Wrap Up: ACHIEVING ZERO PREVENTABLE DEATHS: Building a National Trauma Care System and Research Action Plan

Ronald M. Stewart, MD

April 18th– 19th, 2017

American College of Surgeons
Inspiring Quality:
Highest Standards, Better Outcomes
100+years

The Committee on Trauma

NHTSA
National Highway Traffic Safety Administration

NIH

Thank You

- Multidisciplinary group of attendees
  - Trauma physicians and nurses—civilian & DOD
  - Prehospital professionals
  - Public health professionals
  - Government representatives and advocacy leaders
  - National Academies staff and leadership

Thank You

- Thank you to the ACS COT Staff!
- Special thanks to Robert Winchell, Eileen Bulger, Holly Michaels and Jimm Dodd!

The Problem

- More deaths in children than all other causes combined.
- More than 130,000 Americans die every year
- Health care costs + lost productivity = $671 billion/year
- Most important problem of our children and uniformed service personnel

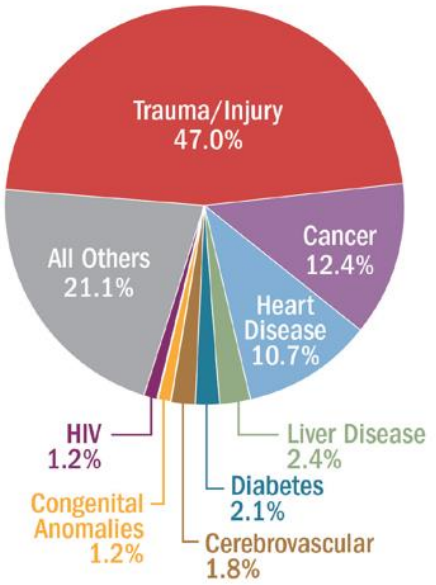


FIGURE 1-1 Leading causes of death, United States: 2014, ages 1-46 years.
SOURCE: Data retrieved from NCIPC, 2015b.

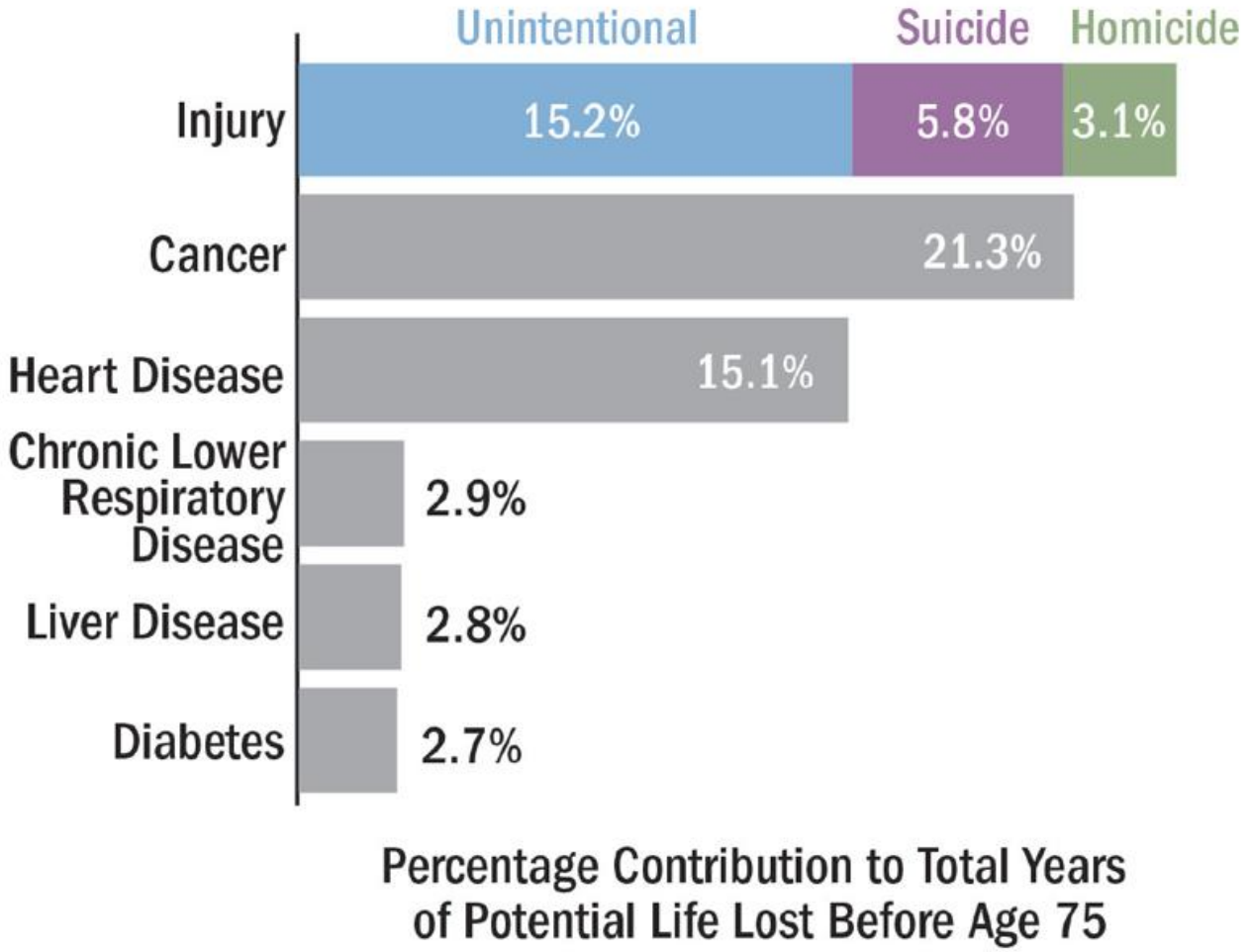
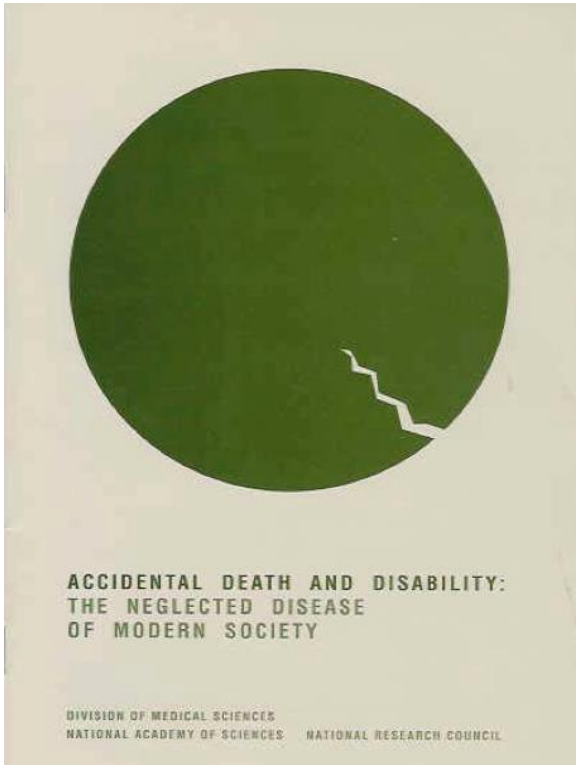


FIGURE 1-2 Leading causes of years of potential life lost before age 75, United States, 2014.

