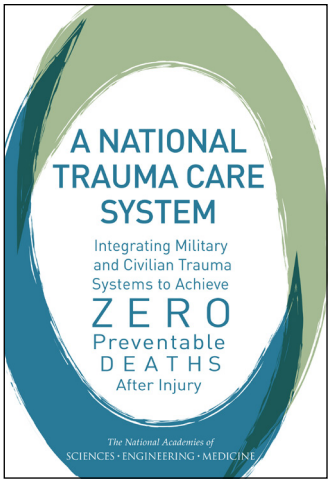
REPORT IN BRIEF
JUNE 2016
Health and Medicine Division

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



Trauma care in the military and civilian sectors is a portrait of contradiction. On one hand, the nation has never seen better systems of care for those wounded on the battlefield or severely injured within the United States. On the other, many trauma patients, depending on when or where they are injured, do not receive the benefit of those gains. Far too many die needlessly or sustain lifelong disabilities as a result.

Hundreds or more U.S. service member lives could likely be saved in future wars if trauma care were optimal. Those potential gains soar into the tens of thousands of lives saved if past and future improvements in military trauma care could be systematically translated into the civilian sector.

To this end, sponsors representing both the military and civilian sectors asked the National Academies of Sciences, Engineering, and Medicine to convene a committee to recommend ways to ensure that lessons learned from the military's experiences in Afghanistan and Iraq are sustained and built on for future combat operations–and that they are translated into the civilian system.

The resulting report, *A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury,* presents a vision for a national trauma care system driven by the clear and bold aim of zero preventable deaths after injury and minimal trauma-related disability, to benefit those the nation sends into harm's way in combat as well as every American.

The committee envisions a national trauma care system grounded in sound learning health system principles applied across the continuum of care, from point of injury to hospitalization, rehabilitation, and beyond.

THE NEED FOR A JOINT MILITARY–CIVILIAN APPROACH TO TRAUMA CARE

During the wars in Afghanistan and Iraq, the percentage of wounded service members who died of their injuries reached the lowest point in recorded wartime history. Trauma care advances were driven by an urgency to save lives that precluded reliance on slow and costly clinical trials to inform improvements in trauma care practices and drove the Military Health System and its emerging Joint Trauma System to embrace a more agile approach to advancing both

combat casualty care and a culture of continuous performance improvement. This learning approach aligns remarkably with the attributes of a "learning health system," in which data from each care experience are captured and care practices evolve incrementally and pragmatically based on the best available evidence.

The full potential of such a system, however, is not being realized in either the military or the civilian realm. Both sectors face gaps that lead to preventable death and disability after injury, including variability in trauma care capabilities and inconsistency in use of best practices over space and time, as well as a lack of consolidated leadership for trauma systems.

Significant improvements in military trauma care and learning can be achieved within the military sector alone, for example, with the standardization of best practices and training requirements across the U.S. Department of Defense. However, sustaining needed expertise and capacity in the military trauma care system is simply impossible absent integration with civilian trauma care systems, given the essential role of the civilian sector in facilitating combat-relevant research and providing training opportunities for the military trauma care workforce.

Such integration also has implications for trauma care in the civilian sector, as trauma is the leading cause of death for Americans under the age of 46 and, in 2013 alone, was associated with an economic cost of approximately $670 billion in medical care expenses and lost productivity. Currently, civilian trauma care is provided through a patchwork of regional trauma systems in which mortality varies twofold between the best and worst trauma centers in the nation. The committee estimates that with optimal trauma care, as many as 20 percent of the 147,790 U.S. deaths from trauma in 2014—nearly 30,000 in a single year—may have been preventable.

A VISION FOR A NATIONAL TRAUMA CARE SYSTEM

Continued progress in trauma care capability will require better conduits for the continuous and seamless exchange of knowledge between the two sectors. A national strategy and joint military–civilian approach for improving trauma care is currently lacking, placing lives unnecessarily at risk. A unified effort driven by committed leadership from both sectors is needed to address this gap and ensure the delivery of optimal trauma care to save the lives of Americans injured within the United States and on the battlefield.

