Medical Care in Theater

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Overview

- **Echelons of care**
  - Emphasis in each echelon
- **Level III Air Force Theater Hospital, Balad, Iraq**
  - How they have achieved 98% US survival
- **Injury patterns during current conflicts**
  - Polytrauma

Echelons of Care

- **Level I**
  - Battlefield to Battalion Aid Station
- **Level II**
  - Forward Surgical Team
    - Replaced the Mobile Army Surgical Hospital (MASH)
- **Level III**
  - Combat Surgical Hospital (CSH)
  - Air Force Theater Hospital (AFTH)
- **Level IV**
  - Landstuhl Regional Medical Center (LRMC)
- **Level V**
  - Stateside – WRAMC, NNMC, BAMC

Level I

- **Immediate lifesaving measures**
  - Uncontrolled bleeding, the main cause of battlefield death
  - Up to 70% of combat fatalities occur in the first 5 minutes of injury
- **Emphasis is placed on stabilizing and evacuation to the next echelon of care**
- **Disease and non-battle injury prevention**
- **Combat stress control prevention measures**
- **Casualty collection**
- **Evacuation from supported units to supporting medical treatment facilities**

Level I – Battlefield Care

- **Self-aid/ Buddy aid**
  - Each soldier is trained to be proficient in a variety of specific first-aid procedures
- **Combat lifesaver**
  - A member of a non-medical unit selected by the commander for additional training beyond basic first aid procedures
  - A minimum of one individual per squad, crew, team or equivalent-sized unit
- **Combat medic**
  - The first individual in the chain who makes medically substantiated decisions based on medical specialty training
  - The combat medic trains to emergency medical treatment (EMT) level

Level I – Battalion Aid Station

- **The Battalion Aid Station is an organic component of the unit it supports**
  - Forward most, medically staffed aid station
- **Physician and physician assistant**
- **Combat medics**
- **Conducts routine sick call when the situation permits**

Combat Medics in Training

Loading onto Blackhawk

National Geographic, Dec. 2006

Level II – Forward Surgical Team

- Highly mobile, austere surgical team
- Provides life- and limb-saving surgical care
- Injuries too severe to survive transport to the combat support hospital
- Limited capabilities
  - No xray, lab, subspecialties
- Transfer then to Level III

Army Medivac – Eagle Dustoff

Arrival to Level III

Air Force Theater Hospital, Balad

Air Force Theater Hospital

- **Typical Level 1 trauma centers stateside has approximately 2,000 admissions a year**
- **The AFTH in Balad had approximately 8,000** [(2)]
  - Tent Hospital, May, 2007
- **Different types of trauma**
  - Multiple-casualty events (mascal) rare in US, common in theater
  - US - 11% of wounds are penetrating traumas
  - Iraq – 68%

Awaiting Patients

Mascal

Mascal - Immediate

Mascal - Delayed

98% Survival

- **Military medicine can now save 98% of those reaching Level III**
- **The Joint Theater Trauma System (JTTS)**
  - Organized approach to providing improved trauma care across the continuum of care, especially in the battlefield environment (3)
- **JTTS Vision**
  - That every military member injured in the theater of operations has the optimal chance for survival and maximal potential for functional recovery

Initiation of Clinical Practice Guidelines

- **Adoption of standardization of care that reduces or prevents practice variations**
  - Standardized way of treating a specific injury with a specific therapy to yield consistent, positive results
- **Data input into Joint Theater Trauma Registry (JTTR)**
  - Captures mechanism, acute physiology, diagnostic, therapeutic, and outcome data on injured patients admitted to deployed US military treatment facilities