SOURCE: Data retrieved from NCIPC, 2015d.

Still most pressing and neglected public health problem in U.S.



1966

National Research Council. 1966. *Accidental Death and Disability: The Neglected Disease of Modern Society*. Washington, DC: The National Academies Press.

"**Research in trauma has suffered** from the lack of recognition of trauma as a major public health problem."

"The most significant obstacle at present [to trauma research efforts] is the lack of long-term funding."

Recommendations:

"Increased federal and voluntary financial support of basic and applied research in trauma."

"*Expansion within the U.S. Public Health Service* of research in shock, trauma, and emergency medical conditions, with the goal of establishing a National Institute of Trauma."

David Hoyt

Development of NASEM Recommendations

FIGURE 30.—Col. Sam F. Seeley, MC, Executive Officer, Directing Board, Procurement and Assignment Service.

- 1966 National Academies of Science White Paper
- 2016 National Academies of Sciences Engineering and Medicine
- Military & civilian physicians and scientists
- From extended combat experience

Much Progress Has Been Made

Past 50 Years

- Dramatic improvements in care and prevention!
  - Major reductions in mortality and complications
- Entire professional disciplines established
- Radical changes in quality
- Research and scholarship flourished
- Data systems unimaginable in 1966
- Educational transformation around trauma care
- Extension of trauma systems to other time sensitive problems

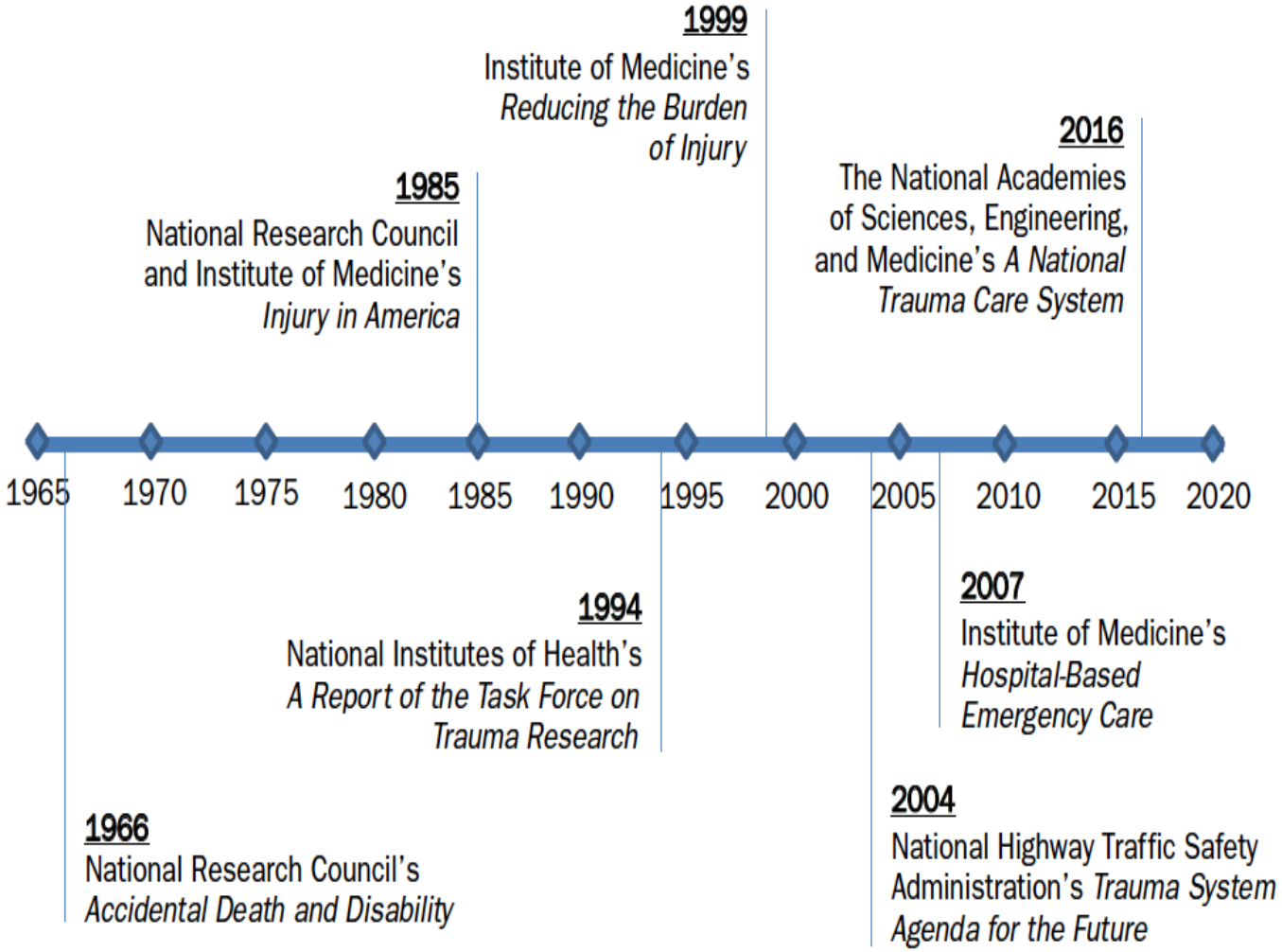


FIGURE 4-4 Timeline of assessments relevant to civilian trauma research.

SOURCES: IOM, 1999, 2007b; NHTSA, 2004; NIH, 1994; NRC, 1966; NRC and IOM, 1985.

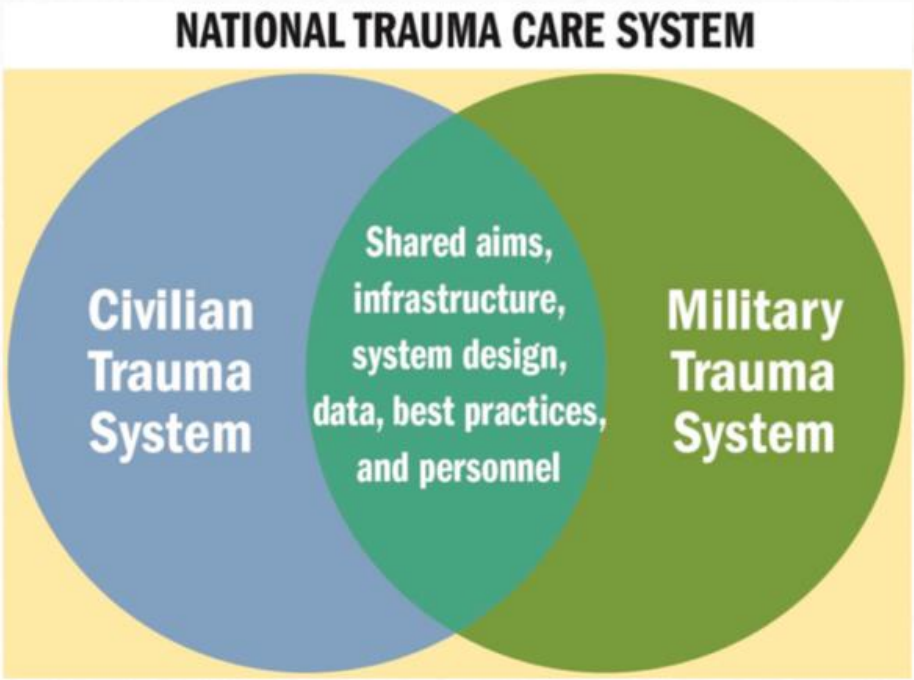
A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths after Injury

- Comprehensive in scope
- Eleven summary recommendations
- Military and Civilian Trauma Systems: *One nation, one system.*

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.

