

# A NATIONAL TRAUMA CARE SYSTEM

Bill Schwab & James Robinson



**Integrating Military and Civilian**

**Trauma Care Systems to Achieve**

**Zero Preventable Deaths After Injury**

June 2016

<http://www.nationalacademies.org>

[nap.edu/traumacare](http://nap.edu/traumacare)

# DISCLAIMER (CWS & JR)

## *NOTHING TO DECLARE*

Views expressed are that of the authors as derived from the NASEM Report.

The opinions and assertions presented are not to be construed as official or reflecting the views of the US Government, *NASEM*, the University of Pennsylvania and Denver Health.

# Objectives

NASEM report: why, process, findings, vision aim, and recommendations.

(Foundation- Learning Trauma Health System) *(IOM 2013)*

Recommendations: (11/61)

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Critical Time and *Needed Actions*:

- Transdisciplinary (sector leaders) constituents to catalyze change at Federal, state and local levels.

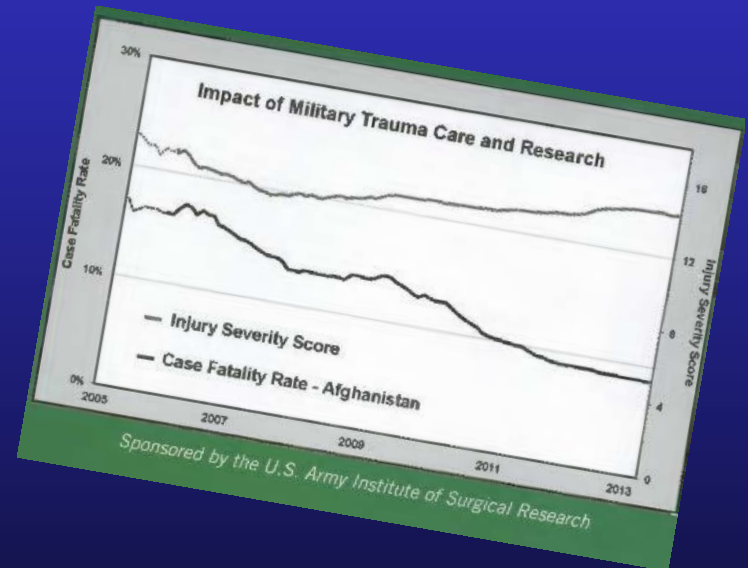
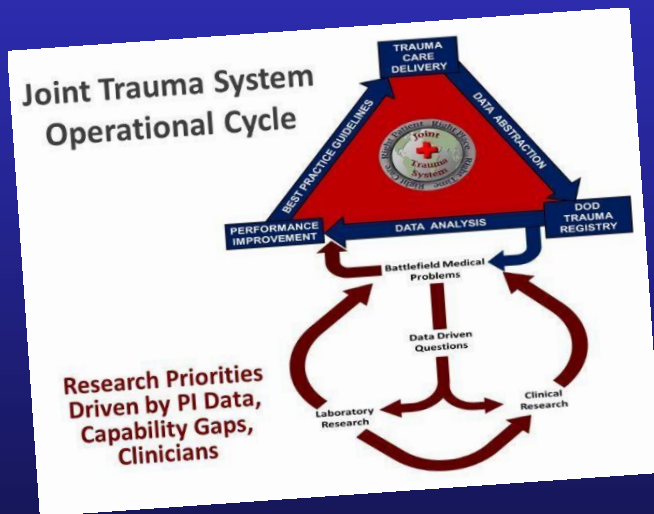
*How to proceed.....*

*Background*

*“WAR...has been a very efficient schoolmaster....”*

*MW Ireland 1921*

2014...13 years of war of sustained deployments that created a workforce who recorded the advances, lessons, technologies and techniques in life saving and recovery...



*Military Medical Forces became THE EXPERTS ...*

*...critical injury,*

*trauma systems and mass casualty response!!*

# Leading Authorities (2014)

- American College of Emergency Physicians
- American College of Surgeons
- National Association of Emergency Medical Technicians
- National Association of EMS Physicians
- Trauma Center Association of America
- U.S. Department of Defense's U.S. Army Medical Research and Materiel Command
- U.S. Department of Homeland Security's Office of Health Affairs
- U.S. Department of Transportation's National Highway Traffic Safety Administration

*Sought expert advice...*

# National Academies of Sciences Engineering and Medicine

Founded 1863...*"investigate, examine, experiment and report on any subject of science"...*

- Private, non profit
- Expert advice to the nation
- Includes:
  - National Research Council
  - Science, Engineering and Medicine (previous IOM)
- ADVISES THE EXECUTIVE AND LEGISLATIVE BRANCHES
- NAM (IOM) - IDENTIFICATION, DIALOGUE AND SOLUTIONS TO ADVANCE HEALTH AND MEDICINE.

..  
... *interdisciplinary think tanks,*  
... *tedious process of fairness, review, analysis and publication ....*

# Committee on Military Trauma Care's Learning Health System and Its Translation to the Civilian Sector

Multi & Interdisciplinary: physicians, surgeons, nurses, EMS, IT, educators, researchers, epidemiologists, senior government consultants, health care innovators, medical editor, and NAM staff...

