Joint Trauma System

Update to the Defense Health Board On "Combat Trauma Lessons Learned from Military Operations of 2001-2013"

Director, JTS
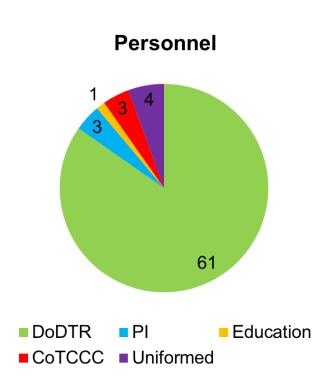
09 August, 2016

Disclaimer

- *The opinions or assertions contained herein are the private views of the author and are not to be construed as official or as reflecting the views of the Department of the Navy, Department of the Army, or the Department of Defense.*

- *No disclosures.*

- *I am a trauma surgeon, not an economist or a Health IT expert.*

- The Joint Trauma System is a performance improvement organisation within the U.S. Army Institute for Surgical Research in San Antonio, TX

- JTS has no statutory, regulatory, or directive authority over trauma care, MTFs, or the services

    - advisory role through CPGs, PI, and SMEs

- JTS houses the DoD Trauma Registry

    - 130,000+ combat casualty/trauma records

    - majority of JTS personnel

- The San Antonio-based JTS should not be confused with the CENTCOM Joint Theater Trauma System (JTTS)

Personnel

Pie chart values: 1, 3, 3, 4, 61

Legend:
- DoDTR
- PI
- Education
- CoTCCC
- Uniformed

Lesson 1: *Despite vast improvements in the military trauma care system over the past decade, there is no unifying agency with oversight over all aspects of the combat casualty care system.*

The DHB concurs with the assessment of the U. S. Military Joint Trauma System Assessment team regarding the need for a lead agency for the combat casualty care system.

Recommendation 1.1: Establish a senior level organization, such as the Defense Health Agency (DHA), as the lead agency for oversight of trauma care.

Proposed NDAA 17 language:

Section 708—Joint Trauma System

This section would require the Secretary of Defense to submit to the Committees on Armed Services of the House of Representatives and the Senate an implementation plan to establish a Joint Trauma System as an enduring organization within the Defense Health Agency. The Joint Trauma System would serve as a reference body for all trauma care provided within the military health system; establish standards of care for trauma services; coordinate the translation of research from the Defense Centers of Excellence into standards of care; and coordinate the lessons learned from joint trauma partnerships into clinical practice. This section would also require the Comptroller General of the United States to review the implementation plan not later than 120 days after the Secretary submits the implementation plan.

SEC. 708. *JOINT TRAUMA SYSTEM.*

(a) *PLAN.*—

(1) *IN GENERAL.*—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall submit to the Committees on Armed Services of the House of Representatives and the Senate an implementation plan to establish a Joint Trauma System within the Defense Health Agency that promotes improved trauma care to members of the Armed Forces and other individuals who are eligible to be treated for trauma at a military medical treatment facility.

(b) *ELEMENTS.*—The Joint Trauma System described in subsection (a)(1) shall include the following elements:

(1) Serve as the reference body for all trauma care provided across the military health system.

(2) Establish standards of care for trauma services provided at military medical treatment facilities.

(3) Coordinate the translation of research from the centers of excellence of the Department of Defense into standards of clinical trauma care.

(4) Coordinate the incorporation of lessons learned from the trauma education and training partnerships pursuant to section 709 into clinical practice.

House Armed Services Committee report on H.R. 4909.
https://www.congress.gov/114/crpt/hrpt537/CRPT-114hrpt537.pdf
Accessed 25 July 2016.

Senate Armed Services Committee draft S.2943.
https://www.congress.gov/bill/114th-congress/senate-bill/2943/text?q=%7B%22search%22%3A%22committeessas00%22%7D&resultIndex=1#toc-HCBBFA29970654592BAB83578D8A66D70
Accessed 25 July 2016.