A national learning trauma care system would **ensure continuous improvement of trauma care best practices** in military and civilian sectors.



"Military and civilian trauma care will be optimized together, or not at all."

The Aim

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 75th 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.

From the National Academies of Science, Engineering and Medicine: http://nationalacademies.org/hmd/reports/2016/a-national-trauma-care-system-integrating-military-and-civilian-trauma-systems.aspx

The Opportunities

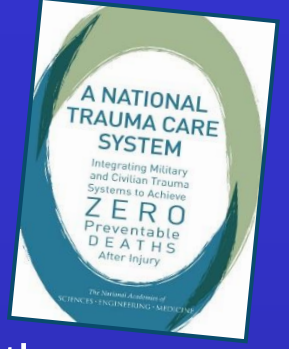
- **The Opportunities**
  - Unity of Effort
  - Elevate the Discussion
  - Inclusiveness
  - Leadership
  - A longitudinal View

- Advance trauma care together …

Berwick JAMA 2016

James Robinson and Bill Schwab

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.

Problem?

- Trauma system: still a patchwork quilt with gaps in some areas—true threats to viability academic Level I centers in others

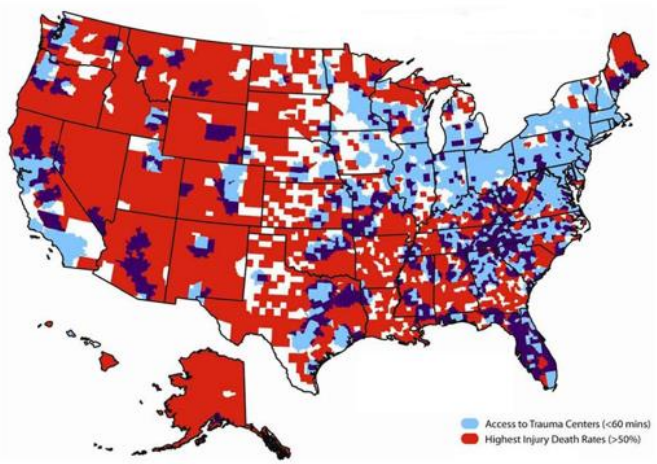


FIGURE 2-3 Lack of access to an appropriate level of trauma care is associated with higher trauma patient mortality.

SOURCE: Map provided by Charles Branas, Ph.D., Professor of Epidemiology, University of Pennsylvania, 2016.

IMPROVING EMERGENCY & TRAUMA CARE SAVES LIVES

35,092

PEOPLE DIED IN TRAFFIC CRASHES IN THE U.S. IN 2015[2]

20% OF TRAUMA DEATHS

are preventable with optimal emergency and trauma care[1]

2 OUT OF 5

WERE ALIVE WHEN FIRST RESPONDERS ARRIVED, BUT LATER DIED[2]

MORE THAN ONE THIRD OF SERIOUSLY INJURED CRASH VICTIMS ARE NOT TAKEN TO A LEVEL I OR II TRAUMA CENTER[3]

THERE IS A **25%** INCREASE IN THE ODDS OF SURVIVAL

for severely injured patients if treated in a hospital that is a level I or II trauma center[4]

Knowing these facts is just the start. We can save more lives with continuous improvement to our nation's emergency care systems.

The Comm
on

ems.gov

NHTSA

NHTSA remains committed to saving lives.
Before, during *and* after the crash.

SOURCES:
1 National Academies of Sciences, Engineering and Medicine. *A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury.*
2 NHTSA Fatality Analysis Reporting System (FARS)
3 NHTSA National Automotive Sampling System-Crashworthiness Data System (NASS-CDS)
4 Mackenzie et al., 2006

Jon Krohmer

Governance/Framework for a National Trauma Care System

- Pull up the ladder Jack, I'm here / Economic point of view
  - Providers have to be able to survive
    - Requires a system that values rewards, expertise and commitment
  - Quality requires experience, experience requires volume

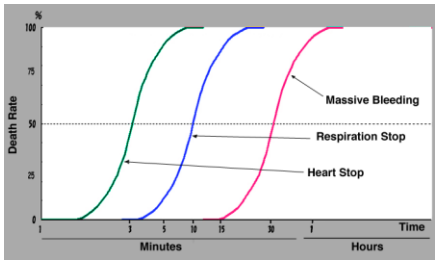
Peter Burke vs. Nick Namias

Governance/Framework for a National Trauma Care System

Goal is Zero Preventable Trauma deaths

Trauma is time sensitive

The majority of Trauma deaths happen early



To make a difference pts need to get to expert care quickly which requires a mature, integrated trauma system

Dr. Burke: Governance/Framework for a National Trauma Care System

Are we there yet?

Annual Trauma deaths in the USA - 150,000

Too early to Pull up the ladder, Jack and the More the Merrier should remain the motivating force for trauma systems development

Dr. Namias Conclusions

- Outcomes are poor in a state with proliferation of trauma centers (don't know what they were before)
- Proliferation induced a competitive spirit, but not competition
- Outcome to volume relationship can only be hurt by increasing number of trauma centers

Civilian Governance- Plan A
Unified Central Authority

- Establish White House level directive
- Lead federal/national authority
  - Establishes requirement for states to address injury
  - Mandates minimal trauma system standards
  - Standards developed by a broad multidisciplinary community of trauma system stakeholders
- Local (e.g. state, regional, county) implementation of standards
- Enforcement of standards (teeth) through tie to existing Federal funding programs, and public reporting
- Leverage existing models (e.g. transplant)

Robert Winchell

Civilian Governance- Plan B
Develop an Incremental Approach

- No unified central trauma system authority
- Multidisciplinary community of trauma system stakeholders develops minimal set of trauma system standards
- Develop incremental approach to provide incentives for specific system elements
  - Work with larger coalitions on areas of shared interest

Next steps

- Proceed with option A, go big
- Establish primary focused aim of establishing comprehensive trauma system as a key element of national security
- Seek contact/support in new White House to support this aim
- Establish a working group, including external expertise, to determine where the central authority should best be located
- Establish a broad working group to establish basic trauma system requirements; high level, small number

Problem?

