A NATIONAL TRAUMA CARE SYSTEM

Integrating Military and Civilian Trauma Care Systems to Achieve Zero Preventable Deaths After Injury

DHB Briefing
August 9, 2016

The National Academies of
SCIENCES · ENGINEERING · MEDICINE

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

Committee has representation from:

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Stratitia, Inc., and 2c4 Technologies, Inc.
Goldkind Consulting, LLC
Brigham and Women's Hospital, and Harvard University
University of Texas Health Science Center
Intermountain Healthcare
Parkland Health & Hospital System
Geisinger Health System
University of Connecticut
Johns Hopkins University School of Hygiene and Public Health
University of Maryland School of Medicine
The Billions Institute
Tulane Department of Surgery (until July 2015)
Consortia for Improving Medicine with Innovation and Technology (CIMIT); Harvard Medical School
University of California, San Francisco
Princeton University (until August 2015)
Denver Health EMS-Paramedic Division
R. Adams Cowley Shock Trauma Center, University of Maryland
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Study Sponsors

- 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 Material Command
- U.S. Department of Homeland Security's Office of Health Affairs
- U.S. Department of Transportation's National Highway Traffic Safety Administration

Charge to the Committee

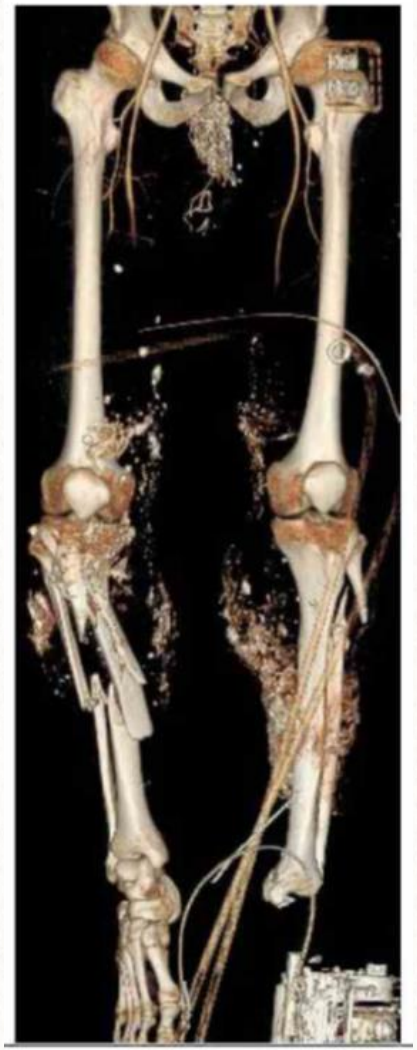
- Identify and describe the **key components of a learning health system** necessary **to optimize care** of individuals who have sustained traumatic injuries **in military and civilian settings**.
- Characterize the military's Joint Trauma System (JTS) and Defense Health Program research investment and their integrated **role as a continuous learning and evidence-based process improvement model**.
- Examine opportunities to **ensure that advances in trauma care are sustained and built on** for future combat operations.
- Consider **strategies necessary to more effectively translate**, sustain, and build upon elements of knowledge and practice from the military's learning health system into the civilian health sector and **lessons learned** from the civilian sector into the military sector.

Case Studies

To address its charge, the committee drew upon 5 case studies centered around common combat-related injuries that were also relevant to civilian sector trauma cases:

- Extremity hemorrhage
- Blunt trauma with vascular injury
- Dismounted complex blast injury
- Pediatric burn
- Severe traumatic brain injury

Case studies were used throughout the report to highlight military learning processes, gaps, and opportunities for improved translation of best practices to and from the civilian sector.



Definitions

- **Preventable deaths after injury:** Those casualties whose lives could have been saved by appropriate and timely medical care, irrespective of tactical, logistical, or environmental issues.