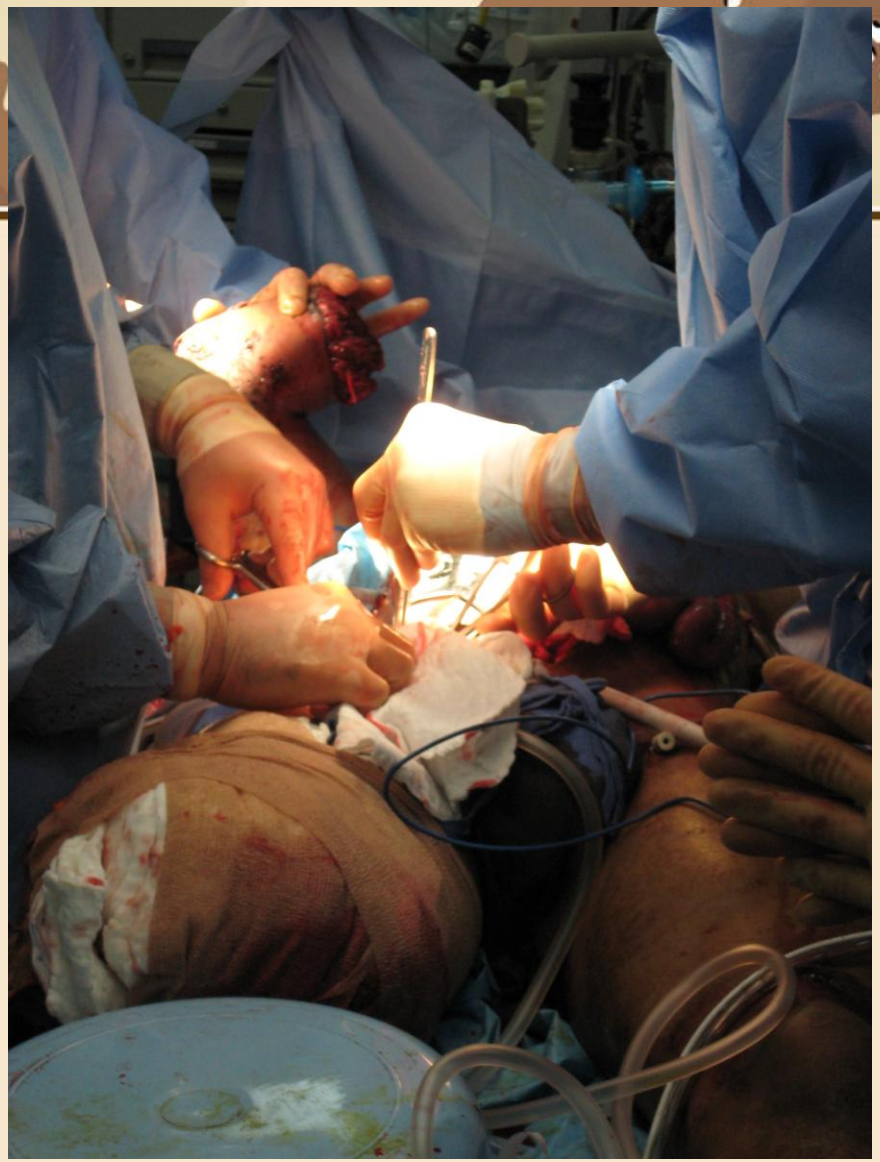
Initiation of Clinical Practice Guidelines

- **Clinical Practice Guidelines (CPG)**
- **Backbone of JTTS performance improvement program**
  - Data published in The American Journal of Surgery, 2009
  - Following the damage control resuscitation guideline, mortality in the massively transfused decreased
    - 32% pre-CPG to 21% post-CPG [(4)]
  - Burn resuscitation-associated abdominal compartment syndrome mortality (burn CPG) decreased
    - 36% pre-CPG to 18% post-CPG [(4)]