The role and alignment of the Joint Trauma System is currently under review within the MHS

- Draft DoD Instruction under adjudication

- Capabilities Based Assessment (CBA) has been initiated
    - Joint Staff and U.S. Army leading the initiative
    - Follows the Joint Capabilities Integration Development System (JCIDS) process
    - All services, HA, DHA are represented

Lesson 2: *At the onset of the current conflicts, communication, coordination, and command and control of and among levels of care and personnel across the Services under Combatant Command control were not well coordinated, trained for, or implemented consistent with practices in civilian centers and systems.*

The Surgeons General have primary oversight of health care policy in their respective Services, while combatant unit commanders control the time, budget, personnel, training, and equipment for trauma care. Each line commander has a medical advisor. However, the advisor to the line commander may have variable experience in combat casualty care and may not be current in either tactical combat casualty care (TCCC) or clinical practice guidelines (CPGs).

Recommendation 2: Responsibilities of the Service Command:

a. Unit surgeons* or the medical advisor for the line commander shall be fully competent in the recommended professional and practice standards as promulgated by the proposed DoDTS (at the writing of this report, it would be the TCCC Guidelines and DoDTS CPGs).

b. Combatant Command Surgeons shall report their expectations, including evacuation times, CPGs, and integration to JTS and the DoD Trauma Registry (DoDTR).

While the JTS has no authority to do this, there has been some progress within the COCOMs:

- CENTCOM has required TCCC, CPGs, and patient care records
- ongoing work with PACOM to develop COCOM trauma system

Lesson 3: *At the beginning of the conflicts, communication and specifically clinical patient information was difficult to transmit among levels of care.*

Lack of or poor communication can lead to a less than ideal state in which treatment facilities become overwhelmed due to inadequate information about incoming medical needs and current facility capabilities. Insufficient access to basic information pertaining to the number, severity, and types of injured can result in suboptimal care following transport. As such, sharing lessons learned is an essential step toward maintaining the trauma advances achieved during the recent conflicts. For example, as a conflict begins in a new theater, communication of this type may be immature, and every effort to mitigate poor communication should be undertaken.

Recommendation 3.1: DoD shall establish and promote a Joint Trauma Medical Communications and Information Director to work with the JTS, who has the authority and resources to develop, test, acquire, and implement a communication system focused on meeting medical needs.

While this does not fall under the JTS' authority, there is language proposed in NDAA 17 that would unify HIT within the DoD MHS, under DHA

"(B) If established under subparagraph (A), the Deputy Assistant Director for Information Operations shall be responsible for management and execution of information technology operations at and between the military medical treatment facilities.

Senate Armed Services Committee draft S.2943.
https://www.congress.gov/bill/114th-congress/senate-bill/2943/text?q=%7B%22search%22%3A%22committeessas00%22%7D&resultIndex=1#toc-HCBBFA29970654592BAB83578D8A66D70
Accessed 25 July 2016.

Recommendation 3.3: DoD should continue to expand its partnerships with civilian trauma organizations to share information, preserve lessons learned, and improve trauma care. For example, a close partnership with a civilian medical center would help to ensure rapid stand up capability if necessary, and in peacetime, could allow for additional trauma experience, maintaining the skills and competency of military medical personnel.

Proposed NDAA 17 language:

- **Strengthens the Readiness of Military Healthcare Professionals** by establishing new trauma centers at military medical centers in areas with unmet patient demand; establishing additional partnerships to enable military trauma specialists and support staff to work in civilian trauma centers for sustained periods of training; increasing opportunities and complexity of care by concentrating military provider resources at MTFs in locations with a large military and retiree population; and expanding the responsibility of the Defense Health Agency for hospital administration, thus allowing the military services to focus on medical readiness.

SEC. 709. JOINT TRAUMA EDUCATION AND TRAINING DIRECTORATE.

(a) ESTABLISHMENT.—The Secretary of Defense shall establish a Joint Trauma Education and Training Directorate (in this section referred to as the "Directorate") to ensure that the traumatologists of the Armed Forces maintain readiness and are able to be rapidly deployed for future armed conflicts. The Secretary shall carry out this section in collaboration with the Secretaries of the military departments.

(1) IN GENERAL.—The Secretary shall enter into partnerships with civilian academic medical centers and large metropolitan teaching hospitals that have level I civilian trauma centers.

(2) TRAUMA COMBAT CASUALTY CARE TEAMS.—Under the partnerships entered into with civilian academic medical centers and large metropolitan teaching hospitals under paragraph (1), trauma combat casualty care teams of the Armed Forces led by traumatologists of the Armed Forces shall embed within the trauma centers of the medical centers and hospitals on an enduring basis.