# Process

- 15 months ...
- Meetings public and private
  - Testimony, evidence, Q & A
  - Data (peer review, gray).
  - Panels, commissioned papers
  - Case reviews
- Deliberation, Writing, review (int & ext),
  - Response, rewriting...re-review, approval
- Finalizing and publication.  
**Dissemination *ongoing....* (+10 months)**



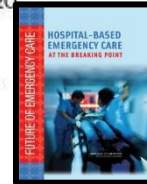
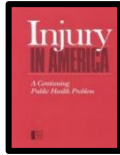
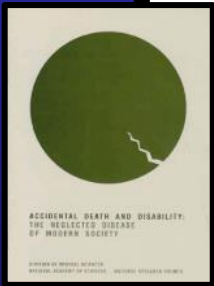
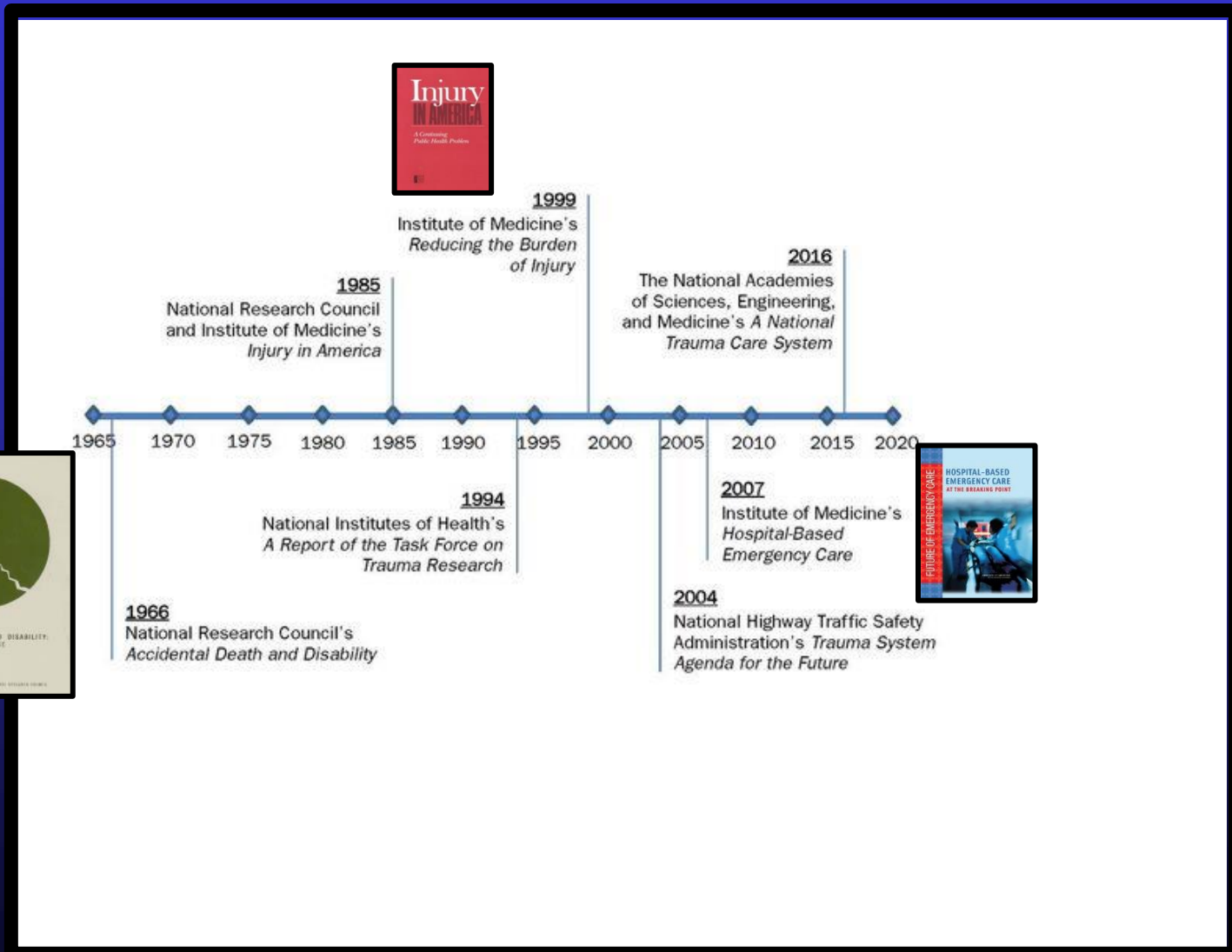
# Charge to the committee (paraphrased)

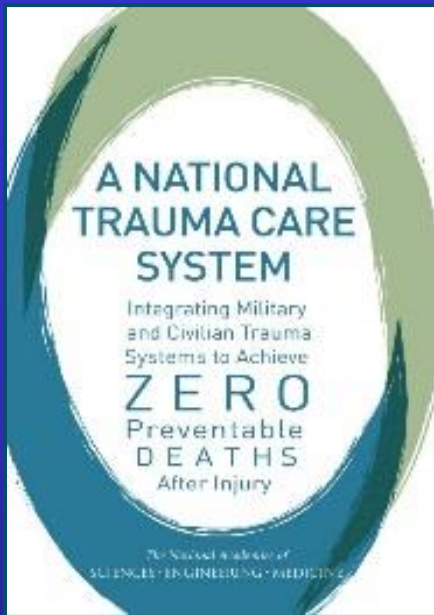
- **Characterize and memorialize:** the military's Joint Trauma System (JTS) and Defense Health Program research investment and their integrated role as a learning and evidence-based improvement process model.
- **Ensure:** that advances in trauma care are sustained and built upon for future combat operations.
- **Recommend:** strategies for bi-directional integration of the MHS into the civilian health sector and lessons learned from the civilian sector into the military sector.
- **Describe:** a sustainable system of learning to optimize trauma care in military and civilian settings.

