



OPERATIONAL MEDICINE OVERVIEW

Tactical Combat Casualty Care

SSG Kile



Ninety percent of combat wound fatalities die on the battlefield before reaching a medical treatment facility. This fact of war emphasizes the need for continued improvement in combat prehospital care. Trauma care training for military medics has been based primarily on the principles taught in the Advanced Trauma Life Support (ATLS) course. ATLS provides a standardized approach to the management of trauma that has proven very successful when used in the setting of a hospital emergency department. The value of at least some aspects of ATLS in the prehospital setting, however, has been questioned, even in the civilian sector. Military authors have voiced additional concerns about the applicability of ATLS in the combat setting. Mitigating factors such as darkness, hostile fire, resource limitations, prolonged evacuation times, unique battlefield casualty transportation issues, command and tactical decisions affecting healthcare, hostile environments, and provider experience levels pose constraints different from the hospital emergency department. These differences are profound, and must be carefully reviewed when trauma management strategies are modified for combat application.



REFERENCES

- Operational Emergency Medical Skills Course Manual, LTC (Ret) J. Hagmann, M.D., 2004
- Tactical Combat Casualty Care, Committee on Tactical Combat Casualty Care, Government Printing Agency, Feb 2003
- Tactical Combat Casualty Care in Special Operations, CPT Frank Butler, Jr., MC, USN; LTC John Hagmann, MC, USA; ENS George Butler, MC, USN, Military Medicine, Vol. 161, Supp 1, 1996



3 ENVIRONMENTS FOR CARE

- **HOSPITALS**
- **TRADITIONAL PRE-HOSPITAL
CARE**
- **OPERATIONAL “OUT-OF-
HOSPITAL” MEDICAL SUPPORT**



HOSPITALS

- Primarily deals with blunt trauma
- Access to full range of specialist Physicians
- Resource intensive
- Advanced trauma care facilities, Intensive care units
- ATLS procedures
- Pre-surgical evaluation with access to full labs, blood banks, etc.



TRADITIONAL PRE-HOSPITAL CARE

- Primarily deals with blunt trauma
- Rapid response times
- Well equipped and supported, utilizes EMT trained personnel
- Advanced life support capabilities
- Rapid transport and access to ambulances, helicopters, etc.
- Short evacuation times (usually less than 1 hour away from hospital)
- Strict medical control and use of protocols



OPERATIONAL “OUT-OF-HOSPITAL” MEDICAL SUPPORT

- Most significant difference between this and the above are evacuation times of greater than 1 hour
- Primarily deals with penetrating trauma
- Independent providers
- Austere environments
- Echeloned care
- May have delayed initial medical access (scene safety important)
- In most cases limited to what medic can carry in aid-bag
- Often pre-injury stressor is present (e.g. dehydration, sleep deprivation, stress of mission)



OPERATIONAL FIELD CARE

3 DISTINCT AREAS

- Care Under Fire
- Tactical Field Care
- Combat Casualty Evacuation Care
“CASEVAC”



CARE UNDER FIRE

- SECURITY!!
- Limited to what is carried by medic and soldiers
- Care based on MARCH acronym
- **M** – Massive Bleeding
- **A** – Airway
- **R** – Respirations
- **C** – Circulation
- **H** - Head

*The best treatment for a patient
under fire
... is to gain Fire Superiority!!*



TACTICAL FIELD CARE

- More secure
- More Resources ... still resource limited
- ABC's and Rapid Trauma Assessment
- IV's and Fluid Resuscitation
- Dressings, Splints and Meds
- CPR - Resuscitation on the battlefield for victims of blast or penetrating trauma who have no pulse, no respirations, and no other signs of life will not be successful and should not be attempted.



C-SPINE PRECAUTIONS

- C-spine control: even with the neck supported in a C-collar, you do not prevent all neck injury
 - For penetrating trauma, C-spine control is unnecessary (blunt trauma tears vertebral ligaments requiring support). Penetrating injury blasts away ligaments, so if there is penetrating trauma then you already have C-spine trauma
 - Value – no one has shown conclusively that C-spine control can reduce the number of people who become paralyzed. For example, in Austria, an EMS system was established in the 1980's using C-spine control but no differences were detected in numbers of patients who developed paralysis before and after introduction (does not mean it isn't there).
 - C-spine control tends to be very resource intensive (manpower and medical management) that we do not use it except for very specific injuries where you think that there is a C-spine injury.



Standard medical procedures have been developed for the treatment of patients in the traditional pre-hospital and hospital environments where evacuations are usually achieved in less than 1 hour. These procedures are not always applicable to your work environment.

