A Shared Ethos: The Military Health System Strategic Partnership with the American College of Surgeons

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Surgeons in a current war never begin where the surgeons in the previous war left off; they always go through another long learning period.
Dr (Col) Edward D Churchill[1]

BACKGROUND

The US military did not go off to the wars in Iraq and Afghanistan with a trauma system in place, but by necessity, an extremely effective system was developed by military surgeons who were trained in the current civilian trauma system, and it was based on the principles developed by the American College of Surgeons Committee on Trauma.[2,3] The resulting Joint Theater Trauma System spans thousands of miles over 3 continents and includes 5 levels of trauma center care, a flying intensive care unit in the form of the Air Force's Critical Care Air Transport Teams, 43 clinical practice guidelines, a detailed trauma data registry, and a weekly worldwide performance improvement conference. This comprehensive system has resulted in the lowest wartime case fatality rate ever recorded, which is particularly remarkable when one considers that the severity of injuries has steadily increased over the course of this 15-year conflict, with the transition from gunshot wounds in Iraq to increasingly effective explosive devices in Afghanistan. However, because the nature of the current conflicts have changed and casualties have thankfully diminished, it is critical that the elements of this trauma system, which has saved so many lives and limbs, are maintained and ready, especially given the current uncertain state of the world. To that end, the theater trauma system has evolved into the Joint Trauma System Defense Center of Excellence (JTS DCoE). This Center includes the military's requirements-driven trauma research program referred to as the Department of Defense (DoD) Combat Casualty Care Research Program and the DoD's medical education and training institutions at The Uniformed Services University of the Health Sciences in Bethesda, MD and the Military Enlisted Training Center in San Antonio, TX. Sustainment of this learning health system in trauma is particularly relevant given that future combat scenarios may be more isolated and complex and less amenable to what was readily available for trauma care during the last wars.

It is worth noting that calculations based on somewhat limited data from the Joint Trauma System (circa 2005) suggest that the case fatality rate was closer to 20% than to the 9%, where it currently resides (Fig. 1).[4,5] Although the maturation of the military's learning system in trauma has certainly contributed to the improved survival rate, so too did the maturation of deployed surgeons. Data compiled by both civilian and military investigators have demonstrated that at the beginning of the conflicts in Iraq and Afghanistan, the majority of surgeons who were deployed for the first time were within a year or 2 of completion of their surgical residencies, many had not yet been certified by the American Board of Surgery, and most had limited trauma training.[6] Less than half had received any trauma-specific pre-deployment training. With the current focus on minimally invasive surgical procedures during residency and the lack of intensive trauma experience in most military general surgery programs, there is a legitimate concern that the next generation of deployed surgeons will be ill prepared to care for combat casualties or associated victims of mass casualty events.

In addition to caring for those wounded on the battlefield, surgeons in the military must also provide surgical services for the nearly 10 million beneficiaries who are entitled to receive care at military treatment facilities

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Abbreviations and Acronyms

ACS COT	= American College of Surgeons Committee on trauma
DoD	= Department of Defense
JTS DCoE	= Joint Trauma System Defense Center of Excellence
MHSSPACS	= Military Health System Strategic Partnership American College of Surgeons
MTF	= military treatment facilities

(MTF) as part of the DoD Military Health System (MHS). In the private sector, quality of care data are being evaluated, and in some cases (such as with the Centers for Medicare and Medicaid), quality indicators are being linked to reimbursement. In response, many hospitals have enrolled in the American College of Surgeon's National Surgical Quality Improvement Program (NSQIP). The NSQIP program provides participating hospitals with risk-adjusted analyses of their submitted data and allows comparison among hospitals regarding observed-to-expected mortality and morbidity rates after surgery. Also, NSQIP consortiums have been developed that allow participating hospitals to develop best practices by learning from others. To date, only a handful of the MTF are participating in NSQIP, and there has not yet been an opportunity for them to work together to solve common quality issues. This is particularly true of the low-volume MTF.

Injury, despite being the second most expensive public health problem in the United States, does not have a dedicated research institute at the NIH, and there are few non-DoD federal dollars available for injury-related research. As a result, the DoD remains the major funder of trauma research through the Combat Casualty Care Research Program.[7] During inter-war periods, research funds within the DoD that were designated for trauma are in danger of being diverted toward other research tropics such as infectious disease, human performance, etc. This is concerning because the military-directed trauma research has provided a high rate of translation of lessons in the form of knowledge and material solutions, which advance both military and civilian trauma care.