- Research: Lack of priority research funding for trauma and acute care research from any federal source – possible exception of the DOD

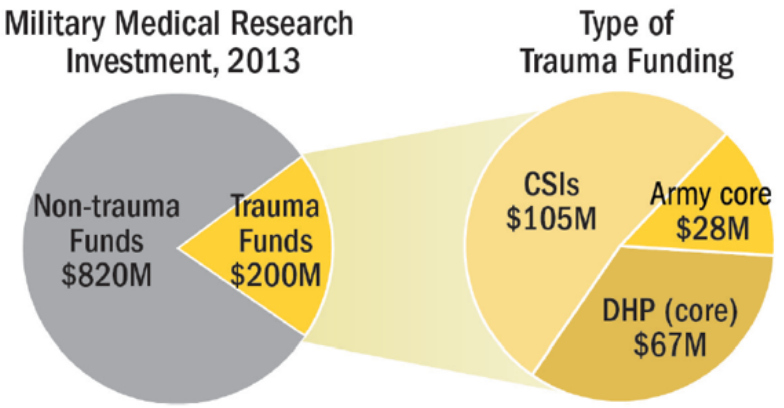
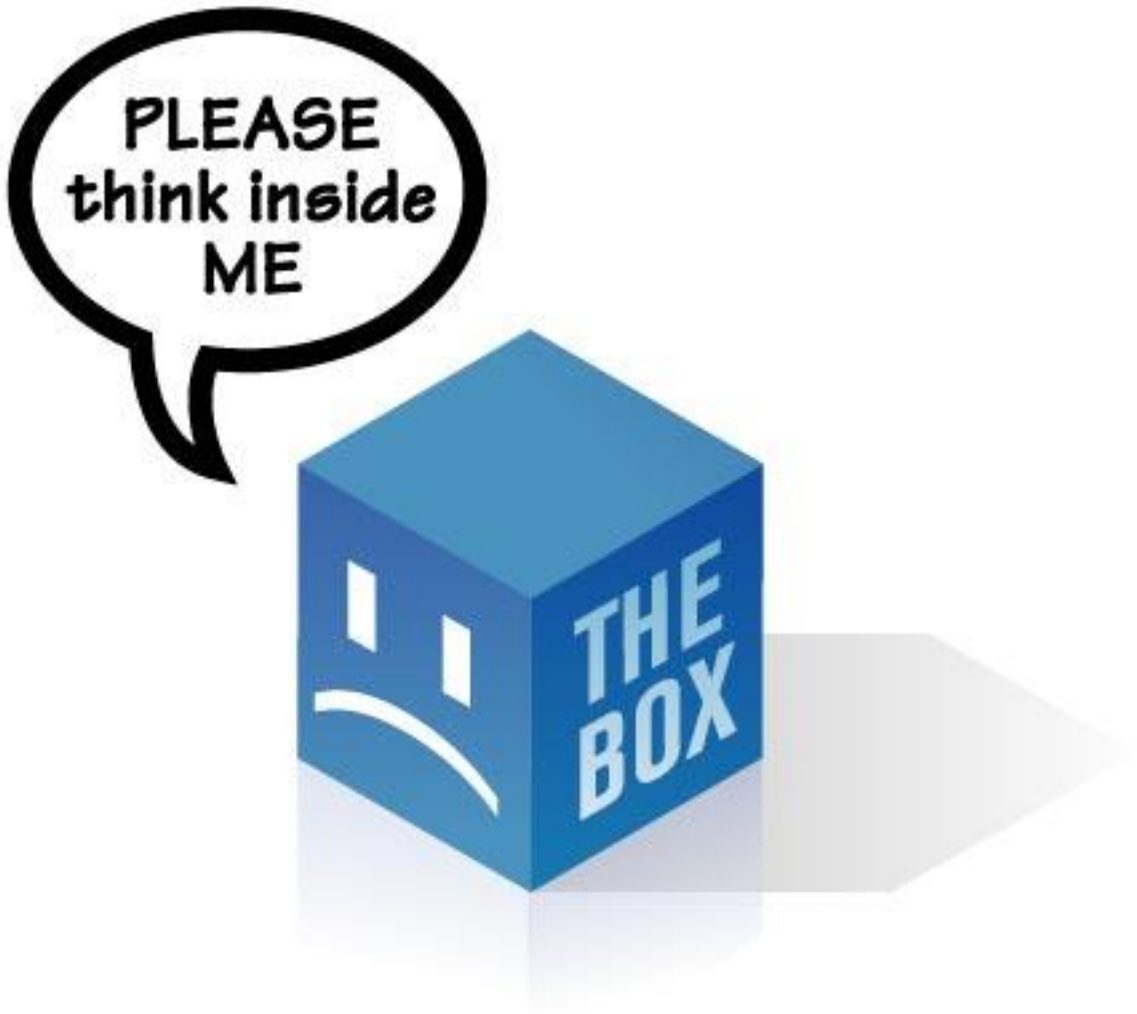


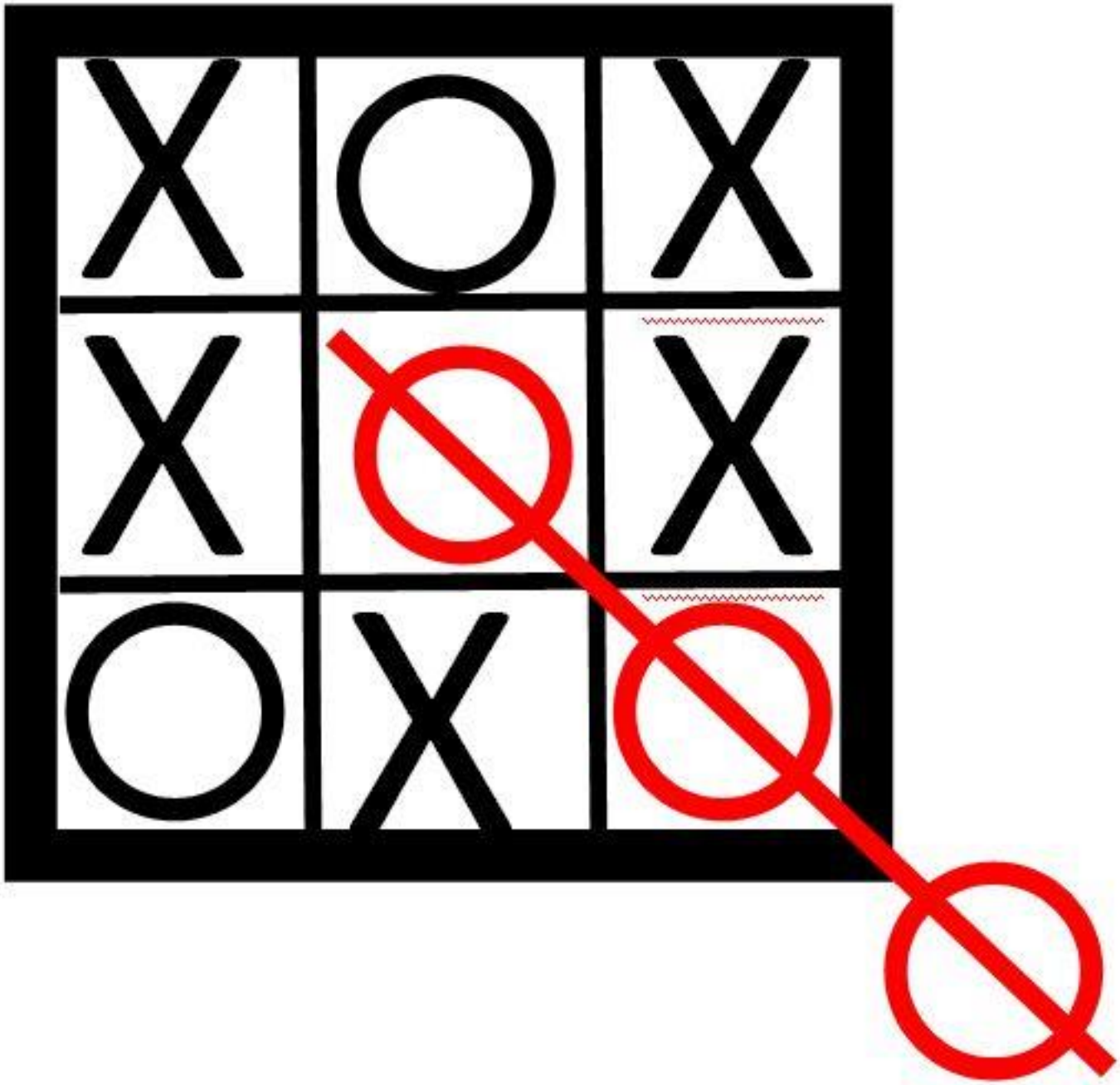
FIGURE 4-5 Funding sources for military medical research, 2013.
NOTE: CSI = Congressional Special Interest; DHP = Defense Health Program.
SOURCE: Data from Rasmussen, 2015.