**UNDERSTAND THE ENVIRONMENT YOU
ARE WORKING IN!!**



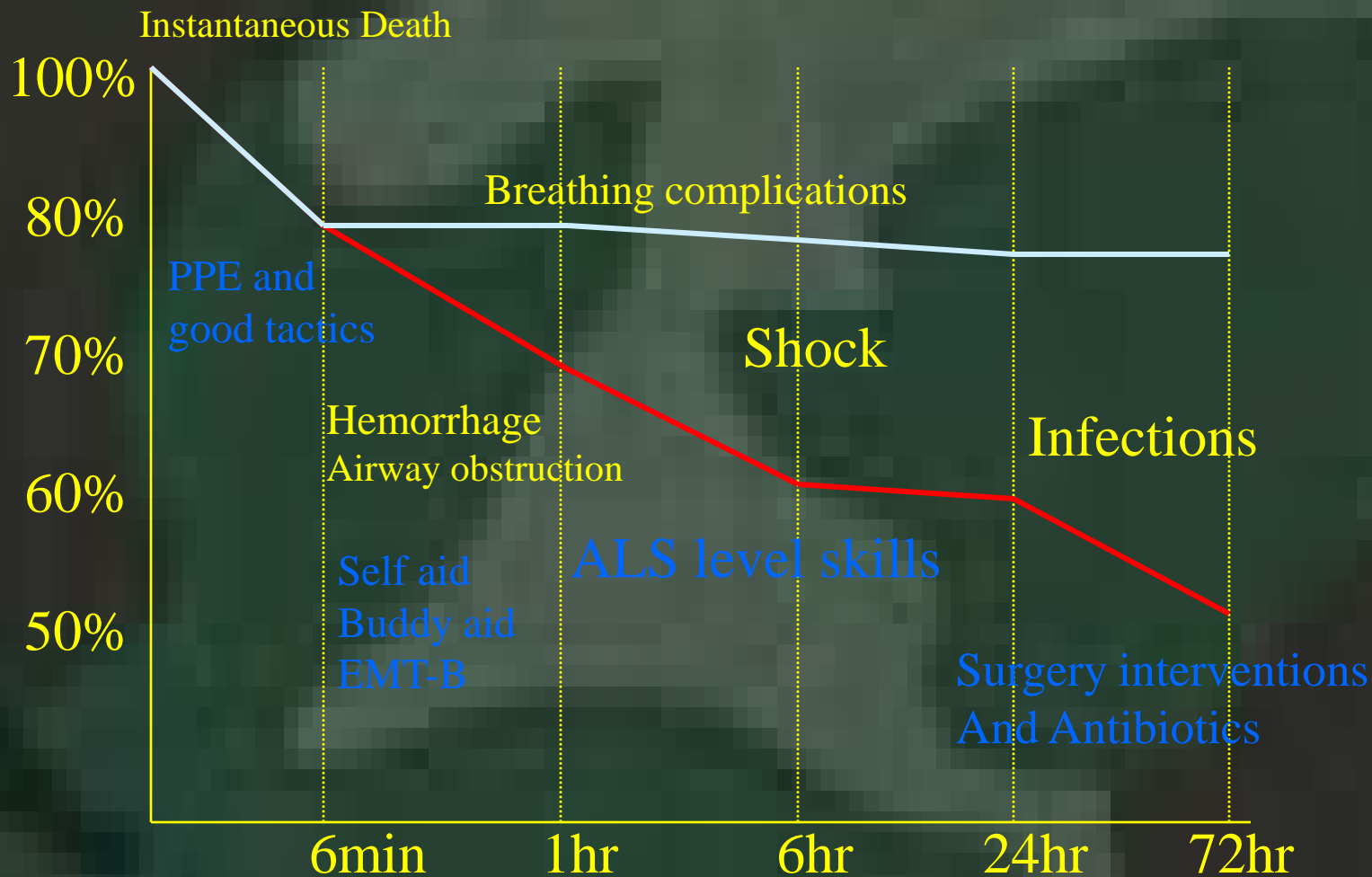
MORTALITY CURVE

Following trauma, the chances of a casualty surviving are dependant upon numerous variables, including the speed at which appropriate medical treatment is administered. During this discussion, we will look at the factors that can affect the chances of a casualty surviving as injury symptoms developing from initial penetrating trauma, through hemorrhage and/or respiratory compromise, to shock and infection.



MORTALITY CURVE

PENETRATING TRAUMA





LIFESAVING MEASURES

- Hemorrhage Control
- Airway management
- Shock



HEMORRHAGE CONTROL

- Tourniquet vs. Field Dressing
- Alternate Means
 - Quickclot
 - Hemcon Dressing
 - Fibrin Bandage



AIRWAY MANAGEMENT

- Resource Intensive methods v. Less intensive methods
 - Allow patient to sit up and manage own airway
 - O2 delivery
 - Naso v. Oral
 - Surgical Cricothyroidotomy v. Intubation
 - Needle Cric



SHOCK

- Shock is initially a physiological protection response that occurs in response to injury
- Not a state your body slowly goes into because of injury
- Stages
 - Compensated
 - Decompensated
 - Irreversible



CONCLUSION

- Operational Environment is different from civilian pre-hospital environment.
- Know your mission profile and understand your resources.
- Right intervention at the Right time.
- Regardless of Echelon assigned to... we ALL are Echelon I medics!



QUESTIONS??

So that others may live...