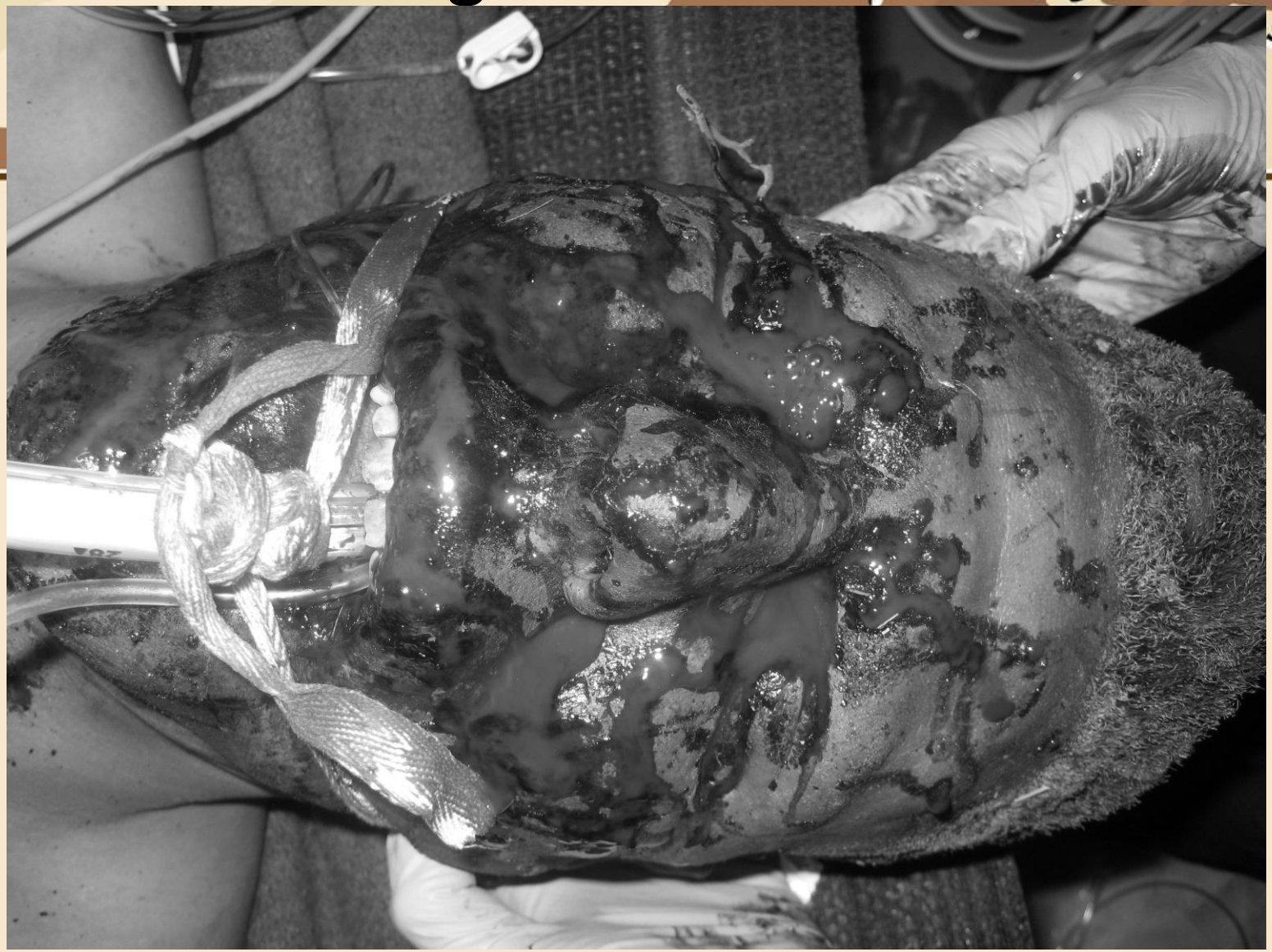
Polytrauma – Hallmark of OIF, OEF

- **Military members are sustaining multiple severe injuries as a result of explosions and blasts**
- **Penetrating trauma - improvised explosive devices (IEDs), blasts, landmines, and fragments account for 68% of combat injuries** [(5)]
- **High incidence of survival with polytrauma sign of advancements in medical care**
  - In previous conflicts, severely injured would not have survived
- **Injuries include burns, shrapnel, traumatic amputations, TBI – often in single patient**