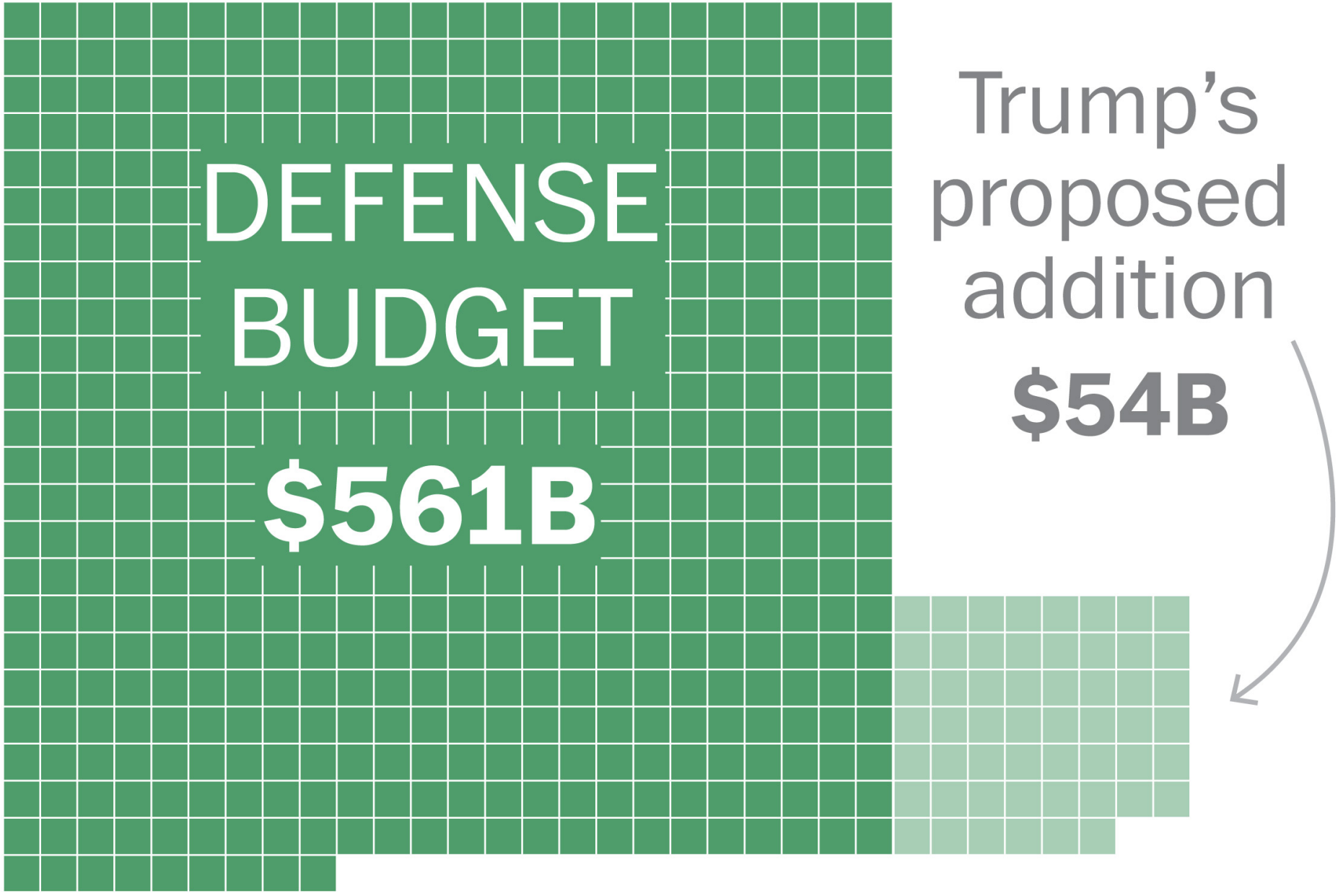

PLEASE
think inside
ME
THE
BOX

Rise in Federal Funding Doubtful

- Continued resolutions
- Sequestration
- Congressional divide


when nothing
goes right...
go left.




DEFENSE
BUDGET
$561B
Trump's
proposed
addition
$54B


DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA
Best Bet for the Near Future
Clinical Research

PRESIDENTIAL ADDRESS

ANNALS OF SURGERY
Vol. 223, No. 5, 453–463

Seed Corn

Impact of Managed Care on Medical Education and Research

James C. Thompson, M.D.

From the Department of Surgery, The University of Texas Medical Branch, Galveston, Texas

Genesis 41:
v. 35 And let them . . . lay up corn . . .
v. 36 . . . that the land perish not through the famine.

"In the Bible, we are admonished to lay up corn so that the land would not perish through famine. If we fail to invest in future education and research, we may have a medical famine."

Dr. Bulger: Next steps?

- National Trauma Research Action Plan
  - Articulate a unified Research Agenda across the continuum of care
  - Define the ASK for financial investment
  - Define a strategy for a federal home for trauma research funding
  - Develop strategies to address regulatory burden
  - Develop a unified approach to advocacy

Dr. Bulger: Next steps?

- ADVOCACY, ADVOCACY, ADVOCACY
- Define Research agenda and priorities to support advocacy efforts
- Advocate for a National Trauma Research Institute?
- Advocate for a National Trauma Research Action Plan
- Bring all organizations interested in trauma research together to advocate with a unified/coordinated approach
  - Eliminate: “bone/blood/burn/brain”
- Engage the public and trauma survivors in advocacy efforts

Eileen Bulger

Discussion

Problem?