# The Opportunity

- *The Opportunity (new)*
  - Existence of a military trauma system built on a learning system framework that has achieved unprecedented survival rates for casualties. *Military LHS....“the model”...*
  - Motivated Trauma Workforce and dozens of civilian trauma systems that are well positioned to assimilate recent wartime trauma lessons and serve as a catalyst and incubator for innovation during the interwar period.
- *Advance trauma care together ...*

# Historic Challenge to effect changes...





# *The Report*

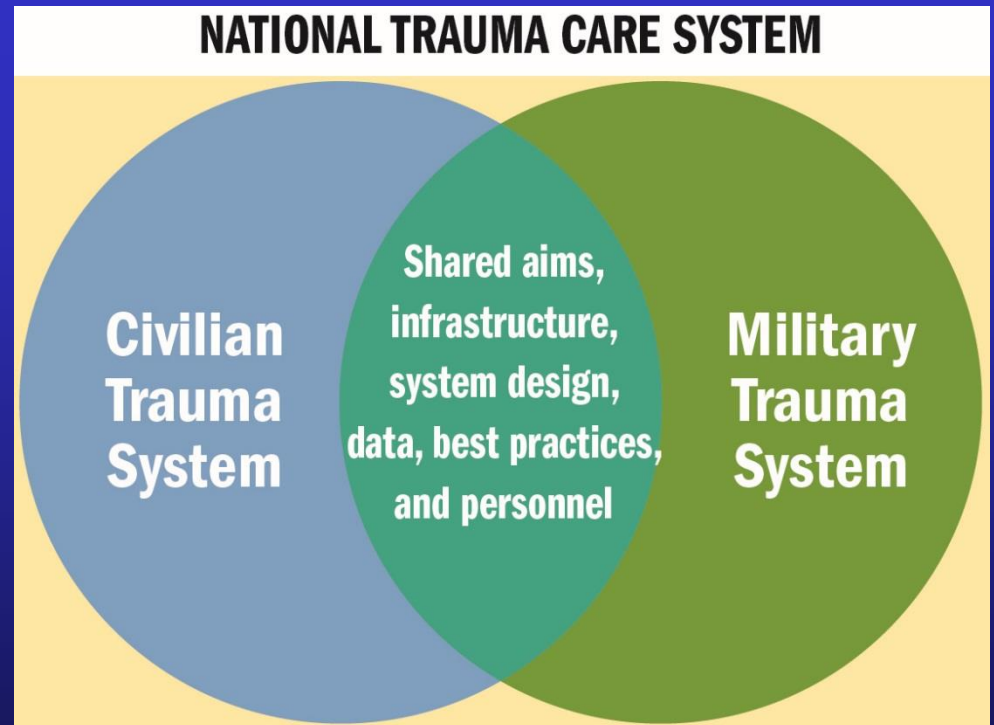
- 431 pages
- Layout:
  - Forward
  - Parts
    - I. Introduction, Overview, & Framework
    - II. Assessment
    - III. Recommendations [Vision]
    - Appendix (5 case studies)
- *Required reading:*
  - Abstract pp 1-3; Summary pp 4-34
  - Bob Woodruff's Journey pp 37-39
  - Figures, charts, etc.

# The Vision: A National Trauma Care System

A national strategy and joint military–civilian approach for improving trauma care is lacking.

***A unified effort\* is needed to ensure the delivery of optimal trauma care to save the lives of Americans injured within the United States and on the battlefield.***

(\*where appropriate)



***“Military and civilian trauma care will be optimized together, or not at all.”***

# The Aim (REC 1)



***Zero Preventable Deaths after injury.....***

# Recommendations (11/61)

***“Military and civilian trauma care and learning will be optimized together, or not at all”*** Berwick, Downey et al JAMA September 2016

- Leadership and a Culture of Learning
  - *Patient Centered Care*
- Digital capture of Patient Experience
- Coordinated PI and responsive Research to generate evidence-based practices
- Timely dissemination of Knowledge
- Transparency and Incentives for Quality Care
- National Trauma and Injury Research Agenda
- Systems for ensuring an Expert Workforce.

***Framework*** k

VIEWPOINT

# A National Trauma Care System to Achieve Zero Preventable Deaths After Injury

## Recommendations From a National Academies of Sciences, Engineering, and Medicine Report

Donald M. Berwick,  
MD, MPP  
Institute for Healthcare  
Improvement,  
Cambridge,  
Massachusetts.

Autumn S. Downey,  
PhD  
National Academies of  
Sciences, Engineering,  
and Medicine,  
Washington, DC.

Elizabeth A. Cornett  
National Academies of  
Sciences, Engineering,  
and Medicine,  
Washington, DC.

Since antiquity, with respect to advancing the care of the injured, "war has been a very efficient schoolmaster."<sup>1</sup> Innovation in trauma care has once again accelerated, spurred by the significant burden of injury from more than a decade of war in Afghanistan and Iraq.

