CASE STUDY

Evidence Based Medicine

From the Streets of Baghdad to the Streets of Our Cities ...What Can We Learn?

by Sean D. McKay

The crisis of today's global realities has invoked revolutionary challenges in virtually every aspect of modern life. Never has this truth been more self evident than in the case of First Responders. Whether the casualty lies wounded in the war torn streets abroad or in the urban cityscapes at home...in the remote reaches of the wilderness or the ravaged landscape of a natural disaster... the challenges of pre-hospital healthcare providers transcend location and demand equally unconventional solutions.

Identifying a void in austere healthcare post Somalia, Military Special Operations Forces began the pursuit of unconventional medical solutions. The outcome, known as **Tactical Combat Casualty Care** (TCCC), is based on a three-tiered strategy outlined in a landmark paper published in a 1996 issue of Military Medicine. Its principle mandate is the critical execution of the right medical interventions at the right time and place. Particularly in the tactical environment, good medicine administered at the wrong time can often prove to be lethal.

Based on extensive and quantifiable research of wounding patterns in combat, TCCC consequently addresses the three major causes of preventable combat death (fig. 1): **Extremity Hemorrhage** (60%), **Tension Pneumothorax** (33%) and **Airway Obstruction** (6%). It also pinpoints the three definitive phases of trauma management: **Care under Fire** (care at the point of wounding while under effective fire or vulnerable to specific threat), **Tactical Field Care** (care prior to evacuation, but no longer under effective hostile fire or specific threat) and **TACEVAC** (care during evacuation to a higher echelon of care). As a result of this extensive research and empirical data, Evidence Based Medicine (EBM) treatment modalities relating to trauma have gained unparalleled ground. TCCC is the only tactical specific medical guidelines to have the dual endorsement of the American College of Surgeons and the National Association of Emergency Medical Technicians.

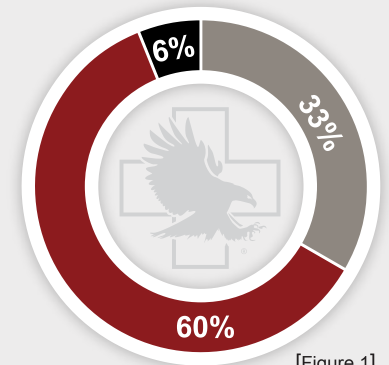
> *"In the last decade there has been a strong emphasis from organized medicine to develop "best practices" based on evidence based medicine (EBM). Simply stated this is to question why we do what we do and to validate our practices by subjecting all we do to objective scientific scrutiny. Keep in mind that best practices is a dynamic concept, that is, change is expected as technology and the fund of knowledge increases. What is a best practice today may not be when re-evaluated in the future."*
>
> **Dr. Richard Carmona**

Although the locations change, the wounding patterns remain the same. The primary, secondary, and tertiary blast injuries that occurred April 19, 1995 at the Alfred P. Murrah Federal Building are consistent with those suffered in London, Israel, Tanzania, Jakarta, and Iraq. Likewise, a 7.62 projectile ripping through a soldier's femoral artery in Fallujah, Iraq creates the same wounding pattern it would in any domestic shooting. ***Locations are interchangeable; the laws of physics are not.***

Civilian EMS typically transposes broad-spectrum guidelines into incidents that have injury fluency. With the "fund of knowledge and technology" increasing daily from the successful implementation of TCCC treatment modalities on the battlefield, EMS protocols must be re-evaluated in order to develop modern "best practices." These treatment modalities include the early use of tourniquets and hemostatic agents for hemorrhage control; the aggressive prevention and management of hypothermia in trauma patients (regardless of ambient temperature); and the early pre-hospital use of antibiotics for penetrating trauma.

The Committee of Tactical Combat Casualty Care and the United States Army Institute of Surgical Research are leading the fight in decreasing preventable death on the battlefield. The **National Tactical Officer's Association** (www.ntoa.org) has picked up the torch in the civilian and federal arena and is providing subject matter experts in both the provider and train the trainer courses. **North American Rescue** is in the business of developing mission specific products and training methodologies that reflect the most aggressive side of emergency medicine. By utilizing Evidence Based Medicine to target the treatment of universal wounding patterns, North American Rescue is able to effectively develop solutions for reducing preventable death both at home and abroad.

Real time, quantifiable evidence is linking unprecedented survival rates among United States Military personnel to TCCC treatment modalities and training. Just as the aftermath of Vietnam greatly influenced emergency medicine on the home front, scientific data returning from the Global War on Terror (GWOT) continues to reveal the shape of things to come. The guidelines require the individual pre-hospital provider to re-evaluate current protocols, training, and mission specific equipment.



[Figure 1]

PREVENTABLE COMBAT DEATH

60%	Extremity Hemorrhage
33%	Tension Pneumothorax
6%	Airway Obstruction

MEDIC LEG RIG

- TCCC Configured
- Provides rapid access to critical equipment in all conditions
- MOLLE-Style Attachment System Compatible
- 1000 Denier Bag with Stress Reduced Coating

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