- Data and data linkage: greatly improved but promise not yet realized

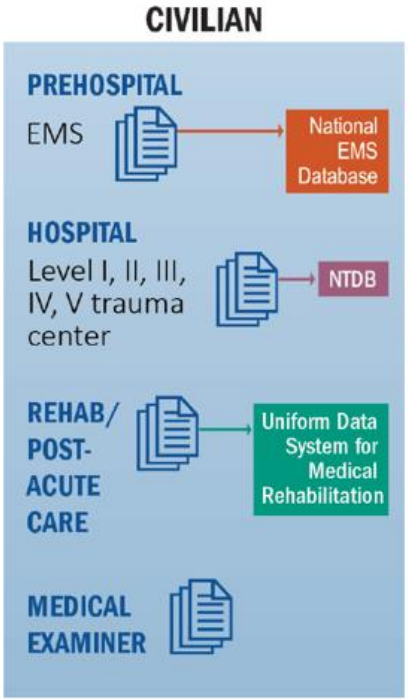


FIGURE 4-2 Digital capture of aggregate trauma patient data in multiple national-level civilian data systems spanning the continuum of care.

NOTE: EMS = emergency medical services; NTDB = National Trauma Data Bank.

Why?

- Data illuminates the way

Avery Nathens

Structure → Process → Outcome

- Structure and process emphasized in time when outcomes not available
- Assumptions
  - One size fits all
  - Appropriate structure and function would lead to good outcomes
- Verification based upon structure and process
  - Disadvantages
    - FTE-heavy
    - Subjective evaluation process for verification
- If comparable outcomes were available, evolution different

Mike Chang vs. Jorie Klein

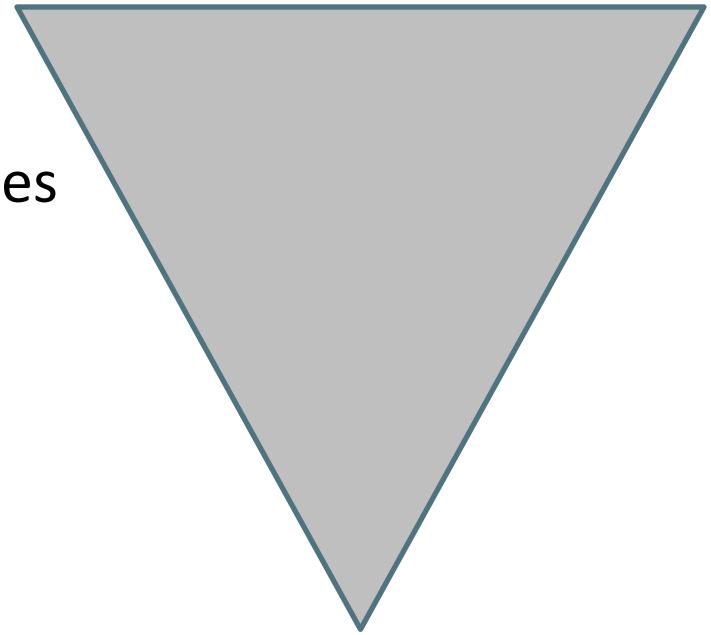
Evolution of Verification Process

- Current weaknesses
  - Time consuming, expensive, labor intensive for COT
  - Time consuming, expensive, labor intensive for trauma center
  - Variability in evaluation of PI process
    - PI process is the focus of verification
  - Cumbersome and expensive from a customer perspective
- Outcomes-based verification would be less expensive, more objective, and lead to:
  - Improved customer satisfaction
  - Better outcomes for injured patients

Measurement of Quality

Structure

- Staff, physical resources, policies



Process

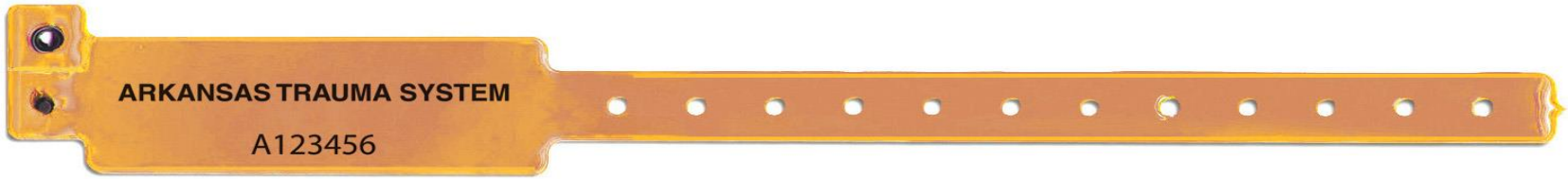
- Was medicine properly practiced?

Outcome

- Modifiable


Outcomes
Verified Trauma Center
System Integration
PIPS
Volume
Nursing
Outreach
Prehospital
TMD
Blood Bank
TPM
Culture
Transfer Process
NTDB
Surgical Commitment
Advocacy
Board Resolution
TQIP
Education
Peer Review
OR
Resources
Medical Staff
Psych Support
Injury Prevention
Critical Care
Trauma
Radiology
Organizational Leadership & Commitment
Registry
Anesthesiology
Emergency Medicine
Diagnostics
Neurosurgery
Trauma Protocols
Orthopedics
Research
Evidence-Based Practice
Lab
Feedback
Rehabilitation
FUNDING
Disaster Response

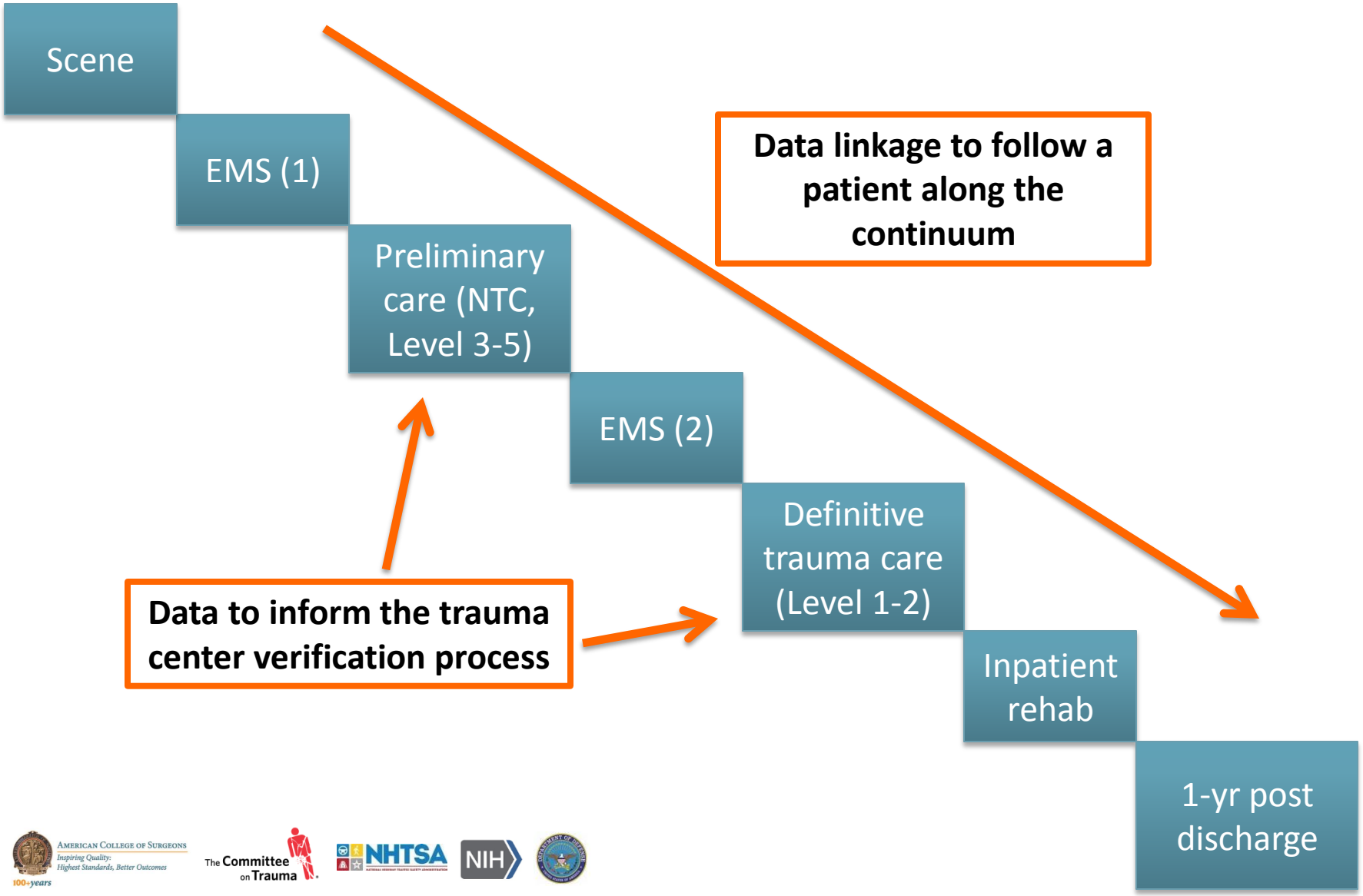
Uniform Trauma ID Bands
What are they?



