

Battlefield Trauma Systems

Introduction

A trauma system is an organized, coordinated effort in a defined geographic area that delivers the full range of care to all injured patients and is integrated with the local public health system. The true value of a trauma system is the ability to provide the appropriate level of care to injured patients, integrating existing resources to achieve improved patient outcomes.

Military Trauma Systems

In the battlefield setting, the region is frequently represented as the Combatant Command (COCOM), which has principal responsibility for military operations, including medical support. Regions may be further subdivided into Theater of Operations (TO) and areas of responsibility, or by specific operations (eg, Operation Enduring Freedom [OEF] and Operation Iraqi Freedom [OIF]). For US forces injured outside the continental United States (CONUS), the continuum of care includes all levels of care within the TO (Roles 1–3), care delivered outside the TO (Role 4), care delivered within CONUS (Roles 4 and 4a), and all phases of patient movement (en route care) from point of injury to definitive care. The goal of a battlefield trauma system is to ensure that every casualty gets the right care, at the right time, in the right place, and that overall survival and chance for maximal function recovery are maintained throughout the continuum of care.

Battlefield Trauma System Model

The current model of the deployed military trauma system is the Joint Theater Trauma System (JTTS). Currently being codified in Services and Joint doctrine, the development, implementation, and maturation of the JTTS are major factors in the low died of wounds (DOW) rate and in the improved functional recovery seen in battlefield casualties in OEF/OIF.

The COCOM JTTS team is assigned to and works directly within the TO and reports directly to the COCOM Surgeon General (SG). A dedicated triservice JTTS team undergoes specialized training in CONUS just prior to deployment to the TO. The team consists of: 1 Theater Medical Director or Trauma Medical Director (TMD) who is either a trauma-trained / critical care surgeon or a combat experienced general surgeon, 1 critical care nurse who is the Program Manager (PM), sufficient numbers of critical care nurses who function as Trauma Nurse Coordinators (TNCs) attached to Role 3 medical treatment facilities (MTFs) within theater, sufficient numbers of enlisted personnel to support the team and its taskings, and additional nurses and enlisted personnel to support special projects as directed by the Department of Defense (DoD) or the COCOM SG.

The TMD is the senior consultant to the COCOM SG on all matters related to the care of the trauma patient. The TMD works closely with all trauma care providers within the TO and within the bounds of the operational environment. Also, the TMD makes frequent site visits to fixed MTFs and evacuation platforms. The TMD is the primary advocate for the theater-wide performance improvement (PI) program. The principal duties of the TMD are to advise the COCOM SG on all matters related to trauma; conduct system-wide patient care conferences on a regular basis; update, revise, educate, and oversee compliance with theater Clinical Practice Guidelines (CPGs); and produce a monthly theater update report based on data from the DoD Trauma Registry (DoDTR).

The primary responsibilities of the PM are to support the TMD in all efforts and taskings, manage the entire team of nurses and enlisted personnel, ensure a robust theater-wide PI program with the TNCs, communicate with theater and the CONUS Joint Trauma System (JTS) team on a regular basis, and ensure quality data abstraction into the DoDTR by the TNCs.

TNCs are critical to the success of the JTTS. Their primary duty is to facilitate a robust PI program within their respective MTFs working directly with the Chief of Trauma. Additionally, they perform near real-time extraction of data from the casualty's medical record into the DoDTR to support ongoing PI initiatives.

Enlisted personnel provide critical administrative and technical support to the team, as well as functional expertise in their primary duty designation.

Purpose of the JTTS

The JTTS is a systematic and integrated approach to coordinate battlefield care to minimize morbidity and mortality, and optimize essential casualty care. The primary focus of JTTS is to improve battlefield trauma care to ensure that the right patient gets to the right place at the right time to receive the right care.

The JTTS was modeled after the civilian trauma system principles outlined in the American College of Surgeons–Committee on Trauma *Resources for Optimal Care of the Injured Patient, 2006*. This document identifies trauma care resources and practices for optimization of standards of care, policies, procedures, and protocols for both prehospital and hospital personnel. Additionally, it identifies and integrates processes and procedures to record trauma patient-related data at all levels of care for continual process improvement.

There is joint service participation in the JTTS and DoDTR. A JTTS trauma TMD and theater TNCs are rotated from each service and integrated into the TO to facilitate improvements in care. The DoDTR, the repository for all significant trauma-related data, is utilized to facilitate PI, utilization of resources, and provide command-level information to the battlefield commanders and DoD decision makers.

JTTS Goals

- Establish and maintain a trauma registry to capture data and provide information on the care and outcomes of military and civilian trauma patients.
 - Provide the services with full and complete access to data in the trauma registry.
 - Provide a database that can generate reports for authorized government agencies.
 - Provide a database that can be queried for Institutional Review Board-approved research studies.