House FY17 NDAA Summary
https://armedservices.house.gov/hearings-and-legislation/ndaa-national-defense-authorization-act.
Accessed 25 July 2016

Senate Armed Services Committee draft S.2943.
https://www.congress.gov/bill/114th-congress/senate-bill/2943/text?q=%7B%22search%22%3A%22committeessas00%22%7D&resultIndex=1#toc-HCBBFA29970654592BAB83578D8A66D70
Accessed 25 July 2016.

Improving and Maintaining Operational Medical Force Readiness

- Creates specialized care centers of excellence at major military medical centers.
- Expands military-civilian trauma training sites and requires integrated trauma team training.
- Requires establishment of personnel management plans for important wartime medical specialties.
- Requires development of quality of care outcome measures for combat casualty care.
- Requires greater focus on medical research to understand better the causes of morbidity and mortality of service men and women in combat.
- Requires development of a trauma care registry.
- Requires development of standardized tactical combat casualty care training.
- Expands eligibility for care in military treatment facilities to veterans and certain civilians.

Senate Armed Services Committee NDAA 17 summary
http://www.armed-services.senate.gov/imo/media/doc/FY17%20NDAA%20Bill%20Summary.pdf
Accessed 25 July 2016

HOWEVER:
- Level 1 trauma centres see primarily blunt, not penetrating trauma
- "only 18% of Level 1 centers indicated that their trauma surgeons could perform 'a full complement of vascular, thoracic, and abdominal procedures" - A National Trauma Care System: integrating military and civilian systems to achieve zero preventable deaths after injury. http://www.nationalacademies.org/hmd/Activities/HealthServices/LearningTraumaSystems.aspx. Accessed 25 July 2016
- "The presence of other learners must not interfere with the appointed residents' education." – ACGME Common Program Requirements http://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRs_07012016.pdf. Accessed 25 July 2016.
- Level 1 trauma centres are in the business of receiving, not stabilising and sending, trauma patients

Lesson 4: *In the context of trauma care, informatics equates to the use of electronic medical records (EMRs), which are vital to clinical care across the continuum and to performance improvement and research.*

Uniform and interoperable databases of medical information can promote more effective and efficient medical capabilities, as well as provide the information needed for implementing training platforms that ensure the highest level of training for medical personnel.

Recommendation 4: To establish a uniform registry that encompasses all aspects of trauma care, from the field to rehabilitation and to the degree possible, beyond rehabilitation to community reintegration, DoD shall take the following actions:

a. Develop a high-fidelity online, tiered database as well as enhanced communications capability through all levels of care.
b. Increase research and development funding for new, automated live-patient tracking and identification, including biometrics.
c. Develop an expeditionary, deployable EMR, which is easy to use, readily taught, increases productivity, secure, web-based, instantly visible from all levels including the Veterans Health Administration, compatible with existing databases and registries, and built by established experts in information systems with input from practicing military providers.
d. Increase system-wide support for concurrent data collection across the continuum to include tactical combat casualty care and Levels I-III, en route care/Critical Care Air Transport (CCAT).
e. Expand the DoDTR platform to provide data and information which can be used in conjunction with the Armed Forces Medical Examiner System (AFMES) in continuous real-time performance assessment and validation of best practices.

- An EMR is NOT a registry

- This fact is poorly understood or frequently misrepresented
  - e.g. "clinical data collected from EHRs … that have a provider, organization, and/or individual signing the information and is [sic] accountable for the accuracy of the data. Those systems cannot be altered, thus the data should be considered as accessible information from a known 'trusted source.'" - Caban JJ, Bonnema A, Bueno ER et al. Mil Med 181, 5:11-22, 2016.

- Yet it is clear that EHRs are not trustworthy
  - VA EHR study: 84% of progress notes contain at least one error, with an average of 7.8 documentation errors per patient. - American Health Information Management Association (AHIMA) Data Quality Management Model. Chicago, IL: AHIMA; 2012.
  - Medicare 2015 National Improper Payment Rates: no documentation 1.3%, insufficient documentation 67.3%, incorrect coding 10.8%, for a total of $43.3B (12.1% of CMS payments) - DHHS, https://www.cms.gov/Research-Statistics-Data-and-Systems/Monitoring-Programs/Medicare-FFS-Compliance-Programs/CERT/CERT-Reports-Items/Downloads/AppendicesMedicareFee-for-Service2015ImproperPaymentsReport.pdf. Accessed 25 July 2016.

