Medical Examiner Role in Trauma System Development
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Top 5 Leading Causes of Death (per age category) in US

Access to Trauma Center Care (Level I / II)

A unified effort is needed to ensure the delivery of optimal trauma care to save the lives of Americans injured within the United States and on the battlefield.

**Trauma System Scope of the Problem**

- Potentially survivable injuries US military operations
  - 1,273 / 4,574 (27.6%)  

- Potentially survivable injuries US civilian population 2014  
  - 147,790 x 0.276 = 40,790

A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths after Injury
NASEM Zero Preventable Death Specific ME Recommendations

Gap:
Linkages are incomplete or entirely missing among pre-hospital care, hospital-based acute care, rehabilitation, and medical examiner data.

“A critical but often neglected source of data—particularly in civilian systems—is autopsy reports on trauma deaths, which could be used to determine the preventability of fatalities based on a common, accepted lexicon.”

Recommendation 5:
The Secretary of Health and Human Services and the Secretary of Defense, together with their governmental, private, and academic partners, should work jointly to ensure that military and civilian trauma systems collect and share common data spanning the entire continuum of care.

History of Battlefield Medical Lessons

World War I
• IV fluids
• Blood transfusions
• Motorized ambulances
• Topical antisepsis

World War II
• Whole blood/plasma available
• Specialty-specific surgical groups
• Antibiotics
• Fixed wing aero-medical evacuation

Korean Conflict
• Improved fluid resuscitation
• Forward availability of definitive surgery
• Helicopters for patient evac/transport
• Primary repair/grafts for vascular injury

Vietnam
• Improved use of helicopters
• Improved laboratory support
• Portable radiology equipment
• Mechanical ventilators in theater

Desert Shield/Storm
• Burn team augmentation of evacuation hospitals to provide theater-wide burn care
• Intercontinental aeromedical transport of burn patients

DOW
KIA

Where Can We Save the Most Lives?

Pre-BTP Deaths

MYF Deaths

Potentially Salvageable
Incon-Survivable

References:
Hemorrhage Focus (n=888)

- Truncal: 36% (Thoracic (max AIS 3))
- JUG: 13.5% (n=133)
- Extremity: 10.2% (n=72)
- Abdominal/Pelvic: 39% (Cervical (max AIS 1))
- 5% (Axilla and Groin (max AIS 5))

Background/Scientific Rationale
Pre-Hospital Mortality Civilian

Potential Survivability Poorly Defined

NASEM Report Emphasis

Case Fatality Rate (CFR) ~ 4.1%
 Hospital Mortality Potentially Preventable
Civilian Injury Death Pre-Hospital

Timing of Death After Injury

Survivability (Optimal Anatomic / Physiologic) Assumption: Optimal Resuscitative / Surgical Conditions Non-Survivable
Multiinstitutional Multidisciplinary Injury Mortality Investigation in Civilian PreHospital Environment (MIMIC)

- Advances in care in both trauma centers and trauma systems have substantially reduced death and disability associated with injury
- Substantial opportunity to further reduce deaths in pre-hospital setting.
  - Potential liabilities in civilian and military pre-hospital care must be identified and remediated in order to reduce the number of potentially preventable deaths on the battlefield and in the civilian environment.
- Purpose of proposal is to characterize the causes of pre-mortality from trauma
- Identify potential high yield areas for research and development in pre-hospital medical care, injury prevention, and trauma systems.

Greater System Benefits

**Trauma**
- Performance improvement
  - Engineering
  - Medical devices / procedures
  - EMS value validation
  - Injury Prevention
- Collaboration between trauma and ME communities

**Medical Examiner**
- Funding for advanced radiological imaging
- Improve mechanistic information
- Interaction between trauma and ME communities
- Bridge the gap between ME and trauma care providers data sets