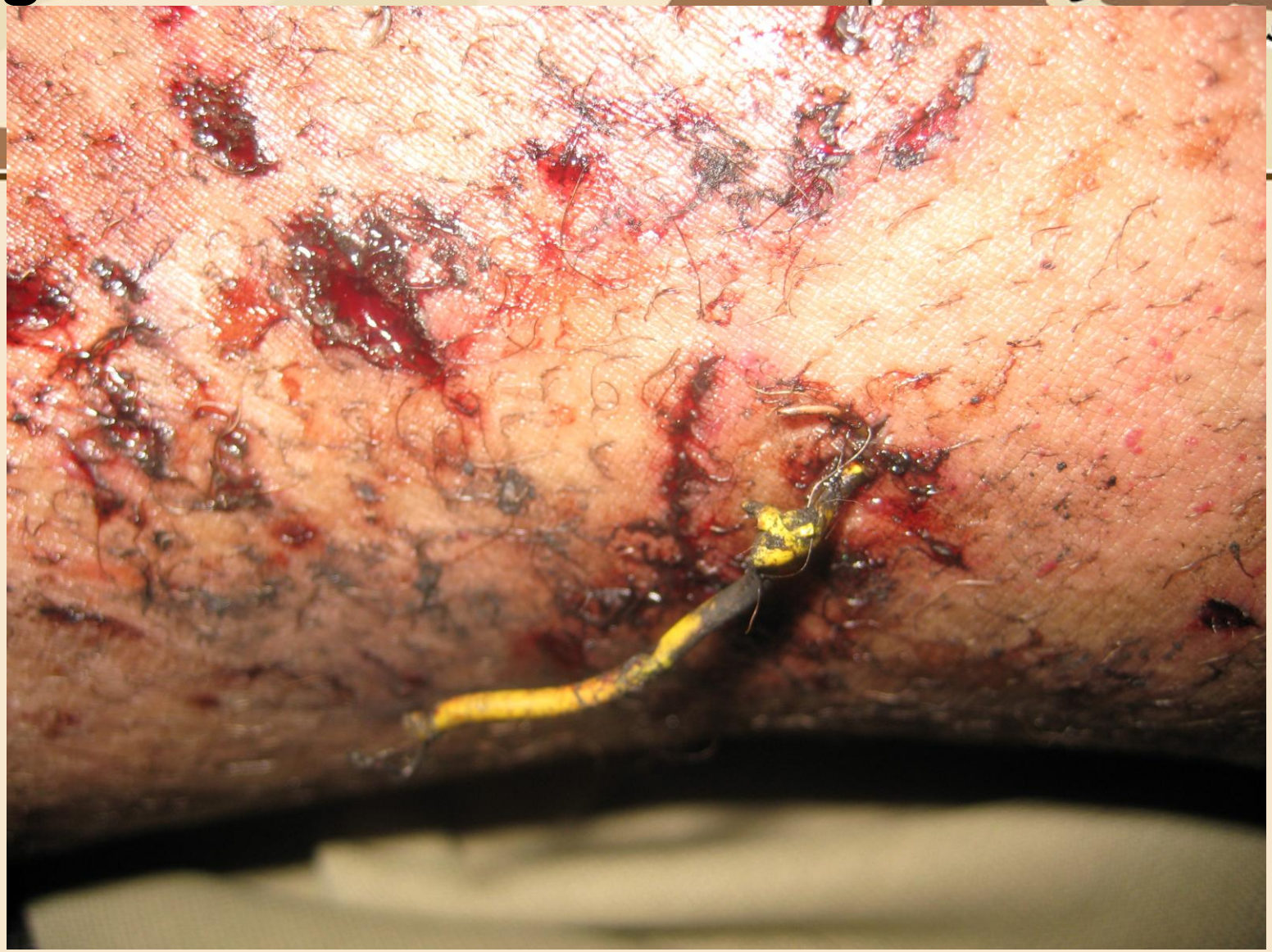
Humvee versus IED



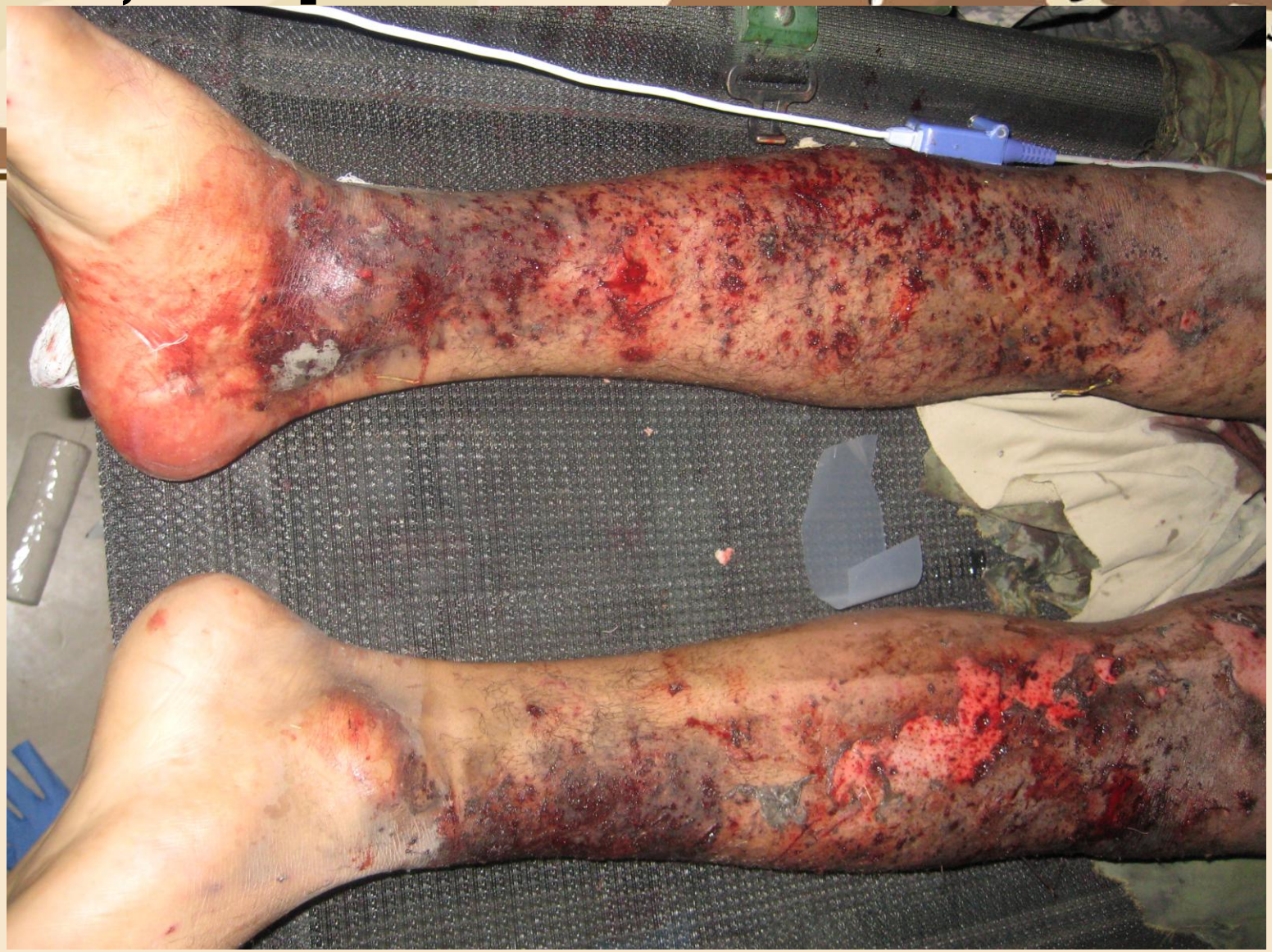
IED Blast – Insurgent



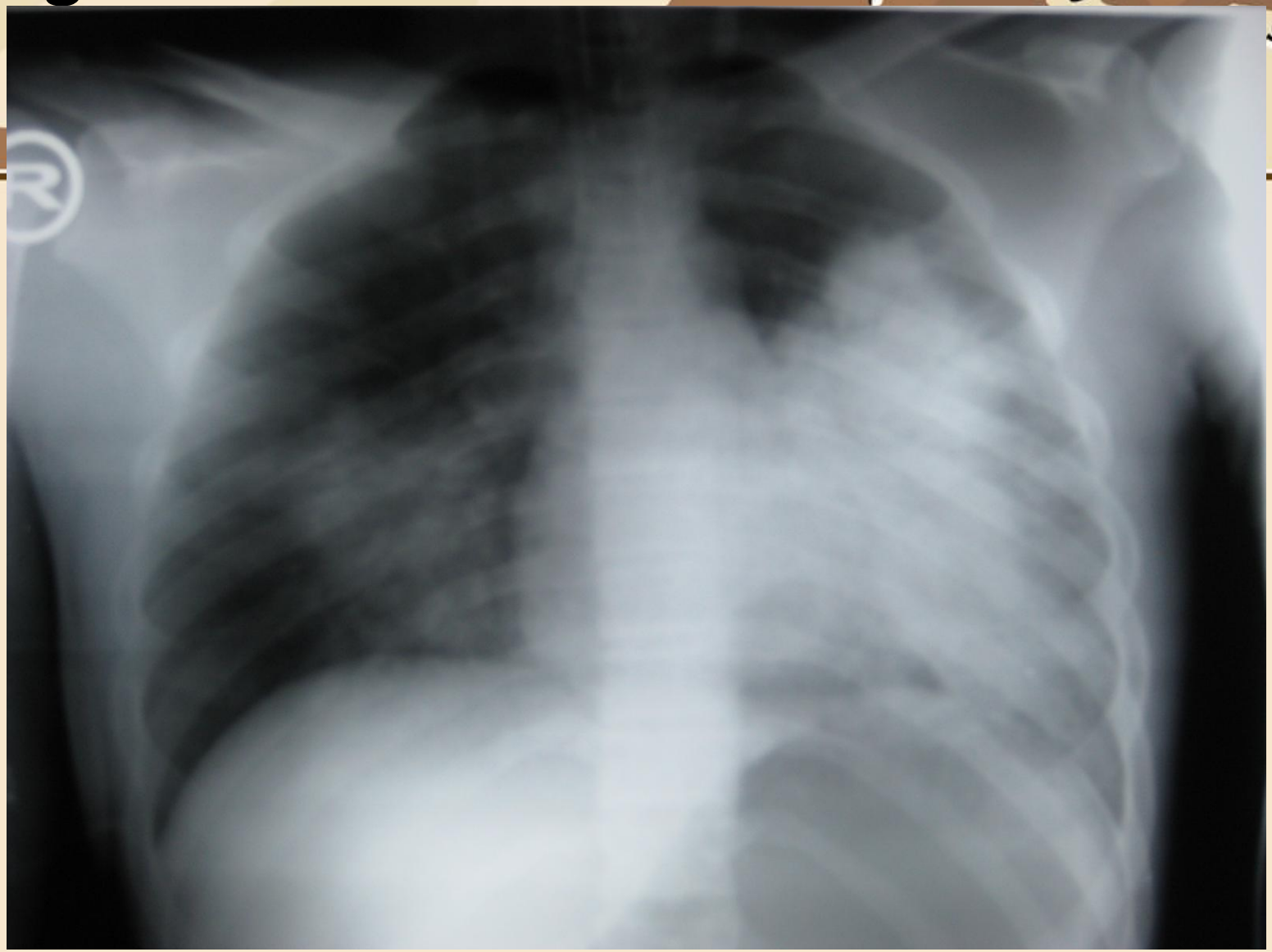