In order to address the concerns outlined above, a historic agreement was recently signed between the Military Health System (MHS) and the American College of Surgeons (ACS). The ACS has a long military history, beginning during World War I, when many surgeons left their academic institutions in order to provide care for the wounded overseas. These surgeons included the founders and early officers of the ACS. Similarly, surgical leaders of the ACS have enjoyed a mutually beneficial partnership with our nation's only military medical school, the Uniformed Services University of Health Sciences in Bethesda. More recently, the ACS, the American Association for the Surgery of Trauma, and the Society of Vascular Surgery have partnered with the United States military to provide funding for the Senior Visiting Surgeon program.[8] This program allowed civilian surgeons to participate together with our military colleagues in operative and critical care of the wounded who were evacuated from the theaters of war in Iraq and Afghanistan and transported to Landstuhl Regional Medical Center in Germany. During a 7-year period, more than 200 civilian trauma and vascular surgeons volunteered their time for this program, as did many orthopaedic surgeons and even some neurosurgeons, fostering mentorship for young military surgeons and assisting in sharing knowledge through scientific presentations and publications.[9] With the newly signed charter, the MHS and the ACS have agreed to work together on a number of issues including education and training, research, quality, and systems-based practice. This strategic partnership has been named the Military Health System Strategic Partnership American College of Surgeons (MHSSPACS). The specific activities of the MHSSPACS are outlined below.

THE MILITARY HEALTH SYSTEM STRATEGIC PARTNERSHIP AMERICAN COLLEGE OF SURGEONS

Education, training and sustainment

As noted above, there is currently no standard surgical preparation for the military surgeon who is being deployed. Additionally, most military surgeons are based at military treatment facilities where trauma care is not routinely provided. Using the expertise of experienced military surgeons who have been deployed, and data and guidance from the JTS DCoE, the MHSSPACS is helping to compile the skill-set needed for a surgeon deployed to far-forward operational scenarios. These military subject matter experts are working with the ACS Division of Education in order to build on existing ACS and military coursework to develop didactic materials and procedural-based training tools for this integrated military-specific curriculum. The experienced educators at the ACS will also assist in developing the evaluation criteria needed to judge an individual's performance on both aspects of the curriculum (competency-based evaluation). The ACS Accredited Education Institutes will be used whenever possible for this

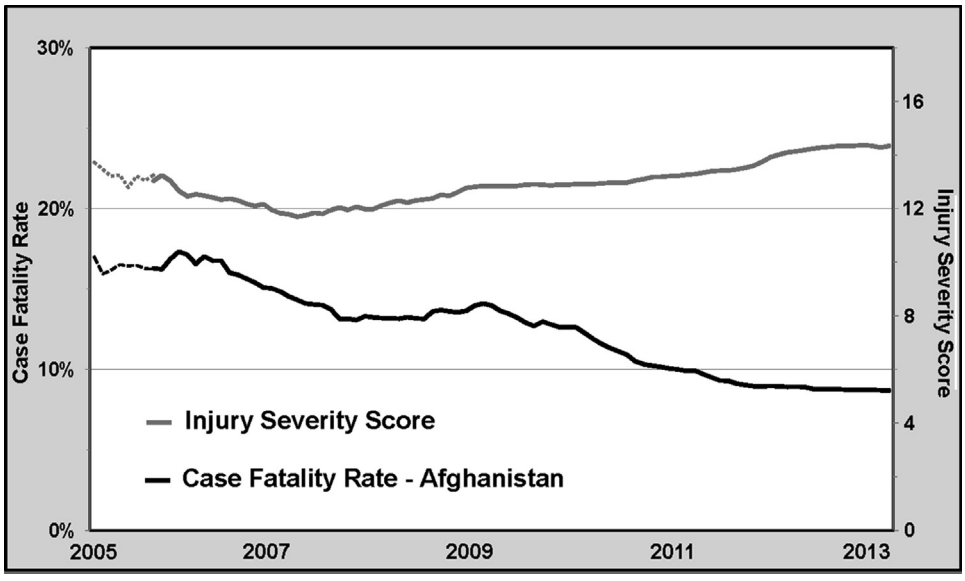

Figure 1. Impact of military trauma care and research. The case fatality rate (CFR) for US service personnel injured or killed in Afghanistan from 2005 to 2013 (black line). Illustrated with the lighter gray line is the military Injury Severity Score (ISS) over the same period. The hashed parts of each line (2005) represent combat data gathered in the earliest period of the Joint Theater Trauma System and Registry. Before 2005, the US military had no trauma system, injury information collection mechanism, or registry. Despite an increasing trend in ISS over the 8-year period, the CFR for US personnel decreased from 16.8% to 8.6%—nearly a 50% relative reduction. (Source: US Joint Trauma System, Joint Base Fort Sam Houston, TX, and the Office of the Secretary of Defense, DMDC Statistical Analysis Division, Pentagon). Reproduced with permission from the *Journal of Trauma Acute Care Surgery*. Wolters Kluwer (publisher).

