[Editorial Forward: Danny L. Burch, Jr., is a sergeant with the Indiana State Police. In this article he proposes to modify the way emergency medical personnel respond in a mass casualty incident, what most would call an active shooter event. His premise, that EMS should be paired with police officers to enter ‘warm zones’, is likely to save lives.]

Changing the Emergency Medical Service Paradigm for Operations in a Tactical Environment after a Mass Casualty Incident

By

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The traditional response to a mass casualty incident, such as an active shooter, is for law enforcement to eliminate the threat while Emergency Medical Service (EMS) stages outside the perimeter until the structure is secured and declared a “cold zone”. Emergency Medical Service (EMS) personnel should be trained to work with and support law enforcement in a potentially high-threat environment by developing and implementing protocols for EMS personnel to rapidly deploy into areas that have been cleared of potential threats, but not yet secured, in order to initiate prompt casualty treatment. A Rescue Task Force (RTF) comprised of law enforcement officers and EMS personnel is a new model to provide emergency medical treatment to casualties in potentially high threat environments.

**The Traditional Paradigm**

After the 1999 Columbine active shooter event, the standard protocol for law enforcement changed from establishing a perimeter and waiting for SWAT to immediately entering the structure to eliminate the threat. The Emergency Medical Service (EMS) community has not adapted to mass casualty incidents such as an active shooter event. The traditional EMS response is to stage outside the perimeter until law enforcement secures the structure and declares the area a “cold zone”. The deficiency of the traditional EMS model is that casualties are not able to receive advanced medical treatment as rapidly as possible.

The Hartford Consensus Conference, which was led by the American College of Surgeons, convened in April, 2013 with the purpose of developing a protocol to reduce preventable deaths in mass casualty incidents. The conference concluded that hemorrhage control should be an essential law-enforcement skill coupled with a rapid and coordinated response by first responders (Lenworth et al., 2013b). The Hartford Consensus II convened on July, 2013. This conference issued a call to action that included the following points:

• EMS/fire/rescue must revise the traditional mass casualty incident response, which is to stage and wait for casualties to be brought out to the perimeter.

• Hemorrhage control techniques such as tourniquets and wound packing must be incorporated into training along with the assessment, triage and transport of casualties with internal hemorrhage and torso trauma to definitive trauma care.

• Incorporate Tactical Combat Casualty Care and Tactical Emergency Casualty Care concepts into EMS/fire/rescue training (Lenworth et al., 2013a).

Essentially, there is a critical flaw with the traditional EMS response. While EMS is staged outside the perimeter waiting for the structure to be declared safe (“cold zone”), casualties inside the structure are not receiving life-saving medical treatment based on the combat-proven principles of Tactical Combat Casualty Care (TCCC). TCCC has been modified for use by domestic first-responders and formalized as Tactical Emergency Casualty Care (TECC).

**Tactical Combat Casualty Care**

Tactical Combat Casualty Care (TCCC), which was developed after the 1993 Battle of Mogadishu by U.S. Navy Capt. Frank Butler, USN MC; Lt. Col. John Hagman, USA MC; and Ensign George Butler, USN MC; redefined pre-hospital care on the battlefield. TCCC defines emergency medical interventions with the goal of reducing preventable deaths at the scene while taking into consideration the limitations due to the austere conditions of combat.

The importance of the emergency medical interventions outlined by TCCC are supported by empirical data. The 1967-1969 Vietnam War Wound Data and Munitions Effectiveness Team study highlighted that approximately 20% of all casualties died from extremity hemorrhage, tension pneumothorax or airway obstruction. A 1984 study highlighted similar data where 9% of casualties died due to exsanguination from an extremity wound, 5% died from tension pneumothorax and 1% from airway obstruction. These wound classifications are considered to be preventable deaths and are exceptionally time sensitive. The success of TCCC has been proven in the Operation Iraqi Freedom and Operation Enduring Freedom conflicts with a preventable death survival rate of 90%. The defining principle of TCCC is to reduce preventable deaths by using the proper emergency medical intervention at the proper time. Delays in treatment only increase the odds of casualty deaths. The concept of "far-forward" placement of medical personnel is critical (Iselin, 2009).