Leg at Knee



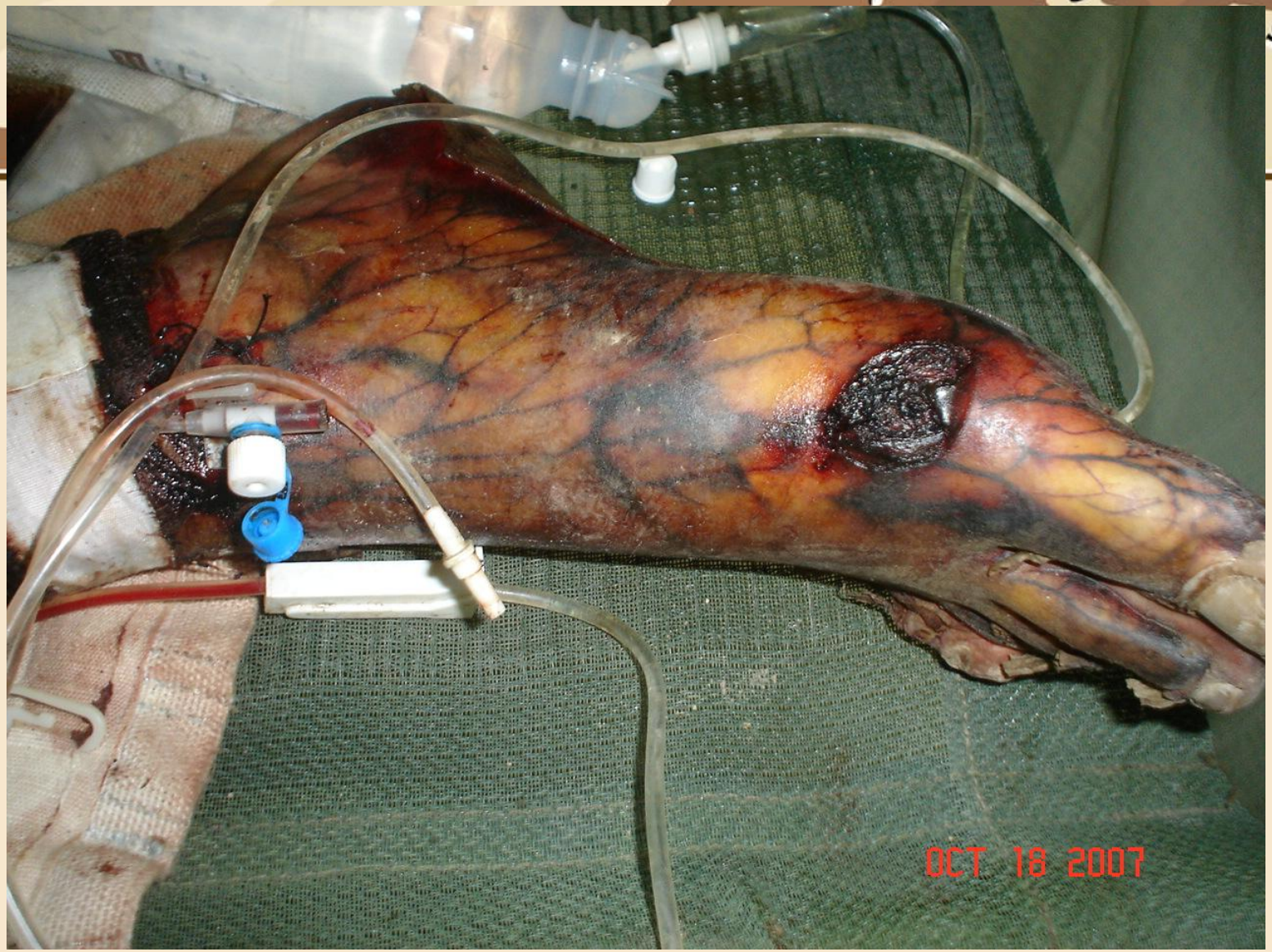
Burns, Shrapnel



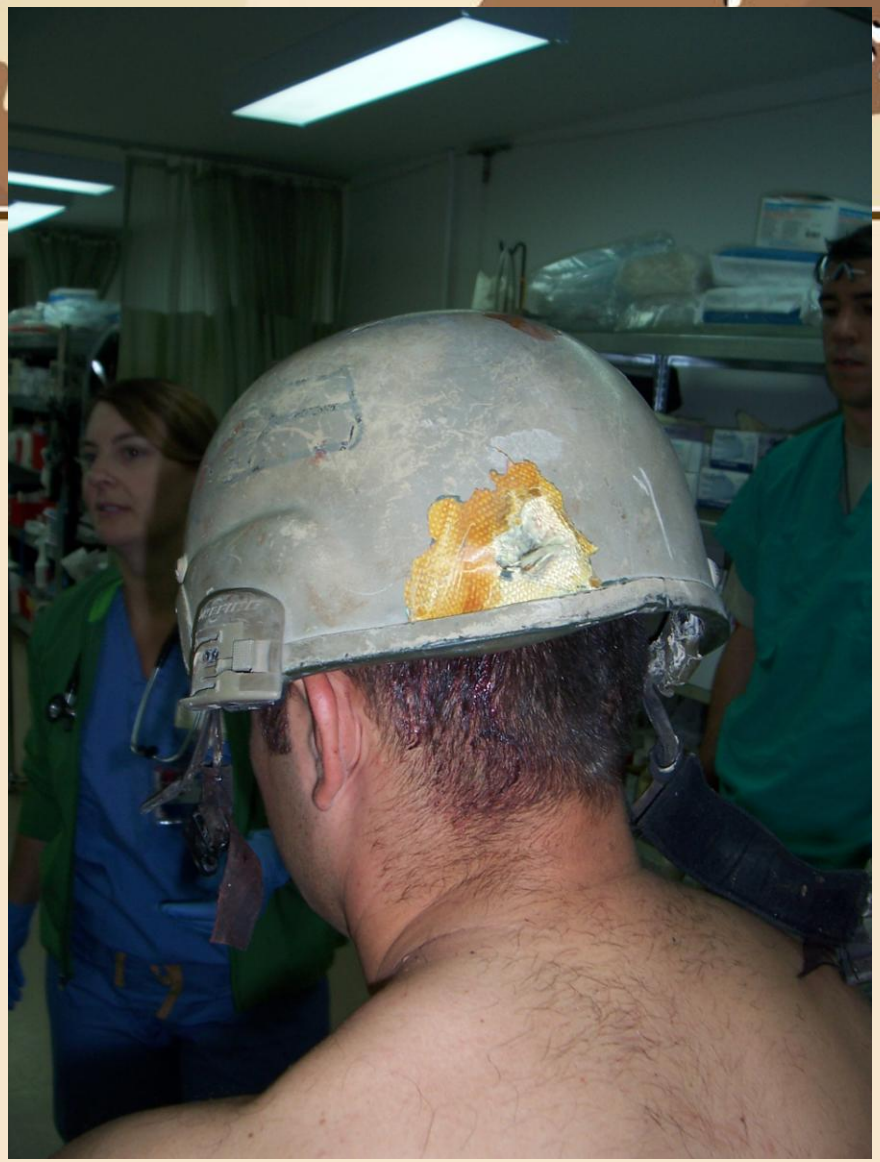
Lung Contusion



90% BSA Burns



Torture



Care Under Fire

Conclusion

- **Combat medical care comes in stages on a continuum**
  - From point-of-injury care on the battlefield by medics
  - Forward surgical hospitals throughout the combat zone
  - Theater hospitals
  - Airevac or CCATT enroute to Landstuhl
  - Definitive care at medical centers in US
  - Followed by VA and rehab care
- **Continuous, ongoing data collection**
- **Continued research into best practices (CPG)**

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