educational endeavor, which will translate to civilian care in the areas of preparedness and trauma. Sustainment of skills will also likely involve partnerships and rotations with busy civilian trauma centers.

Systems

The ACS Committee on Trauma (ACS COT) has a long history of developing standards for trauma centers and trauma systems and then validating a center or system by conducting site visits. Working with the DoD, the ACS COT Trauma Systems Committee is preparing to visit the Military Joint Trauma System Defense Center of Excellence and to assist in defining how that system should look during times of peace or during wartime (then termed the Joint Theater Trauma System or the JTTS). Essential elements of the JTS DCoE will include a real-time performance improvement program that informs and incorporates evidence-supported clinical practice guidelines, the DoD Trauma Registry, and an educational component for surgeons, nurses, and prehospital personnel. As a component of the military's continuously learning health system, the JTS DCoE will remain integrated with the DoD Combat Casualty Research Program, both to inform the research program of relevant needs and to incorporate the output of investigations (ie knowledge and material solutions) into the practice of optimal trauma care. During conflict, the JTS will expand from its core elements and provide coordination as needed for a specific geographic military command. The ACS COT is also working to incorporate trauma data from MTF currently providing care to civilians in their geographic area within the United States into the ACS trauma data base, the National Trauma Database (NTDB), and eventually, into the Trauma Quality Improvement Program (TQIP).

Quality

The consortium of military hospitals participating in NSQIP will be able to work together on performance improvement projects defined by their own needs. A toolbox to assist in implementation of NSQIP is being developed and site visits are planned for specific military establishments. This project is particularly challenging because military treatment facilities are located worldwide. Unique solutions may include data extractors located in the United States and extensive use of videoconferencing. Also in the planning stages is development of a quality curriculum at the Uniformed Services

University, with the goal of incorporating quality training in military medical school and residencies. Lessons learned from this consortium will be translated into the civilian sector via the MHSSPACS.

Research

The ACS is partnering with the DoD Combat Casualty Care Research Program and its staff at Fort Detrick, MD to develop short-, mid- and long-term strategies for trauma and injury research funding in the United States. Although the current model of DoD-led trauma research has demonstrable value to both the military and the civilian populations, it is recognized as vulnerable to drifting priorities during inter-war periods.[7] The seniority and expertise brought to bear by the MHSSPACS stands to outline and propose a more effective and sustaining method to achieve enduring trauma and injury research funding for the country. This line of effort will initially focus on maximizing the current DoD-led model, which includes core DoD medical research funds through individual services (Army, Navy, and Air Force) and the joint service Defense Health Program, as well as funds provided through annual Congressional Special Interest appropriations. In the near term, the DoD will continue to rely on civilian trauma centers and systems to perform a sizable percentage of its requirements-driven research focused on narrowing high-priority gaps in military-relevant trauma care. In the mid-term, the DoD-ACS effort aims to promote a national trauma action plan as a coalescing function, raising the visibility of the topic of trauma and injury research at the national level, and assuring prioritization and integration among federal entities (ie DoD and the Department of Health and Human Services). As a long-term approach, the MHSSPACS will propose the value of a National Trauma Research Institute sustained by a more sizable, reliable, and enduring non-DoD appropriation for trauma and injury research. The evolution of this near-, mid- and long-term strategy aims to reduce reliance on the DoD as the sole proprietor of trauma and injury research funding and to "right size" the national investment in the management of this condition; an investment that is more reliable and at the level commensurate with trauma's burden on society, as measured in years of lost productivity.

The Excelsior Surgical Society

The original Excelsior Surgical Society met for the first time in 1945 at the end of World War II at the Excelsior Hotel in Rome.[10] The Society consisted of surgeons who had been deployed, and they met yearly to discuss their experiences, until the Society was retired in the 1980s. The Society was resurrected during the 2015 annual ACS Clinical Congress meeting and all current and former military surgeons were invited to participate. The meeting consisted of updates from the consultants to the Surgeons General of the Army, Navy, and Air Force as well as invited lectures and research presentations by surgical residents from military training programs. The Excelsior Surgical Society is now formalized and will be a permanent entity at the annual ACS meeting.