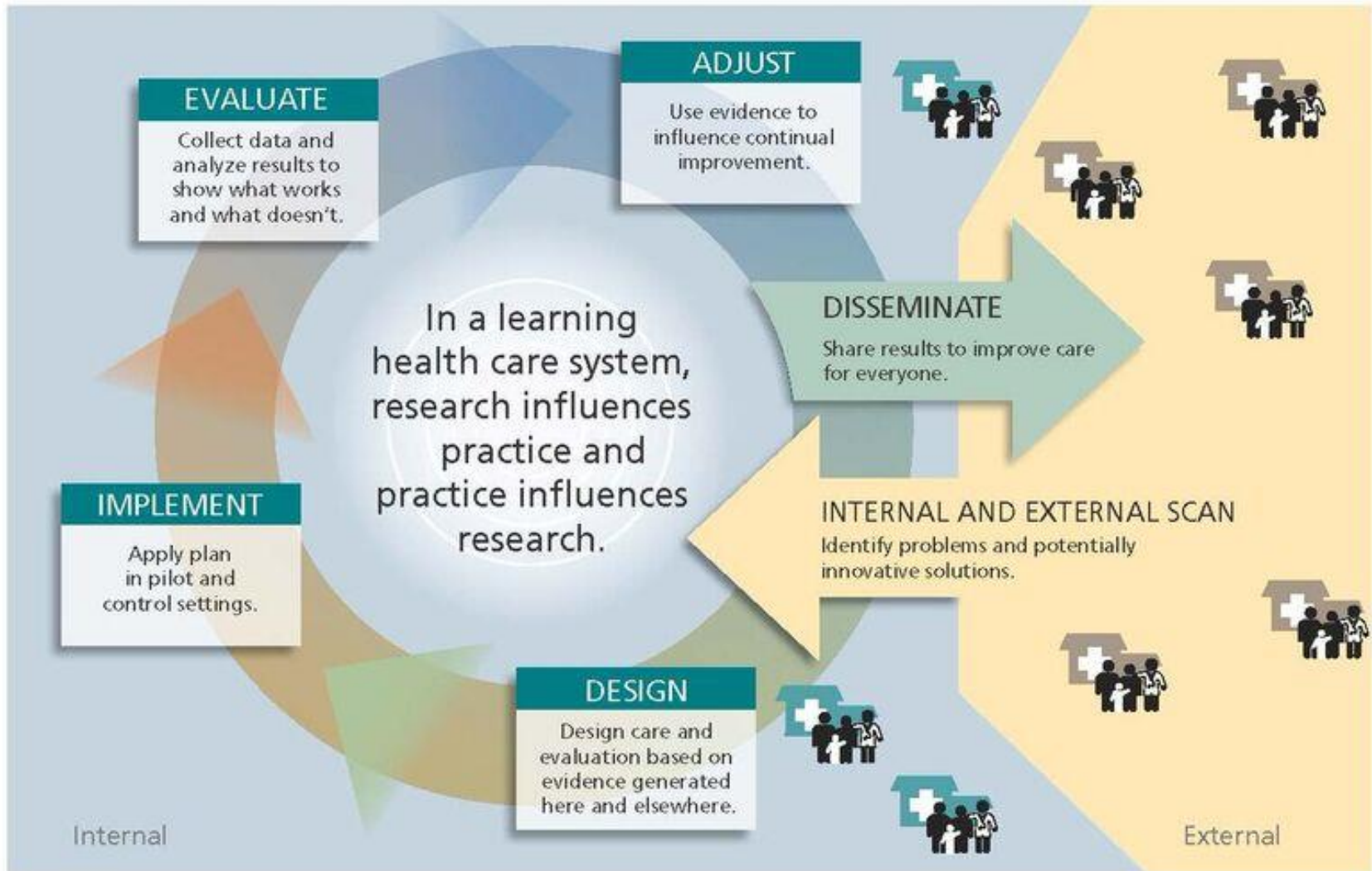
During those recent wars, the percentage of wounded service members who died of their injuries reached the lowest point in recorded wartime history—9.3% in Afghanistan and Iraq compared with 23% during the Vietnam War.<sup>2</sup> Effective bleeding-control measures, improved resuscitation techniques, and aggressive neurocritical care interventions are among many advances that saved lives on the battlefield that otherwise would have been lost. For example, an estimated 1000 to 2000 lives were saved by widespread use of tourniquets.<sup>3</sup>

However, questions have arisen as to how the military's learning trauma system can be improved, sustained, and expanded across the US Department of Defense. In addition, there are questions about how thoroughly and rapidly wartime trauma lessons learned can be applied in the civilian sector, where the need, if not the sense of urgency, is at least as great. In Afghanistan and Iraq, approximately 6850 service member lives have been lost over the last 15 years.<sup>6</sup> In the United States there are nearly 150 000 deaths from trauma each year, and injury is the third leading cause of death, accounting for more years of life lost than any other cause.<sup>7</sup>

A new report from the National Academies of Sciences, Engineering, and Medicine,<sup>8</sup> of which the former Institute of Medicine is now part, clarifies the components of a learning health system necessary to ensure



# FRAMEWORK: THE LEARNING TRAUMA CARE SYSTEM



IOM 2013, *The Path to Continuously Learning Health Care* (nap.edu)

# Domain of a comprehensive trauma system and expense of the expert workforce: **broader!**



FIGURE 3  
The trauma  
care chain of  
survival.