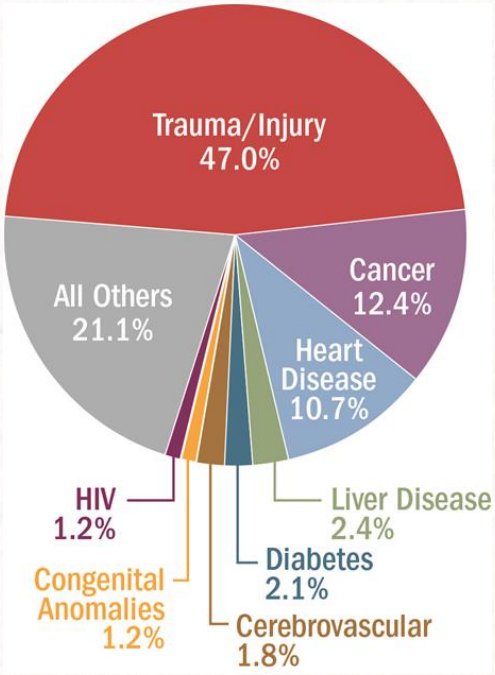
- **Focused empiricism:** An approach to process improvement under circumstances in which: (1) high-quality data are not available to inform clinical practice changes, (2) there is extreme urgency to improve outcomes because of high morbidity and mortality rates, and (3) data collection is possible.

  A key principle of focused empiricism is using the best data available in combination with experience to develop clinical practice guidelines that, through an iterative process, continue to be refined until high-quality data can be generated to further inform clinical practice and standards of care.

- **Expert trauma care workforce:** Each interdisciplinary trauma team at all Roles of care includes an expert for every discipline represented. These expert-level providers oversee the care provided by their team members, all of whom must be minimally proficient in trauma care (i.e., appropriately credentialed with current experience caring for trauma patients).

Context

- **The Imperative**
  - The U.S. service members the nation sends into harm's way and every American should have the best possible chance for survival and functional recovery after injury.
- **The Urgency**
  - Military burden: ~6,850 service member deaths in Iraq and Afghanistan. Nearly 1,000 from potentially survivable injuries.
  - Civilian burden: 147,790 U.S. trauma deaths in 2014 - as many as 30,000 may have been preventable with optimal trauma care.
  - Threats from active shooter and other mass casualty incidents.
  - As wars end and service members leave the military, the knowledge, experience and advances in trauma care gained over past decade are being lost.
- **The Opportunity**
  - Existence of a military trauma system built on a learning system framework that has achieved unprecedented survival rates for casualties.
  - Organized civilian trauma system that is well positioned to assimilate recent wartime trauma lessons learned and serve as a repository and incubator for innovation during the interwar period.



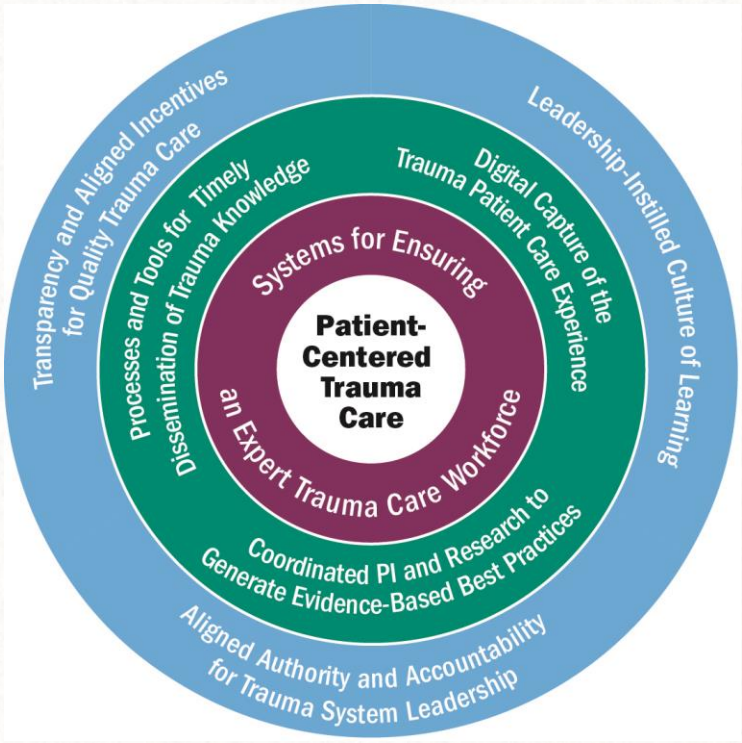
Traumatic injury accounts for nearly half of all deaths for Americans under 46 years of age and cost the nation $670B in 2013.