BENEFIT TO CIVILIANS

No one will debate the fact that the lessons learned from these 15 years of continuous war have greatly benefited trauma care worldwide. A few examples include the use of blood products, advances in burn care, modified resuscitation techniques, complex wound care, temporizing vascular injuries with the use of shunts, and the ability to provide critical care during air transport. All of these lessons have been rapidly incorporated into civilian practice, not only improving the care of the injured at home, but also enhancing our ability to respond to the increasing number of mass casualty events on our own soil.[11,12] Another collaborative between civilian and federal partners including the military (The Harford Consensus) is advocating for the use of military combat gauze and tourniquets by civilians at the scene of disasters, based on the experience at the Sandy Hook Elementary School shooting.[13] This effort is integrated into and complementary to the national "Stop the Bleed" campaign launched on October 6, 2015 at the White House, with the aim of improving the public's ability to respond to scenarios in which lives can be saved by basic and immediate hemorrhage control.[14] The enormous investment by the military into simulation benefits all physicians in training who will be called on to perform a procedure or respond to a crisis in the hospital. The specific training platform referred to earlier, within the MHSSPACS, will be of value not only to military surgeons preparing for deployment but to any surgeon responding to a disaster or who will be providing care in a relatively austere environment. A focus on quality benefits all patients and may reduce health care costs. Finally, given the current state of world affairs, all the elements of this collaboration enhance our security both at home and abroad by assuring that our military remains both healthy and prepared.

CALL TO ACTION

Although the MHSSPACS is initially focusing on maintaining a military trauma system, training for combat casualty care, and trauma research, as these are the areas most vulnerable during inter-war periods, the ACS is

the home for all surgeons, and as such, other surgical disciplines are encouraged to note the value of partnering with the military. For example, NSQIP incorporates the care of all surgical patients in a given treatment facility. In addition to trauma, the ACS also conducts verification site visits in cancer, pediatrics, and bariatric surgery and is also now focusing on geriatric surgical care. This year, the Excelsior Surgical Society is soliciting abstracts for presentation of scientific research from military medical centers in any surgical area. In the area of disaster training and response, the MHSSPACS is working with the Orthopedic Academy and the Orthopaedic Trauma Association to coordinate our efforts, recognizing that there is a strong collaboration with military surgeons in those societies. Similarly, both the American Burn Association and the Society of the American Gastrointestinal and Endoscopic Surgeons have dedicated special sessions for military surgeons. We acknowledge the enormous contributions of both the Society of Vascular Surgeons and the orthopaedic surgeons in the care of the wounded at Landstuhl, Germany. We advocate for the continuation of these efforts and encourage other surgical disciplines to consider how they might partner with the military. As surgeons, we have the unique opportunity to honor all who have served, those that have been wounded, and those who have paid the ultimate price by preserving and advancing the lessons learned by a generation of young men and women who have sacrificed so much. It is an ethos that we all should share.

Author Contributions

Study conception and design: Knudson, Elster, Woodson
Acquisition of data: Knudson, Elster, Kirk
Analysis and interpretation of data: Kirk, Turner, Hoyt
Drafting of manuscript: Knudson, Elster
Critical revision: Elster, Woodson, Turner, Hoyt