- Provide electronic collection and dissemination of trauma patient data available for all levels of care supporting a longitudinal health record.
- Establish and maintain a trauma outcomes database to analyze and evaluate clinical decision-making and measure subsequent outcomes for improving treatment modalities.
- Provide the DoD and other authorized interests with timely and relevant information about care and outcomes.
- Create a research strategy that supports reduction of morbidity and mortality.
- Standardize trauma practices across the continuum of care with the development and implementation of evidence-based CPGs.
- Improve medical record documentation quality.
- Improve communication across the continuum of casualty care.

Joint Trauma System

The JTS is the CONUS-based enduring organization in the DoD that promotes improved trauma care to our wounded warriors and other DoD-eligible trauma victims. It also exists as the chief organization for consultation in the care of the injured for the services, COCOMs, and the entire DoD, to include its senior leadership. It is designed to meet the needs of the President, the Secretary of Defense, and COCOMs with regard to all aspects of trauma care within the DoD. To fulfill this mission, there is a core cadre of trained individuals led by a senior surgeon with prior deployment experience as the JTTS TMD and adequate resources and funding to sustain all the components of the trauma system. The ultimate size of the organization is dictated by events and contingencies—ie, a larger, more robust organization during times of extreme conflict and a smaller but still fully capable organization during times of relative low operations tempo and kinetic operations. JTS works proactively with COCOMs to facilitate the early implementation of JTTS in support of future kinetic operations or other contingencies. The JTS is the primary steward and maintainer of the DoDTR. Components of the JTS (Fig. 35-1) include:

- Prevention.
- Integrated prehospital, en route, and Roles 1–4 care.

JTS COMPONENTS

R4 — “Right Patient, Right Place, Right Time, Right Care”

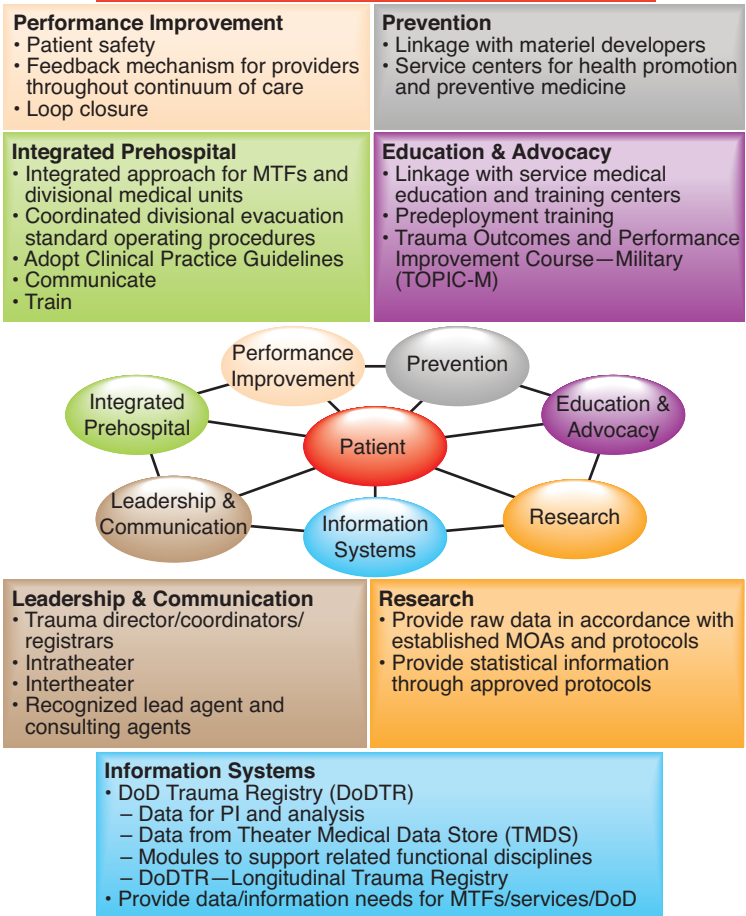


Fig. 35-1. JTS components across the continuum of care.

DoD: Department of Defense; JTS: Joint Trauma System; MTFs: medical treatment facilities; MOAs: memorandum of agreements; PI: performance improvement. Courtesy of Joint Trauma System, US Army Institute of Surgical Research.

- Education and advocacy.
- Leadership and communication.
- Continuous PI.
- Research.
- Information systems (eg, DoDTR Level II Database, Massive Transfusions Database, etc).

Summary

Implementation of the JTS and the JTTS has been a major advance in casualty care during OEF/OIF. Lessons learned have been codified in multiple ways to include doctrinal and policy changes, manning, CPGs, and patient treatment and management techniques. **Every** individual involved in casualty care is a member of the system, including providers, MEDEVAC personnel, medical logisticians, etc. A systems approach to casualty care contributed to decreased morbidity and mortality in OEF/OIF.

Reference

American College of Surgeons. *Resources for Optimal Care of the Injured Patient*, 2006. Chicago, IL: ACS; 2007.

For Clinical Practice Guidelines, go to
http://usaisr.amedd.army.mil/clinical_practice_guidelines.html