- Alpha-numeric code on each band supplied to all hospitals and pre-hospital providers
- Durable vinyl material and brightly colored
- Left in place through discharge & ID# documented in EMS, hospital registries –UNIQUE IDENTIFIER across continuum
- Applied to all patients meeting pre-specified criteria
  - "Go wide" to avoid missing patients

Mike Sutherland vs. Pat Reilly

Trauma Continuum



Problem?

- Military & civilian workforce: lessons lost between conflicts—military battlefield lessons not reliably translated to civlilian care

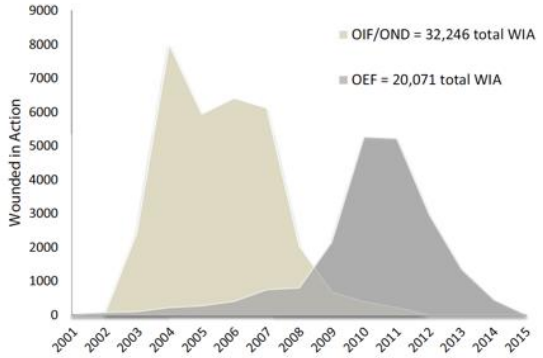


FIGURE 1-6 Wounded in action between 2001 and 2015, Operation Enduring Freedom and Operation Iraqi Freedom/Operation New Dawn.

NOTES: Data were retrieved from the Defense Casualty Analysis System (DCAS). OEF = Operation Enduring Freedom; OIF = Operation Iraqi Freedom; OND = Operation New Dawn; WIA = wounded in action.

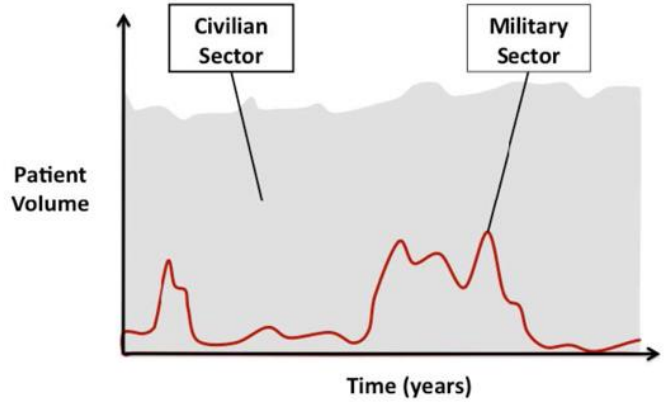


FIGURE 5-2 The episodic nature of trauma care in the military sector as compared with the civilian sector.

SOURCE: Cannon, 2016.

We don't have enough trauma surgeons

- Military Health System
  - A large 50 billion dollar a year HMO.
  - Maintains soldiers medically ready
  - Maintains a medically ready force?
  - Insufficient volume to maintain competencies of surgeons
- Operational Units
  - Professional Filler System
  - Replaced the Berry Plan
  - Relies on MHS to maintain Competent battlefield healthcare force