REFERENCES

1. Churchill ED. Surgeon to Soldiers. Philadelphia, PA: JB Lippincott Company; 1972.
2. Eastridge BJ, Jenkins D, Flaherty S, et al. Trauma system development in a theater of war: experiences from Operation Iraqi Freedom and Operation Enduring Freedom. J Trauma 2006;61:1366–1373.
3. Pruitt BA, Rasmussen TE. Vietnam (1972) to Afghanistan (2014): the state of military trauma care and research; past to present. J Trauma Acute Care Surg 2014;77:S57–S65.
4. Rasmussen TE, Baer DG, Cap AP, Lein BD. Ahead of the curve: sustained innovation for future combat casualty care. J Trauma Acute Care Surg 2015;79:S61–S63.
5. Rasmussen TD, Gross KR, Baer DG. Where do we go from here? J Trauma Acute Care Surgery 2013;75[S2]: S105–S106.
6. Schwab CW. Winds of war: enhancing civilian and military partnership to assure readiness: white paper. J Am Coll Surg 2015;221:235–254.
7. Rasmussen TE, Baer DG. No drift. JAMA Surg 2014;149: 221–222.
8. Moore EE, Knudson MM, Schwab CW, et al. Military-civilian collaboration in trauma care and the senior visiting surgeon program. N Engl J Med 2007;357:2723–2727.
9. Knudson MM, Evans TW, Fang R, et al. A concluding after-action report of the senior visiting surgeon program with the United States Military at Landstuhl Regional Medical Center, Germany. J Trauma Acute Care Surg 2014;76: 878–883.
10. Rich NM. Military surgeons and surgeons in the military. J Am Coll Surg 2015;220:127–135.
11. King DR, Larentzakis A, Ramly EP, Boston Trauma Collaborative. Tourniquet use at the Boston marathon bombing: lost in translation. J Trauma Acute Care Surgery 2015;78: 594–599.
12. Elster EA, Butler FK, Rasmussen TE. Implications of combat casualty care of mass casualty events. JAMA 2013;310: 475–476.
13. Jacobs LM, Wade D, McSwain NE, et al. Hartford Consensus: a call to action for THREAT, a medical disaster preparedness concept. J Amer Coll Surg 2014;218:467–478.
14. Department of Homeland Security. Stop the bleed. https://www.dhs.gov/stopthebleed. Accessed March 1, 2016.

Invited Commentary

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"We have it in our power to bring more fully this College into the National Defense in peace as well as in war."

George Crile, 6th Convocation Address of the American College of Surgeons, October 26th, 1917.[1]

George Crile, President of the American College of Surgeons offered these words in 1917 in what was described as "the greatest medical-military gathering ever held on this continent."[1] The venue at the Congress Hotel in Chicago included hundreds of military medical officers from the US and Canada as well as representatives from the British Army Medical Service and the Medical Department of the French Army. The war effort precluded a meeting of the College in 1918, but in his 1919 Presidential Address, William J Mayo acknowledged that "more than three-fourths of the Fellows of the Association have been in their country's service and returned to their work with renewed vigor and enthusiasm."[2] Since its founding more than 100 years ago, the American College of Surgeons has been part of the fabric of military surgery.

As described by the authors of the report titled, "A shared ethos: the Military Health System Strategic Partnership with the American College of Surgeons" in this edition of the *Journal of the American College of Surgeons*,[3] nearly a century after the presidencies of Crile and Mayo, the relationship between the College and the Military Health System (MHS) has matured significantly. Honed again by the crucible of war and cooperation during this most prolonged period of combat in US history, the partnership has taken the momentous step of chartering a strategic partnership—Military Health System Strategic Partnership with the American College of Surgeons (MHSSPACS). Adoption of this agreement and commitment of resources to its success represent a level of obligation from the 2 organizations not attained in more than a century of strong relations. In this context, it is difficult to overstate the historic nature of the MHSSPACS and the policy paper authored by this group of leaders.

The report by Knudson and colleagues[3] and its description of the MHSSPACS charter and its lines of effort—Education and Training, Systems of Care, Quality and Research—is timely for the nation because it considers lessons from the wars and deliberates on the damaging impact on the homeland of accidents, crashes, and acts of violence. During the same years as the wars in Afghanistan and Iraq, death from trauma and injury in the civilian setting increased at more than twice the rate of the US population growth.[4] Trauma and injury are now the leading cause of death in those younger than 44 years old, and are the leading cause of lost productive life-years among all Americans.[5] Given these observations and the complex nature of national and homeland security, now seems an opportune time to formally link civilian and military efforts in surgery and emergency care. The significance and timeliness of this topic are underscored by an ongoing activity led by the National Academies of Sciences, Engineering and Medicine: "Military Trauma Care's Learning Health System and its Translation to the Civilian Sector."[6] As an advisor to the nation on matters of health and medicine, the National Academies and its committee are endeavoring to characterize features of the military's trauma care system including strengths, limitations, and translatable lessons for the public and for policy makers.