Framework for a Learning Trauma Care System

Committee built upon the components of a continuously learning health system articulated by IOM (2013) report *Best Care at Lower Cost.*

Components of a **continuously learning trauma care system:**

- Digital capture of the patient care experience
- Coordinated performance improvement and research to generate evidence-based best trauma care practices
- Processes and tools for timely dissemination of trauma knowledge
- Systems for ensuring an expert trauma care workforce
- Patient-centered trauma care
- Leadership-instilled culture of learning
- Transparency and incentives aligned for quality trauma care
- Aligned authority and accountability for trauma system leadership

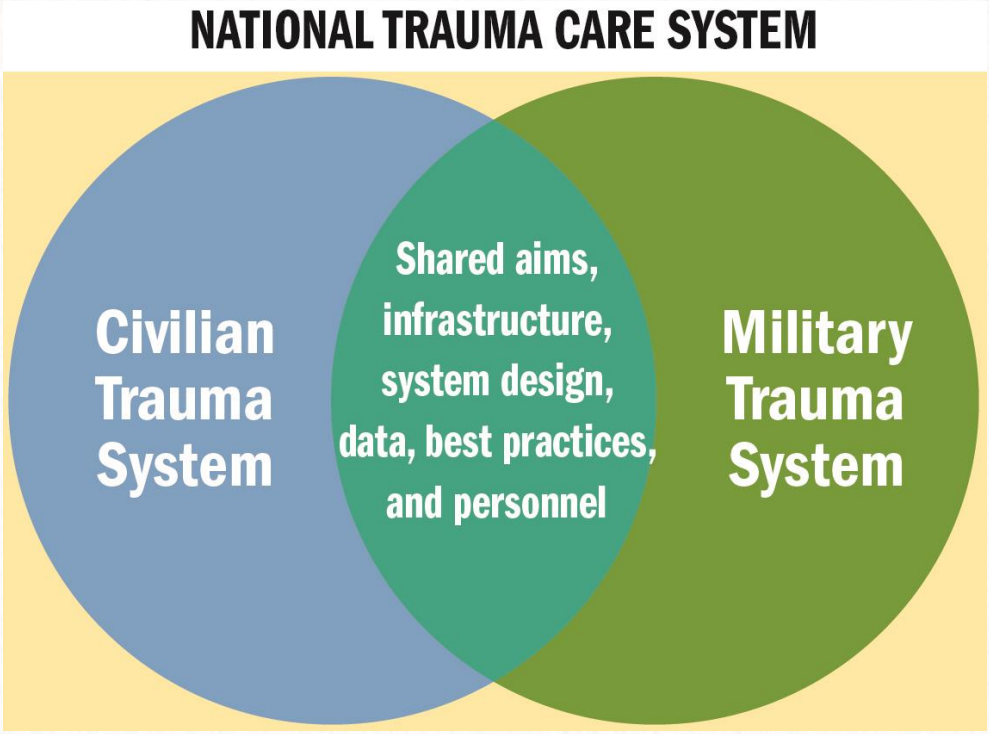


Patient centeredness is the core of a learning trauma care system.

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."

Findings and Recommendations

The Aim (Rec 1)

The Role of Leadership

- National-Level Leadership (Rec 2)
- Military Leadership (Rec 3)
- Civilian Sector Leadership (Rec 4)

An Integrated Military–Civilian Framework for Learning to Advance Trauma Care

- Improving the Collection and Use of Data (Recs 5 and 6)
- A Collaborative Research Infrastructure in a Supportive Regulatory Environment (Recs 7 and 8)
- Systems and Incentives for Improving Transparency and Trauma Care Quality (Recs 9 and 10)
- Ensuring an Expert Workforce (Rec 11)

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.

National-Level Leadership

Key Finding:

- 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.

Recommendation 2: The White House should lead the integration of military and civilian trauma care to establish a national trauma care system. This initiative would include assigning a locus of accountability and responsibility that would ensure the development of common best practices, data standards, research, and workflow across the continuum of trauma care.