The committee envisions a national trauma care system grounded in sound learning health system principles applied across the continuum of care, from point of injury to hospitalization, rehabilitation, and beyond. Achieving this vision will require a strategic systems approach centered on shared aims, common standards, an integrated framework, clear lines of knowledge transfer, and shared points of accountability. The committee offers 11 recommendations toward this goal.

THE ROLE OF LEADERSHIP

No level of government below the White House has the ability to catalyze development of the necessary partnerships between governmental and nongovernmental leaders and to ensure coordination and accountability across the many federal agencies involved in trauma care. For this reason, the committee recommends that the White House lead the integration of military and civilian trauma care to establish a national trauma care system. Such a system should unite military and civilian trauma leaders around a national aim of achieving zero preventable deaths after injury and minimizing trauma-related disability. In support of this effort, the Secretaries of the Department of Defense and the Department of Health and Human Services should each identify within their respective departments a locus of responsibility and authority to lead and coordinate military and civilian system efforts in pursuit of the national aim.

Improving trauma care will require an unprecedented partnership across military and civilian sectors and a sustained commitment from trauma system leaders at all levels.

A consortium of federal (military and civilian) and other governmental, academic, professional society, and private-sector stakeholders should be convened to jointly define a framework for implementing the national trauma care system, including the designation of stakeholder roles and responsibilities at multiple tiers (see Figure).

IMPROVING THE COLLECTION AND USE OF DATA

Learning and improvement require a continuous supply of data and information. In both sectors, however, trauma patient data are inconsistently collected and fragmented across independent data systems and registries, limiting the extent to which individual patient care and systems of care can be evaluated and improved. The committee recommends that military and civilian trauma systems collect and share common data spanning the entire continuum of care, including prehospital trauma care and long-term outcomes. Moreover, trauma management information systems should be designed to ensure that frontline providers have real-time access to such data.

To realize the full potential of a learning trauma care system, trauma data should be used for performance improvement at the provider, facility, and system levels. The committee recommends that trauma system leaders establish processes to ensure that all trauma care providers have access to data on their performance (e.g., compliance with evidence-based guidelines) relative to that of their peers and that appropriate incentives be established to promote the participation of all military and civilian trauma systems in a structured trauma quality improvement process.

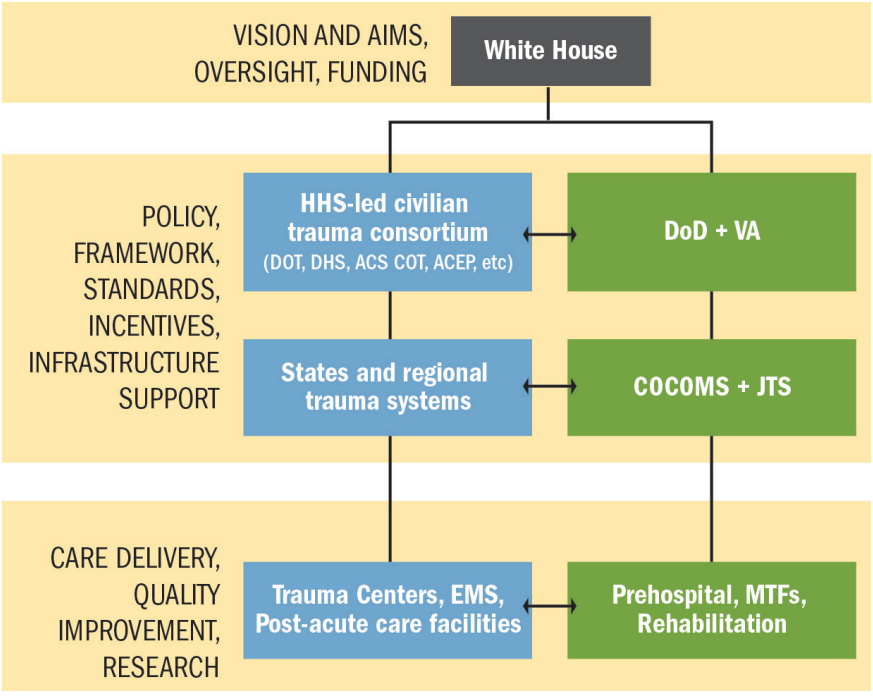


FIGURE
Tiered roles and responsibilities for military and civilian stakeholders in a national trauma care system implicit in report recommendations 1–4. To read the full text of the committee's recommendations, please visit nationalacademies.org/TraumaCare.