Point of injury - “Re-entry”

# Recommendations (11/61)

***“Military and civilian trauma care and learning will be optimized together, or not at all”*** Berwick JAMA 2016

- **Leadership and a Culture of Learning**
  - *Patient Centered Care*
- Digital capture of Patient Experience
- Coordinated PI and responsive Research to generate evidence-based practices
- Timely dissemination of Knowledge
- Transparency and Incentives for Quality Care
- National Trauma and Injury Research Agenda
- **Systems for ensuring an Expert Workforce.**

# National-Level Leadership

## Findings:

- The absence of any higher authority to encourage coordination, collaboration, standardization, and alignment in trauma care across and within the military and civilian sectors has resulted in variations in practice, suboptimal outcomes for injured patients, and a lack of national attention and funding directed at trauma care.
- Previous White House-led national initiatives have helped unify and ensure collaboration among existing efforts and points of authority spread across military and civilian federal agencies, state and local governments, and professional organizations. **REC 1, 2, 7**

*White House must set the aim: and lead the establishment of the NTS*

# The White House

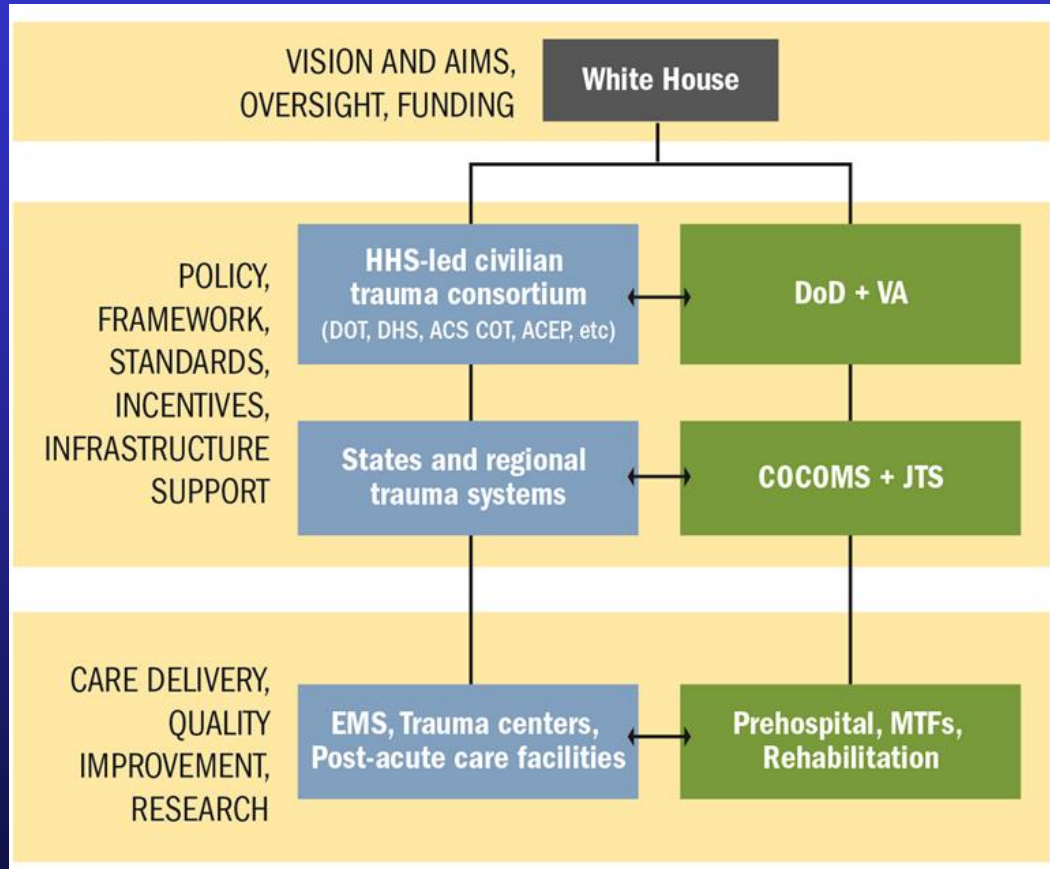


Figure 4 Tiered roles and responsibilities for military and civilian stakeholders in a national trauma care system implicit in Recommendations 1-4.

*By Executive Order...vision, aim, plan & research plan (rec 7)*

# Civilian Sector Leadership

## Findings:

- Authority and accountability for civilian trauma care capabilities are fragmented and vary from location to location, resulting in a patchwork of systems for trauma care in which **mortality varies twofold between the best and worst trauma centers in the nation.**
- There is **no federal civilian health lead for trauma care** (including prehospital, in-hospital, and post-acute care) to support a learning health system for trauma care, create policy and provide funding to develop trauma (and emergency) systems.
  - Despite past recommendations that such a lead agency be established.