Full list of actions detailed in bullets that follow the recommendation

Military Leadership

Key Findings:

- **Responsibility, authority, and accountability** for battlefield care **are diffused** across central and service-specific medical leadership, as well as line leadership.
- There is **no overarching authority** responsible for ensuring medical readiness to deliver combat casualty care.

Recommendation 3: The Secretary of Defense should ensure combatant commanders and the Defense Health Agency (DHA) Director are responsible and held accountable for the integrity and quality of the execution of the trauma care system in support of the aim of zero preventable deaths after injury and minimizing disability.

- The Secretary of Defense also should ensure the DHA Director has the responsibility and authority and is held accountable for defining the capabilities necessary to meet the requirements specified by the combatant commanders with regard to expert combat casualty care personnel and system support infrastructure.
- The Secretary of Defense should hold the Secretaries of the military departments accountable for fully supporting DHA in that mission.
- The Secretary of Defense should direct the DHA Director to expand and stabilize long-term support for the Joint Trauma System so its functionality can be improved and utilized across all combatant commands, giving actors in the system access to timely evidence, data, educational opportunities, research, and performance improvement activities.

Full list of actions detailed in bullets that follow the recommendation

Civilian Sector Leadership

Key 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), despite past recommendations that such a lead agency be established.

Recommendation 4: The Secretary of HHS should designate and fully support a locus of responsibility and authority within HHS for leading a sustained effort to achieve the national aim of zero preventable deaths after injury and minimizing disability. This leadership role should include coordination with governmental (federal, state, and local), academic, and private-sector partners and should address care from the point of injury to rehabilitation and post-acute care.

Full list of actions detailed in bullets that follow the recommendation

Improving the Collection and Use of Data

Key Findings:

- The **collection and integration of trauma data** across the care continuum **is incomplete** in both the military and civilian sectors.
- **Data are fragmented** across existing trauma registries and other data systems, and **data sharing** within and across the military and civilian sectors **is impeded** by political, operational, technical, regulatory, and security-related barriers.

Recommendation 5: The Secretary of HHS and the Secretary of Defense, together with their governmental, private, and academic partners, should work jointly to ensure that military and civilian trauma systems collect and share common data spanning the entire continuum of care. Within that integrated data network, measures related to prevention, mortality, disability, mental health, patient experience, and other intermediate and final clinical and cost outcomes should be made readily accessible and useful to all relevant providers and agencies.

Specifically:

- Congress and the White House should hold DoD and the VA accountable for enabling the linking of patient data stored in their respective systems.

Full list of actions detailed in bullets that follow the recommendation

Improving the Collection and Use of Data: Timely Access to Data and Knowledge

Key Findings:

- The military's teleconsultation programs in theater are jeopardized by a lack of funding and institutionalization.
- While best practices in telemedicine exist within the United States (e.g., Project ECHO), this tool is **not used to its full potential** in military or civilian trauma care.
- More formal methods for military-civilian collaboration could better translate military best practices and its agile approach into civilian guideline development processes.

Recommendation 6: To support the development, continuous refinement, and dissemination of best practices, the designated leaders of the recommended national trauma care system should establish processes for real-time access to patient-level data from across the continuum of care and just-in-time access to high-quality knowledge for trauma care teams and those who support them.

Full list of actions detailed in bullets that follow the recommendation

A Collaborative Military–Civilian Research Infrastructure

Key Findings:

- Despite its significant societal burden, **civilian investment** in trauma research is **not commensurate** with the importance of injury.
- Sustainment of DoD's trauma research program is threatened by funding reductions though previously identified gaps in combat casualty care capabilities remain **less than 50 percent resolved**.

Recommendation 7: To 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, the White House should issue an executive order mandating the establishment of a National Trauma Research Action Plan requiring a resourced, coordinated, joint approach to trauma care research across DoD, HHS (NIH, AHRQ, CDC, FDA, PCORI), DOT, the VA, and others (academic institutions, professional societies, foundations).

Full list of actions detailed in bullets that follow the recommendation

A Supportive Regulatory Environment

Key Findings:

- The ambiguity between quality improvement and research slows and even impedes quality improvement and research activities.
- FDA and DoD requirements for informed consent **impede needed trauma research**.