**EMS in the “Warm Zone”**

Domestic mass casualty events from an active shooter have similar ballistic wound mechanisms and austere conditions as combat. Any delay by EMS personnel to enter a “warm zone” contradicts the TCCC principles and increases the odds of preventable deaths. The Rescue Task Force (RTF) concept is based on the protocol developed by the Arlington County Fire Department in Virginia in 2008. The protocol was developed from the same interior tactics used by firefighters in a structure fire. According to Iselin (2009):

“The RTF is essentially a simple response model made up of multiple four-person teams that move forward into the unsecured scene along secured corridors to provide stabilizing care and evacuation of the injured. Each team consists of two police patrol officers to provide front and rear security, and two medics to stabilize patients using TCCC principles and equipment.”

The risks to the EMS personnel of the RTF is reduced by incorporating appropriate equipment and training. Law enforcement provides security for the EMS personnel that are outfitted in ballistic vests and helmets (Iselin, 2009). Indeed, the International Association of Fire Fighters released a statement in June, 2013, supporting TCCC and the model of a Rescue Task Force escorted by law enforcement into a “warm zone”. The concept is also supported by the International Association of Fire Chiefs and the United States Fire Administration. Nationally, agencies in California, Colorado, Kentucky, North Carolina, Ohio, and Virginia have developed protocols to provide a more rapid response (USDHS, 2015; USFA, 2013).

It has been demonstrated during training by first responders in Arlington County, Virginia, that the RTF concept is feasible and effective. One training iteration included the responding law enforcement officer contact team requesting the RTF within ten minutes of entering the building. Four RTF teams entered into the building. Subsequently, all 44 victims were stabilized and extricated to the external casualty collection point within 30 minutes. In comparison, using the traditional EMS protocol in a separate drill, 90 minutes had passed before the first contact was made with a casualty, and it required 2.5 hours to evacuate all the casualties from the structure. These performance metrics support the RTF concept and demonstrate that casualties throughout a structure can be rapidly treated and extricated before law enforcement has secured the entire building (Iselin, 2009).

**Changing the Paradigm**

EMS personnel that attended training to introduce the concepts of operating in a tactical environment were studied to evaluate their “perceptions of preparedness, adequacy of training, and general attitudes toward active shooter incident response” (Jones, 2014).

Two hundred fifty-six EMS personnel participated in the survey before and after receiving the training. Post-training, the number of personnel that felt adequately prepared to respond to an active shooter incident changed from 41% to 89%. Similarly, the number of personnel that felt adequately trained to provide medical care during an active shooter incident changed from 36% to 87%. Those that said they should never enter a building with an active shooter changed from 73% to 61% after the training. Indeed, those without prior military or tactical experience that agreed they should never enter a building with an active shooter until the scene was declared safe changed from 78% to 50%. Personnel with prior military or tactical experience who indicated they felt adequately trained to provide medical care in a high threat environment changed from 56% to 31%. Likewise, they also indicated their perception of feeling comfortable working jointly with law enforcement in a warm zone changed from 76% to 56% (Jones, 2014).

A study of 120 Tactical Emergency Medical Service (TEMS) operations in Helsinki, Finland, from 2004 to 2009 was conducted. The median time from dispatching the incident to the arrival of first responders on scene was 10 minutes with a median duration of operations of 41 minutes. Basic life support was provided in all the incidents. None of the casualties that were alive upon arrival to the hospital succumbed to their injuries. The results of the study found that TEMS was a feasible, rapid and efficient way to provide medical support to law enforcement operations (Vainionpää, 2012).

**Conclusion**

Emergency Medical Service (EMS) personnel should be trained to work with and support law enforcement in a potentially high threat environment by developing and implementing protocols for EMS personnel to rapidly deploy into areas that have been cleared of potential threats, but not yet secured, in order to initiate prompt casualty treatment. A Rescue Task Force (RTF) comprised of law enforcement officers and EMS personnel will be able to provide emergency medical treatment to casualties in potentially high threat environments. Long-standing attitudes and perceptions regarding the EMS role at a mass casualty incident from an active shooter event appear to change by incorporating appropriate equipment and training to mitigate risk. Further study needs to be completed to determine proper RTF tactics and how to effectively implement a RTF.

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