- – "the introduction of HIT, rather than leading to improvements in the quality of data being recorded, has led to the recording of a greater quantity of bad data"
- – "Although EHR-related errors, and their actual and potential impact on the quality and usefulness of EHR documentation, quality of care, and patient safety, have been documented for years, much work still needs to be done to measure the occurrence of these errors, determine the causes, and implement solutions. "
- – "Currently there are no regulatory requirements to evaluate EHR system efficacy and safety. …EHR certification does not guarantee that EHRs will be implemented and that they will work as planned"
    - - Bowman S. Perspect Health Inf Mgmt 10(Fall), 2013.

- These "data quality" metrics are driven by reimbursement, not by science, so individual data points are not necessarily even being evaluated for "quality"
- Whereas the DoDTR maintains 95% abstractor accuracy and inter-rater reliability rates for single data points

- The continued existence of the DoDTR is seriously threatened because of this misperception

    – DoD CIO Zero-based Budget Review to eliminate redundancies
      http://www.med.navy.mil/dha_dhits/2015%20DHITS%20Presentations1/Track%205%20-%20Informatics,%20Analytics,%20Business%20and%20Governance/Track%205%20-%20Block%205%20-%20MTF%20Level%20IT%20Spend%20-%20Things%20you%20Didn_t%20know%20but%20Should%20-%20Cantu%20%20-%20Final.pdf. Accessed 25 July 2016.

    – IOM report: "There is no direct link between the electronic medical record systems and the DoDTR; data therefore cannot populate the registry through automated transmission…. Military and civilian trauma management information systems rely on inefficient and error-prone manual data abstraction to populate registries." (A National Trauma Care System: integrating military and civilian systems to achieve zero preventable deaths after injury. http://www.nationalacademies.org/hmd/Activities/HealthServices/LearningTraumaSystems.aspx. Accessed 25 July 2016)

- Automated data population into the trauma registry will allow rapid access of POOR QUALITY data that will, in turn, lead to BAD RECOMMENDATIONS and SUBOPTIMAL TRAUMA CARE

Lesson 5: *Ongoing improvement of outcomes for the combat wounded requires a robust ability to monitor the care rendered to combat casualties and to measure casualty outcomes as a function of the various elements of trauma care provided along the continuum in theaters of conflict. The Services are attempting to track and analyze outcomes, but compared to JTTS/JTS/DoDTS oversight of the same, there is significant opportunity to codify the PI process. Codifying the PI process will allow DoD to benchmark practices and outcomes and initiate near real-time corrective measures not possible outside the DoDTS today.*

Recommendation 5.1: The DHB concurs with the recommendations from *United States Military Joint Trauma System Assessment* listed below, and encourages DoD to act on these recommendations:

a. JTS should develop an overarching PI and Patient Safety Plan;
b. The PI and Patient Safety Plan should encompass a system-wide process for identifying events, taking corrective actions, monitoring, evaluating, and benchmarking;
c. As the lead agency for the system, JTS and the JTTS leadership in theater must possess the infrastructure and authority and systems accountability over the continuum of care for the PI process; and
d. A robust and system-wide informatics platform is needed to support the process.

With mandatory force reductions in theatre, the last JTTS team withdrew from CENTCOM in December 2014
- CENTCOM JTTS functions now assumed where possible by JTS
- PI activities coordinated through COCOM Surgeon's office

Lesson 7: *Medical and trauma knowledge must flow freely between the civilian and military medical communities and be coupled with rapid training integration strategies.*

Recommendation 7: To standardize and harmonize trauma training across the Services, DoD shall take the following actions:

a. Sustain and expand initiatives to train and support all tactical evacuation medics to a common and high standard (at the writing of this report that standard would be Critical Care Flight Paramedics) (e.g., 160th Special Operations Aviation Regiment [Airborne] model, Air Force Special Operations Command model, newly implemented Army Medical Department model).

b. Develop an initiative to train and sustain combatant unit senior ground medics to a common and high standard.