Recommendation 8: To accelerate progress toward the aim of zero preventable deaths after injury and minimizing disability, regulatory agencies should revise research regulations and reduce misinterpretation of regulations through policy statements (guidance).

Points of consideration:

- Amend the FDA's authority so as to allow the FDA to develop criteria for waiver or modification of the requirement of informed consent for minimal-risk research.
- For nonexempt human subjects research that falls under HHS or FDA human subjects protections, DoD should consider eliminating the need to also apply 10 U.S.C. 980 to the research.
- Distinction between QI and research needs to support pragmatic learning methods that align with a learning health system (e.g., focused empiricism).

Full list of actions detailed in bullets that follow the recommendation

Systems and Incentives for Improving Transparency

Key Findings:

- In both the military and civilian sectors, **performance transparency** at the provider and system levels **is lacking**.
- No process exists for benchmarking trauma system performance across the entire continuum of care within and between the military and civilian sectors.
- **Military participation** in national trauma quality improvement collaboratives **is minimal**; only a single military hospital participates in an ACS TQIP.

Recommendation 9: All military and civilian trauma systems should participate in a structured trauma quality improvement process.

- ACS should expand TQIP to encompass measures from point-of-injury/prehospital care through long-term outcomes, for its adult as well as pediatric programs.
- CMMI should pilot, fund, and evaluate regional, system-level models of trauma care delivery.

Full list of actions detailed in bullets that follow the recommendation

Systems and Incentives for Improving Trauma Care Quality

Key Findings:

- The **greatest opportunity to save lives** after injury is in the prehospital setting.
- Prehospital care is not currently linked to health care delivery reform efforts.
- Variable standards of care, a paucity of universal protocols and current reimbursement practices for civilian EMS (i.e., pay-for-transport) are **major impediments to the seamless integration of prehospital care** into the trauma care continuum.

Recommendation 10: Congress, in consultation with HHS, should identify, evaluate, and implement mechanisms that ensure the inclusion of prehospital care (e.g., emergency medical services) as a seamless component of health care delivery rather than merely a transport mechanism.

Possible mechanisms that might be considered include:

- Amendment of the Social Security Act such that emergency medical services is identified as a provider type enabling establishment of conditions of participation.
- Modification of CMS's ambulance fee schedule to better link the quality of prehospital care to reimbursement and health care delivery reform efforts.
- Establishing responsibility, authority, and resources within HHS to ensure that prehospital care is an integral component of health care delivery, not merely a provider of patient transport.

Full list of actions detailed in bullets that follow the recommendation

Ensuring an Expert Workforce

Key Findings:

- Policy and operational barriers—variable trauma workload, beneficiary care responsibilities, and the lack of defined trauma care career paths—**impede the military's ability to recruit, train, and retain** an expert trauma care workforce.
- Reliance on just-in-time (e.g., trauma courses, short-duration predeployment training programs) and on-the-job training **does not provide the experience necessary** to ensure an expert trauma care workforce.
- DoD lacks validated, standardized trauma training and skill sustainment programs.

Recommendation 11: To ensure readiness and to save lives through the delivery of optimal combat casualty care, the Secretary of Defense should direct the development of career paths for trauma care. Furthermore, the Secretary of Defense should direct the Military Health System to pursue the development of integrated, permanent joint civilian and military trauma system training platforms to create and sustain an expert trauma workforce.

Specifically:

- Assign military trauma teams to civilian trauma centers and ensure the verification of a subset of MTFs as Level I, II, or III trauma centers.
- Hold DHA accountable for standardizing the curricula, skill sets, and competencies for military physicians, nurses, and allied health professionals.

Full list of actions detailed in bullets that follow the recommendation

Thank you

Report was released June 17th

Free PDF of the report is available at

nationalacademies.org/TraumaCare

Summary materials also available online

- 4-page report brief
- Recommendation List
- Infographic
- Slide set

Next Steps

- Multi-stakeholder Dissemination Meeting to be held Nov 1-2, 2016
- Discussion of the report at annual AMSUS meeting on Dec 2nd

For more information about the study, please contact:

Study Director

http://nas.edu/