Eastern Association for the Surgery of Trauma

28th Annual Scientific Assembly

Sunrise Session 11
Preparing for the Next War:
Pivotal Military-Civilian Relationships

January 16, 2015
Disney’s Contemporary Resort
Lake Buena Vista, Florida
Preparing for the Next War: Pivotal Military-Civilian Relationships

Masterminding the Joint Trauma System
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Trauma Director
Saint Marys Hospital
Rochester MN
16 January 2015

Percentage of Total Combat Deaths Over Time

Early, Adequate Surgery is the Answer to Died of Wounds

- Most important steps are stopping hemorrhage and avoiding infection and sepsis
- Wounds debrided of nonviable, contaminated tissue with good blood supply are best able to resist infection
PROXIMITY ≠ SURVIVABILITY

Early OIF Surgical Sites

COMBAT TRAUMA SYSTEM
REALITY in Early OIF

UNDER-triage

Reasons cited
1. Casevac
2. Closest medic
3. Poor casualty assessment
4. Unaware of capability/necessity

Point of Injury
Major trauma

Triage Level I

Evac #1
Evac #2
FST
CSH
Avoidable risk
CONSEQUENCE

We had fallen behind the construct of experience gained and lessons learned from civilian trauma systems.

Trauma System

DEFINITION
“An arrangement of available resources that are coordinated for the effective delivery of emergency health care services in geographical regions consistent with planning and management standards.”

GOAL
Get the right patient to the right hospital in the right amount of time.

DEL RIO MODEL OF TRAUMA CARE
Point of Injury
Level 1 TRIAGE
FSMC
FST
CSH

Crosslevel or redeploy, based on med
req

Cooperative Care and Medical
Interchange
Participation in PI process by both EAC and
Divisional medical units

CSH SOP developed and trained

Triage System = Increased Survival

CONTINUOUS EN ROUTE CARE
Current Route from Injury to Definitive Care

Casevac
Tactical Medevac
Strategic AE

Definitive Care Level 4

Surgical Capability Pushed Far Forward

COMBAT TRAUMA SYSTEM
DESIRED ENDSTATE

Trauma System = Increased Survival
Burns May-July 2006

- 28 US Troops identified with burns transferred to Level III:
  - 82% due to IED; 68% Soldiers
  - 64% required surgery in theater
  - 70% > 10% Total Body Surface Area
  - 39% TBSA (avg 2003-05 = 14%)
  - Burn outcome: DOW = 5 (18%)
    (mortality 2003-2005 = 3.8%)
- Good Data = Good Decisions
- $25 million in Nomex uniforms distributed to all troops going outside the wire

Trend is from 3 US troops burned/month Jun 05 to 12 burned/month June 06
Mortality by Plasma : RBC Ratio

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Mortality</th>
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<tbody>
<tr>
<td>(Low) 1:8</td>
<td>65%</td>
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<tr>
<td>(Medium) 1:2.5</td>
<td>34%</td>
</tr>
<tr>
<td>(High) 1:1.4</td>
<td>19%</td>
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</table>

The ratio of blood products transfused affects mortality in patients receiving massive transfusions at a combat support hospital. Bergman MA, et al.

Comparison of Statistics for Battle Casualties, 1941-2005

<table>
<thead>
<tr>
<th></th>
<th>World War II</th>
<th>Vietnam War</th>
<th>Iraq &amp; Afghanistan</th>
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<tbody>
<tr>
<td>%KIA</td>
<td>23.7%</td>
<td>21.3%</td>
<td>12.5%</td>
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<tr>
<td>%DOW</td>
<td>3.4%</td>
<td>3.5%</td>
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<tr>
<td>%CFR</td>
<td>22.8%</td>
<td>16.5%</td>
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Combat Casualty Statistics OIF/OEF

OIF Cumulative Monthly Avg CFR%, DOW%, KIA% and ISS
Jan 2004 - Feb 2008

Data Source: Defense Management Data Center, Statistical Analysis Division, DOD, JTPA v3.0
IN-THEATER COMBAT MORTALITY

<table>
<thead>
<tr>
<th>Year</th>
<th>Crimean War</th>
<th>American Civil War</th>
<th>Russian-Japanese War</th>
<th>WWI</th>
<th>WWII</th>
<th>Korean War</th>
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<td>4%</td>
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<td>1970</td>
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25% Decrease in combat deaths

MAJ Mark D. Taylor
Army surgeon killed 20 MAR 2004

COL Brian D. Allgood
Army surgeon killed 20 JAN 2007
The Future is in Research

- Will require close military/civilian collaboration
- Will require dedicated funding
- We must follow long term outcomes through the VA system

What Are We Doing About It?

- Defense Health Board and its Trauma and Injury Subcommittee: report on lessons learned to SecDef
- National Trauma Institute: working with DoD researchers
- American Surgical Organizations Collaborative
- National Trauma Research Repository Development
- Large scale national injury and treatment studies
- Advocating for National Trauma Clinical Research Network Development and Funding
Leadership Development for the Joint Trauma System: Past and Future

Brian Eastridge, MD, FACS
COL, MC, USAR

1. Unorganized delivery of trauma care on the battlefield
   a. Casualties going to the wrong location
   b. Suboptimal staffing and placement of surgical assets

2. Medical records are not reliably being delivered with casualties at each level (<40%)
   a. Impact on clinical care
   b. Documentation directive

3. No medical registry driven by medical input that allows accurate description of injuries or deaths
   a. Unable to reliably answer questions and improve outcomes
      i. Survivable Injuries and/or deaths
      ii. Lack of performance improvement measures / research

Army Trauma Consultant
Review of Battlefield Medical Care

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JTTS Vision / Mission
That every soldier, marine, sailor, or airman injured on the battlefield or in the theater of operations has the optimal chance for survival and maximal potential for functional recovery.

- Improve organization and delivery of trauma care
- Improve communication among clinicians in the evacuation chain to ensure continuity of care and access to data
- Populate the Joint Theater Trauma Registry (JTTR) to evaluate care provided, document outcomes, and facilitate conduct of formal research
- Evaluate and recommend new equipment or medical supplies for use in theater to improve efficiency, reduce cost, improve outcomes
- Facilitate medical performance improvement to promote real-time, data-driven clinical process improvements and improved outcomes
Joint Trauma System Leadership Goals

- Use a process to establish, maintain, and constantly evaluate and improve a comprehensive trauma system in cooperation with medical, professional, governmental, and other civilian organizations.
- Collected data used to evaluate system performance and to develop policies.
- Regularly review system performance to develop to best practice clinical guidelines.
- Informs and educates Services, regional and local constituencies, and policy makers to foster collaboration and cooperation for system enhancement and injury management.

Joint Trauma System Components

Joint Trauma System Organization
Joint Trauma System Evolution

Leadership Challenges

• Military
  – Joint or Unified command to maximize service to Joint medical community
  – POM funding / peacetime sustainment
  – Organization doctrinal mandate
  – Optimal placement
  – Co-locate with DoD medical training, DoD level I trauma centers, and Center for Battlefield Health and Trauma Research

Leadership Challenges for the Future

• Organizational sustainment
  – Staffing
  – Funding
  – Priority

• Civilian trauma partnerships

• Training platforms