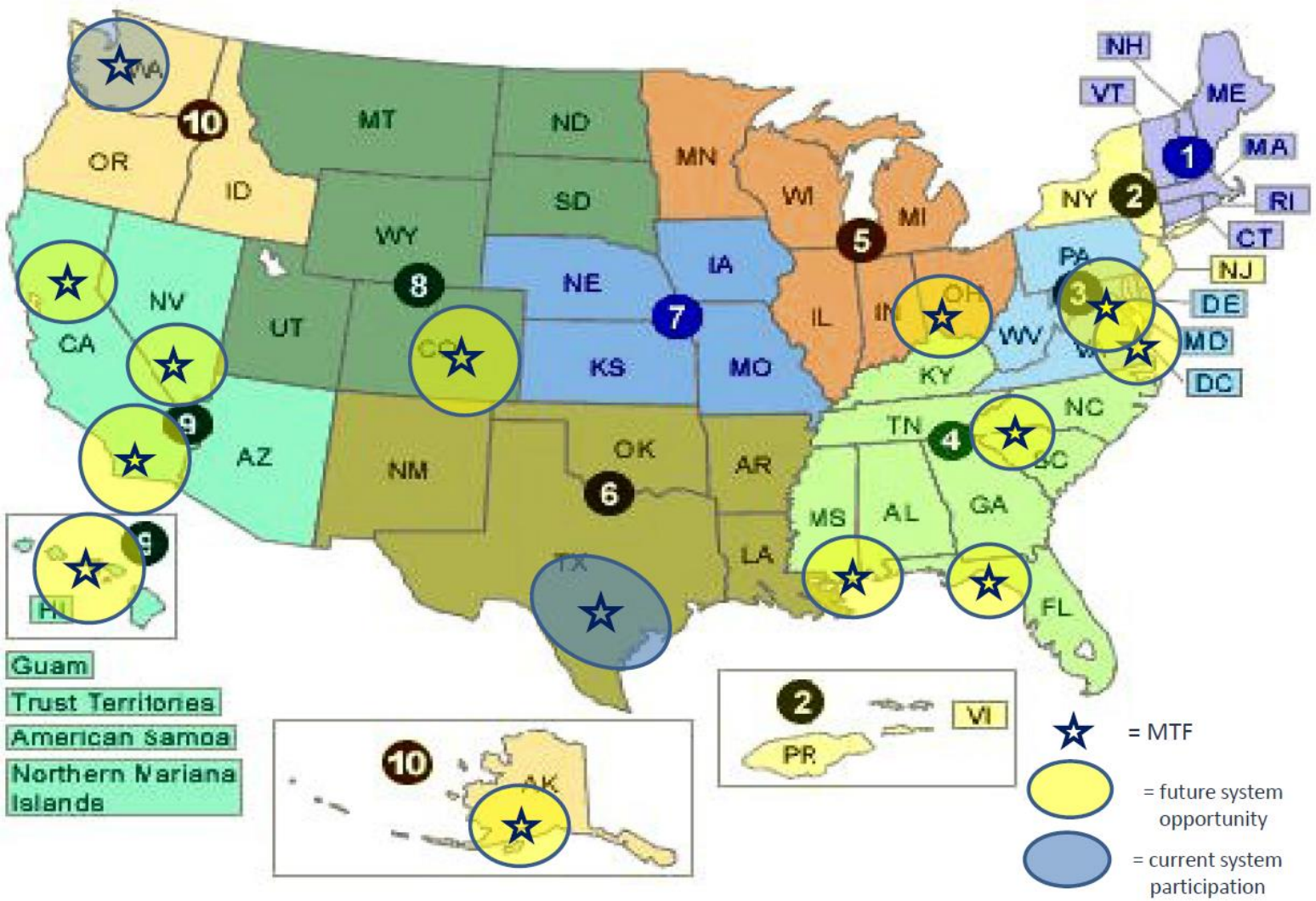
Shawn Nessen vs. Deb Kuhls

Many benefits of joint collaboration using a volunteer medical team

- Joint military forces theater trauma system
- Team system director, nurse coordinators deployed to address trauma system components, deficiencies, trauma PI, Joint Theater Trauma Registry (JTTR), M&M, Op Reports, CPI, develop optimal resources book for the care of combat casualties, prevention (pre-deployment training and PPE)
- Developed standardized documentation; mortality decreased from 16.5% (VW) to 8.8% in the Iraq/Afghanistan war
- Research: MTP; Whole blood; utilization of TXA
- Coagulopathy detection

Eastridge BJ, Jenkins D, Flaherty S, Schiller H, Holcomb JB. Trauma system development in a theater of war: experiences from Operation Iraqi Freedom and Operation Enduring Freedom. JOT 2006:61:1366-1373

One Nation One System:



Jeff Bailey

4. Supports National Defense and Homeland Response

Ready DoD Trauma Teams

Community Needs
- Specialty Care
- Surge Capacity

Every MTF should participate in the US Trauma System:

1. Fulfills the law
2. Delivers the ZPD vision of One Nation One System
3. Improves the Nation's Trauma System
4. Supports National Defense and Homeland Response

Participants January 2017 and Today

Donald Jenkins

Lenworth Jacobs

Stephanie Kwortnik

Lance Stuke

Robert Walker

Shawn Nessen

Deb Kuhls

Jeffrey Bailey

Peggy Knudson

Kyle Remick

David Teague

Leonard Weireter

Matt Martin

Don Jenkins

Conclusions and Action Plan

- Widely disseminate proposals and plan to stakeholders
- Inform the Defense Trauma Enterprise (DTE) ongoing capabilities based assessment
- Work in collaboration with ACS advocacy group and Coalition for National Trauma Research (CNTR) and other relevant stakeholders to inform elected officials
- Enabling legislation has been created through the NDAA 2017
- Any additional initiatives to be undertaken should be addressed through pending legislative vehicles

Town Hall

- Need for improved communication
- Need for messaging
- Inclusive vs Less inclusive definition of patients
- Importance of trauma survivors as advocates
- Stop the Bleed program as a springboard to improved community dialogue and conversation

Town Hall

- Trauma as the focus or focus on Emergency Health Care or Unscheduled Care?
- Need for effective and trageted public service announcements
- Need for a strong communication strategy
- Inclusive trauma system was discussed - include all of the agents of acute injury - kinetic injury, bullets, thermal energy, cars, burns, opioid overdoses, chemical injuries, and death. Consult needed from Research America
- EMS and Trauma System as a framework for other time sensitive conditions; ACS needs to set standards for trauma systems

Second Day: Challenges, Best Practices and Implementation

- Systems approach to other time sensitive diseases
- Prehospital perspective
- Civilian – Military – Military –Civilian Lessons Learned
- Trauma Systems as a framework for disaster preparedness and response
- Community Preparedness: Stop the Bleed
- Value of a Regional Medical Operations Center
- Importance of Prevention in Trauma Systems
- NHTSA: Road to Zero Program and possible collaboration

Integrating Civilian and Military Trauma Systems

- NDAA: What it is and its importance.
- Integrating Military Treatment Facilities into Civilian Systems
- Integrating Military Providers into Civilian Facilities
  - Hospital
  - EMS
- Challenges in Integration
- Panel

Peter W. Thomas

- Advocate
- Attorney
- Leader
- Trauma Survivor

What to do?

- Organized, collaborative, persistent, passionate effort to work together to implement a National Trauma Action Plan
- Focus on the best interest of the patient
- Expertise: Patient care, Quality, Education, Prevention
- Advocacy
  - Realize political power
  - Working together with our community and our patients is critical
- ACS COT major short and long term goal to turn these recommendations into action to improve patient care
- Every single trauma care provider in the US is needed in this effort

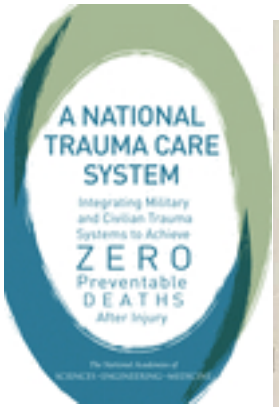
Our Goal Today

- Break down the space into manageable and relatable areas
- Work towards a simple communication strategy
  - Is naturally organizing and aligning
  - Encompasses the whole
  - Patient centered
  - Provides a framework for describing the needed action from Academies report
- Provide a civil, collegial and inclusive forum for dialogue & strategy

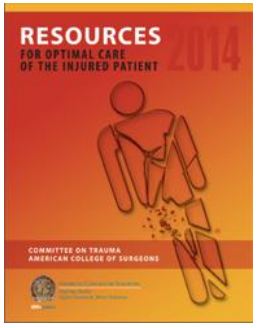
“A National Trauma Action Plan”

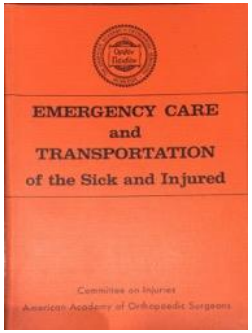
- We need a great trauma system.
- We can’t have a great trauma system without great research.
- We can’t have great research without great data.
- We can’t implement a great trauma system without great education and training.
- We need a national trauma action plan.

The Time for Action is Now



- 50 years since the first great strides were made
- National Academies of Medicine Report
  - 1966 and 2016
- Turbulent times
- Aligned civilian and military leaders
  - Committed group of young and senior leaders
  - Organizational commitment
- Still critical need with large burden of disease
  - Most important health problem of our children and our uniformed service personnel
- Important for national security
- Important for our children






Thank You!