
NSF	7.46 Billion
DOE SC (Energy, science office)	5.35 Billion
VA	.63 Billion
AFRI (agriculture/food res. inst)	. 35 Billion
ARS (agriculture res. service)	1.14 Billion
<b>Cost of Injury</b>	<b>676 Billion / year</b>

Source:



# Agriculture and Food Research Initiative

- AFRI is the nation's leading competitive grants program for agricultural sciences. The National Institute of Food and Agriculture (NIFA) awards AFRI research, education, and extension grants to combat childhood obesity, improve rural economies, increase food production, create new sources of energy, mitigate the impacts of climate variability, address water availability issues, ensure food safety and security, and train the next generation of agricultural workforce.

United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture

# Agriculture and Food Research Initiative

- AFRI was established by Congress in the 2008 Farm Bill and re-authorized in the 2014 Farm Bill. The President's FY 2017 budget request proposed to fully fund AFRI for \$700 million. This amount is the full funding level authorized by Congress when it established AFRI in the 2008 Farm Bill and would double the \$350 million made available in FY 2016. As part of the President's FY 2017 Budget proposal, AFRI investments will target the diverse challenges facing agricultural producers—from climate change to pollinator health to antimicrobial resistant bacteria.
- In addition to the \$375 million provided in the discretionary request, the budget includes a legislative action to make available \$325 million in mandatory funding for the program as part of a government-wide investment in research and development

# Research Networks do exist

- Resuscitation Outcomes Consortium (ROC) (done, 2017)
- Neurological Emergency Treatment Trials Network (22 hubs) (done, 2017)
- SIREN – all emergencies potentially
- LITES – DoD directed to military relevant

# Congressionally funded (earmarks)

- METRC: orthopedic injuries
- ABA: Burn research
- CNTR: MIMIC (civilian mortality)
- Limitations
  - Not enduring - requires annual begging (appropriation)
  - Funneled through DoD - - - -

# NASEM 2016 ZPD Report

- Conclusion #3 (pg 214)
- “Investment in trauma research is not commensurate with the burden of traumatic injury. To address critical gaps in knowledge of optimal trauma care practices and delivery systems, the United states need a coordinate trauma research program with defined objective, a focus on high-priority needs, and adequate resources from both the military and civilian sections”
- **We need a National Institute of Trauma Research**