Notably, the lines of collaborative effort that underpin the MHSSPACS are aligned with features that the Institute of Medicine (IOM) defined as necessary within its model of a "Continuously Learning Health Care System." The IOM coined the phrase, "Continuously Learning Health Care System" in its 2012 report, "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America."[7] In the report, the IOM emphasized the value of evidence-based, patient-centered care, scientific research, and communities of care, all within a system that promotes medical education and performance improvement. As delineated in the report by Knudson and colleagues,[3] these same features have been identified as having emerged from the military's combat casualty care apparatus; a system that was pressed to perform by a large burden of injury stemming from simultaneous and distant theaters of war. Functioning in that combat casualty care apparatus are the Joint Trauma System Defense Center of Excellence, the Department of Defense (DoD) Combat Casualty Care Research Program, and the Uniformed Services University for the Health Sciences—"America's Medical School." Together these MHS entities and their respective processes have been identified as the components of the military's own learning health system in trauma.[8]

As Knudson and colleagues[3] identified, development of the DoD Joint Trauma System—now a DoD Center of Excellence—and its trauma registry, performance improvement, and practice guideline mechanisms were, and continue to be, the engine behind the military's trauma care capability. Also highlighted is the substantial national investment made through the DoD for trauma research. Unlike other mechanisms of federally funded medical research, the research executed through the DoD is tied to specific military requirements or "gaps" in care.[8] In this context, the research investment made through the DoD is more "top-down" and is managed with an eye toward translation of fairly specific knowledge and materiel solutions, as opposed to the more traditional investigator-initiated model. Although most, if not all, of the solutions stemming from the DoD research investment translate to civilian trauma and emergency care, the report by Knudson and colleagues[3] aptly pointed out that this is the only significant national investment made in trauma research. The authors noted that this is a precarious position for the nation, and they proceeded to outline a compelling near-, mid-, and long-term template that would bring research funding for this condition to a level "commensurate with trauma's burden on society as measured by in years of lost productivity."[3]

Finally, the report by Knudson and colleagues[3] noted the importance of the nation's military medical academy in Bethesda and its role in the newly established MHSSPACS. In addition to educating nearly 200 military students per year and serving as the academic foundation for the military's learning health system, the report identified key roles the Uniformed Services University stands to play in establishing new standards in surgical training and readiness as well as a novel quality

curriculum that will introduce this principle during the earliest stages of medical education. Through the education and quality lines of effort of the MHSSPACS, individual expertise and capabilities within the College—including NSQIP and the Trauma Quality Improvement Program—stand to be more intentionally used to improve standards within the MHS. And because the MHS is the nation's largest single-payer health care system, experience gained through new education and quality initiatives in its treatment facilities have the potential to inform and hone mechanisms within the College and the broader civilian practice community.

As the presidential speeches of Crile and Mayo identified and as highlighted in the report by Knudson and colleagues, military and civilian surgery have a long-standing shared ethos.[1-3] The MHSSPACS and its areas of collaborative effort—Education and Training, Systems of Care, Quality and Research—represent a historic transition in this relationship and a timely alliance for the nation. By aligning the MHSSPACS with facets of the military's learning system in trauma care and by identifying resources the College can apply in the early phases of the partnership, the authors of this agreement have maximized opportunity, including prospects for the partnership to grow to positively influence all surgical disciplines. This report and the partnership it describes should inspire military and civilian alike to "work with renewed vigor and enthusiasm" in their shared mission.[2]

REFERENCES

1. Presidential address of George Crile. Bull Am Coll Surg 1917;3:1–2.
2. Presidential address of William J Mayo. Surg Gynecol Obstet 1920;30:97–99.
3. Knudson MM, Elster EE, Woodson J, et al. A shared ethos: the Military Health System Strategic Partnership with the American College of Surgeons. J Am Coll Surg 2016;222:1251–1255.
4. Rhee P, Joseph B, Pandit V, et al. Increasing trauma deaths in the United States. Ann Surg 2014;260:13–21.
5. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web–based Injury Statistics Query and Reporting System (WISQARS). Available at: http://www.cdc.gov/injury/wisqars/. Accessed April 7, 2016.
6. National Academy of Sciences and Medicine Activity: Military Trauma Care's Learning Health System and its Translation to the Civilian Sector. Available at: http://www.nationalacademies.org/hmd/Activities/HealthServices/LearningTraumaSystems. Accessed April 7, 2016.
7. Smith M, Saunders R, Stuckhardt L, McGinnis JM, Committee on the Learning Health Care System in America; Institute of Medicine, eds. Best Care at Lower Cost: The Path to Continuously Learning Health Care in America. Washington DC: National Academies Press; 2013.
8. Rasmussen TE, Reilly PA, Baer DG. Why military medical research? Mil Med 2014;179:1–2.

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