**Rec (4, 5, 7, 9, 10)**

*SEC/HHS has the responsibility and authority to achieve zero preventable deaths...*

# Military Leadership

## Findings:

- Within the military leadership structure, there is **no overarching authority** responsible for ensuring medical readiness to deliver combat casualty care.
- **Responsibility, authority, and accountability** for battlefield care **are diffused** across central and service-specific medical leadership, as well as line leadership.
- An **inconsistent level of understanding** by senior medical and line leadership of the value of a learning trauma care system **impedes-- continuous learning and improvement.**

*REC (5,7,8,9,11) 2017 NDAA*

*SEC/DOD has the responsibility and authority to achieve zero preventable deaths...*

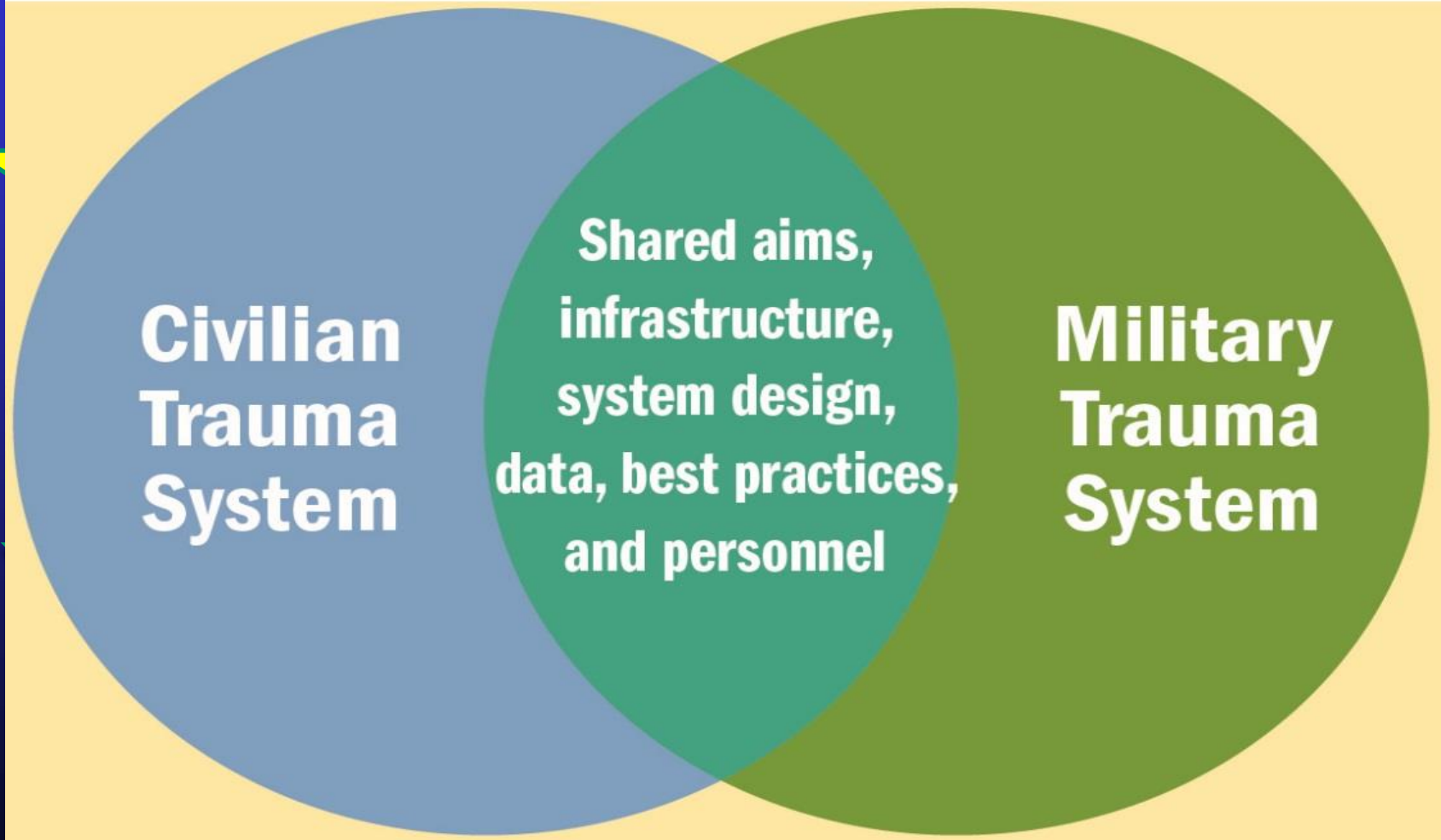
# Leadership- federal

## NATIONAL TRAUMA CARE SYSTEM

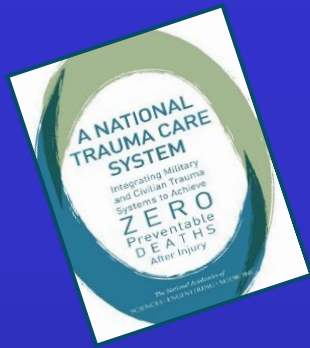
**Civilian  
Trauma  
System**

**Shared aims,  
infrastructure,  
system design,  
data, best practices,  
and personnel**

**Military  
Trauma  
System**







# Recommendations (11/61)

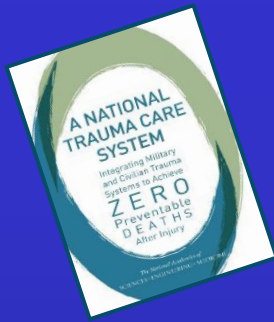
**"ZERO PREVENTABLE DEATHS"**

- Leadership and a Culture of Learning
  - *Patient Centered Care*
- Digital capture of Patient Experience
- Coordinated PI and responsive Research to generate evidence-based practices
- Timely dissemination of Knowledge
- Transparency and Incentives for Quality Care
- National Trauma and Injury Research Agenda
- **Systems for ensuring an Expert Workforce.**

# Recommendation 11

- Building integrated platforms to ensure a ready and expert trauma care workforce.
- Directs the DOD/DHA to create platforms of continuous bidirectional learning, career development, training and research.