c. Support the development of CCAT and the Center for the Sustainment of Trauma & Readiness Skills (C-STARS) by the Air Force for development of best practices and common standards for en route care.

d. Review Service trauma training center programs (Army Trauma Training Centers, Navy Trauma Training Centers, C-STARS) and consider creating Joint Trauma Training Centers (JTTCs) making sure training occurs in a team based environment, ideally with a team that will deploy together.

e. Ensure best practices and procedures are cross-leveled and standardized across all military medical simulation training centers (MSTCs), which should receive central certification.

f. Ensure MSTC trainers are subject matter experts, regardless of military versus civilian status, and are trained to a standard, not to a time.

g. Train military tactical evacuation (TACEVAC) personnel to, at a minimum, civilian critical care transport standards (see Recommendation 7c.).

Proposed NDAA 17 language:

Section 709—Joint Trauma Education and Training Directorate

This section would require the Secretary of Defense to assess the number of traumatologists needed to meet the requirements of the combatant commanders and to establish a Joint Trauma Education and Training Directorate to create enduring partnerships with civilian trauma centers. These military trauma surgeons and physicians, along with the clinical support teams, would be embedded within civilian trauma centers to maintain professional readiness to treat critically injured patients. This section would also require the Secretary to submit an implementation plan to the Committees on Armed Services of the House of Representatives and the Senate not later than July 1, 2017.
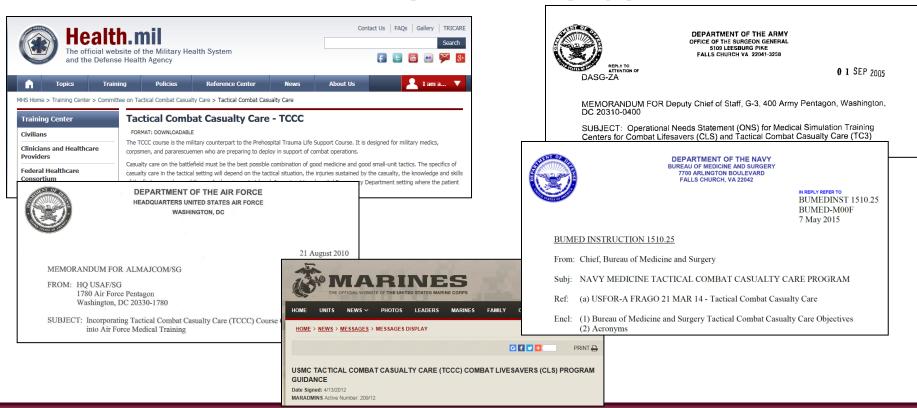
House Armed Services Committee report on H.R. 4909.
https://www.congress.gov/114/crpt/hrpt537/CRPT-114hrpt537.pdf
Accessed 25 July 2016.

Lesson 9: *Effectively trained TCCC has a demonstrable effect on reducing potentially preventable causes of death on the battlefield.*

Recommendation 9: TCCC shall continue to form the basis for battlefield trauma care and be integrated as the minimal accepted standard of training for all military members, initial enlisted medical training, and specialized enlisted medical training. In addition, TCCC sustainment training programs must occur on a regular basis, as the TCCC Guidelines are a "living" document and are regularly updated.

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Tactical Combat Casualty Care - TCCC

FORMAT: DOWNLOADABLE

The TCCC course is the military counterpart to the Prehospital Trauma Life Support Course. It is designed for military medics, corpsmen, and pararescuemen who are preparing to deploy in support of combat operations.

Casualty care on the battlefield must be the best possible combination of good medicine and good small-unit tactics. The specifics of casualty care in the tactical setting will depend on the tactical situation, the injuries sustained by the casualty, the knowledge and skills of the first responder, and the medical equipment at hand. In contrast to a hospital Emergency Department setting where the patient

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DEPARTMENT OF THE ARMY
OFFICE OF THE SURGEON GENERAL
5109 LEESBURG PIKE
FALLS CHURCH VA 22041-3258

REPLY TO ATTENTION OF
DASG-ZA

0 1 SEP 2005

MEMORANDUM FOR Deputy Chief of Staff, G-3, 400 Army Pentagon, Washington, DC 20310-0400