FIGURE NOTES: Blue boxes represent the civilian sector; green boxes represent the military sector. ACEP = American College of Emergency Physicians; ACS COT = American College of Surgeons Committee on Trauma; CoCOM = combatant command; DHS = U.S. Department of Homeland Security; DoD = U.S. Department of Defense; DOT = U.S. Department of Transportation; EMS = emergency medical services; HHS = U.S Department of Health and Human Services; JTS = Joint Trauma System; MTF = military treatment facility; VA = U.S. Department of Veterans Affairs.

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

Donald Berwick (Chair)
Institute for Healthcare Improvement

Ellen Embrey
Stratitia, Inc., and 2c4 Technologies, Inc.

Sara F. Goldkind
Goldkind Consulting, LLC

Adil Haider
Harvard University

COL (ret) John Bradley Holcomb
University of Texas

Brent C. James
Intermountain Healthcare

Jorie Klein
Parkland Health & Hospital System

Douglas F. Kupas
Geisinger Health System

Cato Laurencin
University of Connecticut

Ellen MacKenzie
Johns Hopkins University

David Marcozzi
University of Maryland

C. Joseph McCannon
The Billions Institute

Norman McSwain, Jr.
(until July 2015)
Tulane University

John Parrish
Consortia for Improving Medicine with Innovation and Technology (CIMIT), and Harvard University

Rita Redberg
University of California, San Francisco

Uwe E. Reinhardt
(until August 2015)
Princeton University

James Robinson
Denver Health EMS

Thomas Scalea
University of Maryland

C. William Schwab
University of Pennsylvania

Philip C. Spinella
Washington University in St. Louis

Study Staff

Autumn Downey
Study Director

Elizabeth Cornett
Research Assistant

Crysti Park
Senior Program Assistant (until October 2015)

Thelma Cox
Senior Program Assistant (October 2015-May 2016)

Joanna Roberts
Senior Program Assistant (from April 2016)

Monica Gonzales
Associate Program Officer (July 2015-December 2015)

Rebecca Morgan
Senior Research Librarian

John (Jack) Herrmann
Senior Program Officer

Rick Erdtmann
Director, Board on the Health of Select Populations

Andrew M. Pope
Director, Board on Health Sciences Policy

Robert Wood Johnson Foundation Fellow

Leon Dent
Nashville General Hospital and Meharry Medical College

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Trauma Center Association of America

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U.S. Department of Homeland Security

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GENERATING KNOWLEDGE AND DEVELOPING EXPERTISE

To address critical gaps in knowledge, the committee recommends that the White House direct the development of a National Trauma Research Action Plan to guide a coordinated U.S. trauma research program with defined objectives, a focus on high-priority needs, and a level of resourcing from both military and civilian sectors commensurate with the importance of injury. Without compromising human subject protections or patient privacy, regulatory agencies should consider revising research regulations and issuing guidance to ensure that continuous learning approaches are fostered and that critical trauma research and performance improvement activities are not impeded.

Best practices and innovation derived from performance improvement and research efforts will improve trauma care and patient outcomes only if they are disseminated and applied in practice. One recommended approach is to ensure just-in-time access to high-quality knowledge, for example, by embedding clinical guidelines into decision support tools and providing opportunities for real-time interface with trauma care experts (e.g., via telemedicine). However, trauma teams also must develop expertise by caring for trauma patients on a daily basis. The committee recommends the development of trauma-specific career paths for military providers and an integrated network of military and civilian trauma centers to serve as a training platform to create and sustain an expert workforce and to promote the translation of best practices between sectors.

CONCLUSION

Improving trauma care will require an unprecedented partnership across military and civilian sectors and a sustained commitment from trauma system leaders at all levels. The committee's vision is ambitious but achievable. The benefits are clear: the first casualties of the next war would experience better outcomes than the casualties of the last war, and all Americans would benefit from the hard-won lessons learned on the battlefield.

To read the full text of all of the committee's recommendations, please visit nationalacademies.org/TraumaCare.♦♦♦

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