*This is Us.....NDAA 2017...*



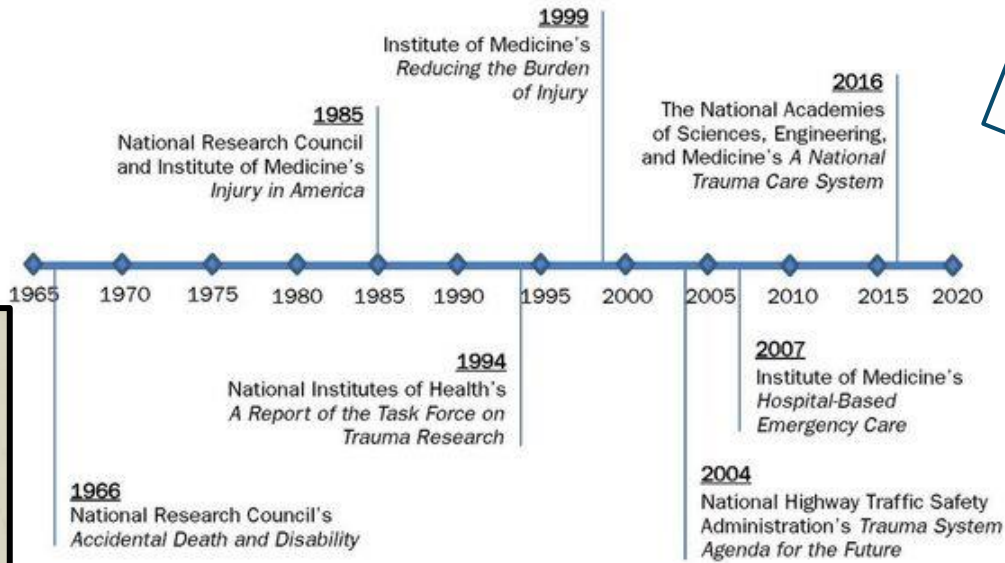
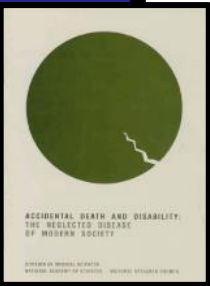
# Expert Workforce...

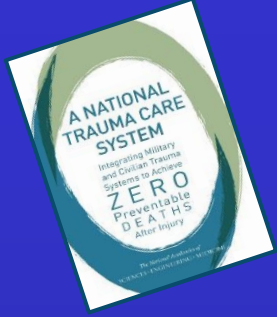
*With Civilian partners....*

- Expand Mil-Civ TTCs
- Assign\* Mil TRA TEAMS
- DOD standardize curricula skill sets, competencies
- DOD establish research portfolio to assure all personnel are sustained at “expert” level for CCC
- Ensure all MTFs participate in TQIP



**Contiguous Bidirectional Learning, Career development, Training and Research**





# Expert –Advocacy Force...



## Most Important

- Broad, Deep & Motivated
  - Critical to assure success
- Strongest advocacy force!!
- *Historically: drivers of the advancing trauma and emergency care, education and knowledge ....the diversified workforce and those who champion this critical need of human life.....*

# What is needed?

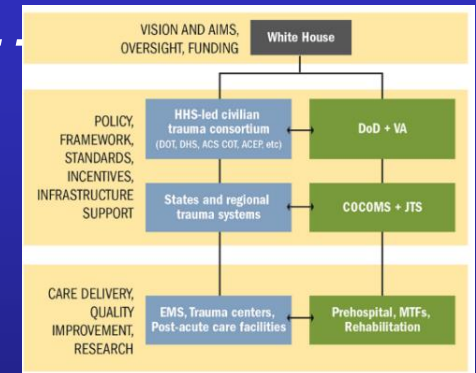
## Unified approach among all...

- “Motivated workforce” as the advocacy force..

*Stakeholders appear disorganized...*

- » *National Trauma Action Plan*
- » *National Trauma System*
- » *National Trauma Research*
- » *Military-Civilian Workforce (readiness)*

– Federal, STATE and regional support



- Now, more than ever-

– A central locus of coordination and oversight ....

– Working across and with all constituents and stakeholders to advance “the” agenda

# The Opportunities

- **The Opportunities**
  - Unity of Effort
  - Elevate the Discussion
  - Inclusiveness
  - Leadership
  - A longitudinal View
- Advance trauma care together ...

*Berwick JAMA 2016*

# Unity of Effort

*“Without an aim, there is no system.”*

-Deming

**Recommendation 1: The White House should set a national aim of achieving zero preventable deaths after injury and minimizing trauma-related disability.**

- The 75<sup>th</sup> Ranger Regiment demonstrated that achieving zero preventable deaths is an **achievable goal** when leadership takes ownership of trauma care and data is used for continuous reflection and improvement.