SUBJECT: Operational Needs Statement (ONS) for Medical Simulation Training Centers for Combat Lifesavers (CLS) and Tactical Combat Casualty Care (TC3)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, DC

21 August 2010

MEMORANDUM FOR ALMAJCOM/SG

FROM: HQ USAF/SG
1780 Air Force Pentagon
Washington, DC 20330-1780

SUBJECT: Incorporating Tactical Combat Casualty Care (TCCC) Course into Air Force Medical Training

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USMC TACTICAL COMBAT CASUALTY CARE (TCCC) COMBAT LIVESAVERS (CLS) PROGRAM GUIDANCE

Date Signed: 4/13/2012
MARADMINS Active Number: 209/12

DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
7700 ARLINGTON BOULEVARD
FALLS CHURCH, VA 22042

IN REPLY REFER TO
BUMEDINST 1510.25
BUMED-M00F
7 May 2015

BUMED INSTRUCTION 1510.25

From: Chief, Bureau of Medicine and Surgery

Subj: NAVY MEDICINE TACTICAL COMBAT CASUALTY CARE PROGRAM

Ref: (a) USFOR-A FRAGO 21 MAR 14 - Tactical Combat Casualty Care

Encl: (1) Bureau of Medicine and Surgery Tactical Combat Casualty Care Objectives
(2) Acronyms

Lesson 12: *Medical and trauma training must be integrated into operational and tactical training.*
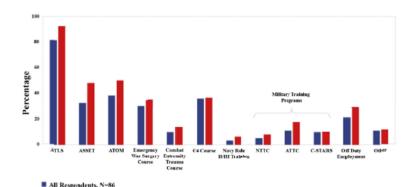
Recommendation 12: To integrate trauma training into operational and tactical training, DoD shall take the following actions:

a. Train all combatant unit personnel in basic TCCC and combat trauma management initially, annually, and within six months of combat deployment (e.g., USSOCOM Directive 350-29 model); this shall be a requirement for deploying to a combat theater.
b. Include demanding, realistic, scenario-based exercises in training, identifying basic critical tasks and training those to mastery, not merely familiarization.
c. Leverage the opportunity for field medical operations and training.
d. Establish Service training under the newly established DHA in order to standardize training across the Services.

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

5-20   *A NATIONAL TRAUMA CARE SYSTEM*

■ All Respondents, N=86
■ Respondents who deployed from 2009 through current, N=52

FIGURE 5-6 Utilization of predeployment trauma training courses and programs.

Source: IOM report (A National Trauma Care System: integrating military and civilian systems to achieve zero preventable deaths after injury.)
http://www.nationalacademies.org/hmd/Activities/HealthServices/LearningTraumaSystems.aspx.
Accessed 25 July 2016)

Lesson 14: Commanders can only accept full responsibility for risk assumption or mitigation when they understand the inherent risk as well as their options as commanders to mitigate that risk. Medicine, medical, and medical training are terms conveying specialty training or education and have no tactical relevance. Accordingly, casualty response training for first responders and combatant leaders is often not incorporated into unit battle drills. This trauma training for leaders is an essential component of battlefield trauma care.

Recommendation 14: To ensure command accountability for trauma training, the following shall occur:

a. Battlefield trauma training must be a reportable item and receive command attention.[2]
b. Medical training and readiness shall be measured before deployments and considered a go or no go item with commander attention.
c. DoD shall provide a structure and foundation for casualty response systems and trauma care training. Combatant non-commissioned officers provide first responder continuity for casualty response systems.
d. DoD shall change all references to tactical life-saving tasks/equipment from medical to casualty.

"(2) The commander of each military medical treatment facility shall be responsible for—

"(A) ensuring the readiness of the members of the armed forces and civilian employees at such facility

Senate Armed Services Committee draft S.2943.
https://www.congress.gov/bill/114th-congress/senate-bill/2943/text?q=%7B%22search%22%3A%22committeessas00%22%7D&resultIndex=1#toc-HCBBFA29970654592BAB83578D8A66D70
Accessed 25 July 2016.

Congressional language proposed for NDAA 17 has enormous potential to change the face of military trauma care

- Training
- Sustainment
- Delivery of care
- Organisation/responsibility

The role of the Joint Trauma System is in evolution, and yet to be determined

The DoD Trauma Registry and its modules are at risk

Questions?