# Unity of Effort

*“Is it better for PATIENTS?”*



# The Burden of Trauma

- In 2013 alone, *trauma associated with an economic cost of ~\$670 billion* in medical care expenses and lost productivity
- Trauma is the *number one cause of years of productive life lost* before age 75—greater than either cancer or heart disease
- Approximately *7,000 servicemen and women* have lost their lives in combat in wars in Iraq and Afghanistan
- Approximately *two million* Americans have died from traumatic injury since 2001

# The Burden of Trauma

- Traumatic injury *is the leading cause of death* for Americans under the age of 46
- *147,790 U.S. trauma deaths in 2014* - as many as 30,000 may have been preventable
- Increasing threat of active shooter and other mass casualty

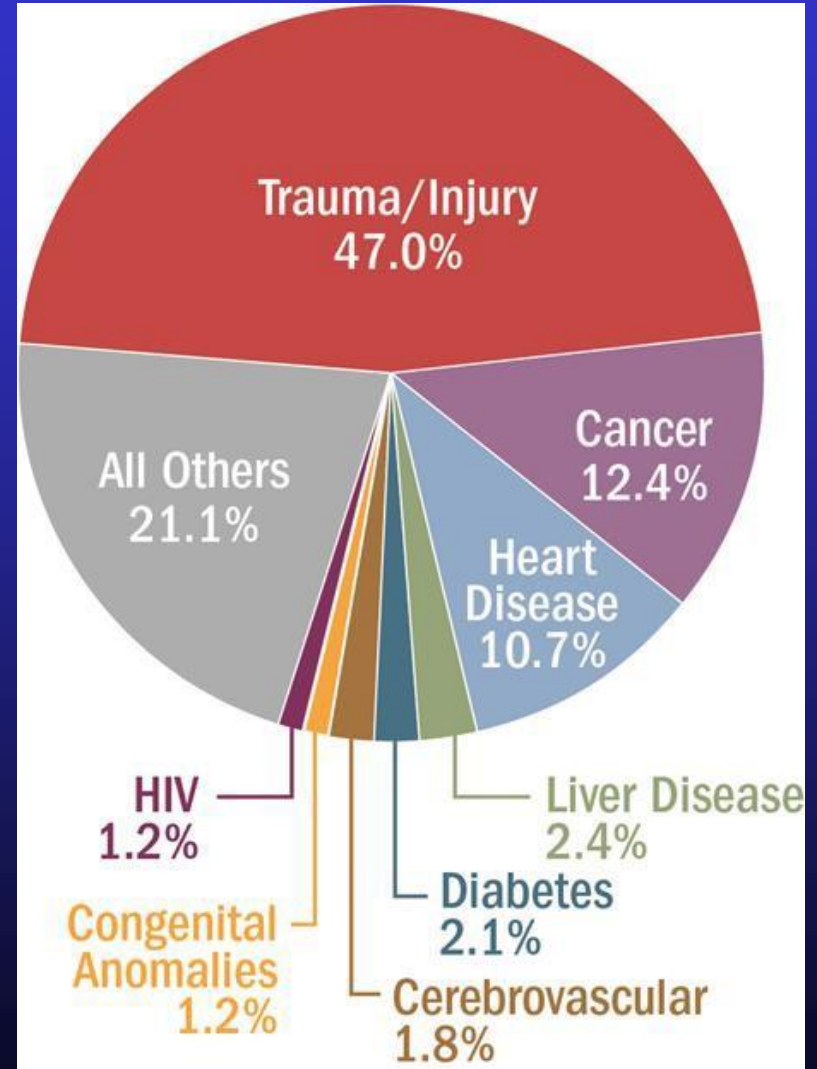


FIGURE 1 Leading causes of death, United States: 2014, ages 1-46 years.  
SOURCE: Data from the National Center for Injury Prevention and Control.

# Inclusiveness

- National Problem
- Broad Stakeholders
- Take Off the Blinders
- “Make a Sandwich”
  - Policy
  - Practice



# Inclusiveness





# A Longitudinal View

*“Start with the end in mind.”*

-Steven Covey

- Inclusivity Supports It
- The Aim Directs It
- Go To Gemba

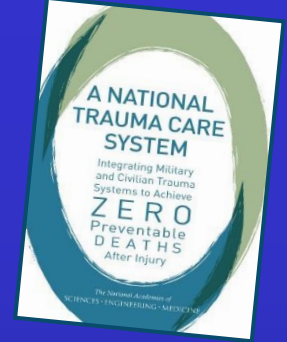


# A Longitudinal View

- Leadership
  - Accountability and Responsibility
- A Network
  - Technology
  - Data
  - People



# Summary



- **Compel** WH to set a national goal of Zero Preventable Deaths and integrate the military and civilian trauma sectors into a National Trauma System
- **Compel** leading mil and civ authorities to assume responsibility and direct coordination for federal agencies, NGOs, private entities and others to achieve a nationally integrated TS.
- **Improve** data sharing across the compendium of care\* esp. prehosp care data and support the dissemination of data driven best practices
- **Mandate** a Nat'l Trauma Research Action Plan involving all stake holders and adjusts the regulatory environment to facilitate trauma research.
- **Ensure** readiness by creating a comprehensive system of training & maintaining skill sets, creating TRA career paths and embedding military trauma teams in civilian trauma centers.

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