The Hartford Consensus: THREAT, A Medical Disaster Preparedness Concept

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Mass murder through active shooter and explosive events has been at the forefront of our news. Despite improvements in both law enforcement tactics and emergency trauma care, additional integration of the core functions of the public safety response to these events has the potential to maximize survivability. From the mass casualty shooting at Columbine High School in Littleton, CO, through the shootings at Sandy Hook Elementary School in Newtown, CT, an examination of events will demonstrate some improvement. However, we must continue to hone our response.

Perhaps no incident has changed both law enforcement and fire/rescue/emergency medical services (EMS) response like the Columbine High School shooting. At that time, traditional law enforcement response doctrine dictated waiting for tactical personnel to arrive to secure the school. During this waiting time, some of the fatalities and some of the morbidity among survivors were due to unchecked hemorrhage and shock.[1] Nearly 8 years later, a clear transition in active shooter response was evident on the campus of Virginia Tech University, where the initial response included 2 tactical medics who provided care, predominantly hemorrhage control and airway management, long before the scene was secured.[2] The mass casualty shooting incident at Foot Hood military base resulted in 13 dead and 31 wounded. An officer was able to stop the shooter, but sustained bilateral thigh wounds with significant hemorrhage from the left lower extremity. An Army medic controlled her hemorrhage with a Combat Application Tourniquet (C-A-T, Composite Resources) applied to the left thigh after direct pressure and improvised tourniquets failed to control the hemorrhage. Further advances in law enforcement and fire and rescue response were evident in the response to the Aurora, CO movie premier shooting. Continuing the trend of moving effective care earlier in the active shooter response, several of the wounded were rapidly extracted from the scene and transported to hospitals and trauma centers by police vehicles.[3] The incident at the Sandy Hook Elementary School in Newtown, CT was a different scenario. The shooter used a semiautomatic weapon with high velocity ammunition; more than 150 rounds were fired in less than 5 minutes. Twenty-six individuals were shot and died almost immediately.[4] Unfortunately, a rapid response for medical care would not have saved these victims. However, this mass murder of first grade students and their teachers has heightened awareness of these horrific events and has initiated calls for measures to improve response and reduce the tremendous burden of these events.

THE HARTFORD CONSENSUS CONFERENCE

On April 2, 2013, representatives from a select group of public safety organizations including law enforcement, fire, prehospital care, trauma care, and the military convened in Hartford, CT to develop consensus regarding strategies to increase survivability in mass casualty shootings. Representatives at the Hartford Consensus Conference recognized the necessity of the groups' combined constituency to realize that goal. The organizations represented in Hartford are listed in Table 1. A concept document resulted and became known as the Hartford Consensus. The purpose of this article is to describe the evolution of the concepts presented in that paper, to further describe the problem, and to propose specific actions to help save lives.

EVOLUTION OF CIVILIAN PREHOSPITAL TRAUMA LIFE SUPPORT

The history of EMS in the United States began with the American College of Surgeons (ACS) Committee on

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Abbreviations and Acronyms

ACS/COT = American College of Surgeons Committee on Trauma
ATLS = Advanced Trauma Life Support
CoTCCC = Committee on Tactical Combat Casualty Care
EMS = emergency medical services
MPHTLS = Military Prehospital Trauma Life Support
PHTLS = Prehospital Trauma Life Support
TCCC = Tactical Combat Casualty Care
THREAT = Threat suppression, Hemorrhage control, Rapid Extrication to safety, Assessment by medical providers, and Transport to definitive care

Fractures, which subsequently became the Committee on Injuries and later the Committee on Trauma (COT). A firm foundation in trauma care was established for the ACS when Robert Kennedy stated in his 1954 Scudder Oration, "Many times treatment given by physicians in the office or hospital cannot undo the lack of care or improper rendering of it at the site of the accident." This concept was expanded in 1960 with Dr Kennedy's seminal text, *Nonpenetrating Injuries of the Abdomen.*[5] This was followed by the development of the EMT-A training program by Joseph D "Deke" Farrington, MD, FACS. Walter Hoyt, MD, FACS was an early leader in the creation of the original edition of *Emergency Care and Transportation of the Sick and Injured*,[6] which became the standard for emergency medical technician training. The next step in the involvement of ACS with trauma care occurred when The Committee on Trauma of Nebraska recognized a need to provide care for the injured similar to that provided to cardiac patients by the Advanced Cardiac Life Support. The Lincoln Medical Foundation supported this program, the Advanced Trauma Life Support (ATLS) course, and it was adopted in 1980 in Lincoln, NE. The Ad Hoc Committee for ATLS of the ACS/COT assumed leadership for the course and it was subsequently offered across the United States during that initial year. The ATLS later spread around the world; it has become the standard of care for the management of trauma during the first hour of care in the hospital.[7]

As the ATLS standards for hospital trauma management developed, it became apparent that there was much more to the care of the trauma patients than the care begun in the hospital. In 1891, Dr Nicholas Senns, founder of the Association of Military Surgeons of the United States, said it best, "The fate of the wounded rests in the hands of one who applies the first dressing."[7] The care given in this first half of the "golden hour," before the patient arrives in the hospital, is critical to saving lives. This was recognized by members of ACS/COT, who appointed Norman McSwain, MD, FACS, to work with the National Association of Emergency Medical Technicians to address the medical standards and principles of care in that first half of the golden hour,[7] the idea being that the prehospital care delivery standards should mesh with the in-hospital standards of care. These standards became known as the PreHospital Trauma Life Support, or PHTLS.

Table 1. Hartford Consensus Participant Organizations

- The American College of Surgeons
- The Federal Bureau of Investigation
- American College of Surgeons Committee on Trauma
- PreHospital Trauma Life Support
- The Committee on Tactical Combat Casualty Care
- Major Cities Chiefs Association (Police)
- The International Association of Fire Chiefs - Emergency Medical Services Section

Currently, it is a philosophy of trauma care that from the time of the injury until the patient has completed rehabilitation, services are given by a team of providers based on the location of care. The principles of care are the same, but preferences change depending on the "situation where the care is provided, the condition of the patient, the skills and experience of the provider and the resources available."[7] The principles of care are the same whether in the civilian or combat prehospital scene, the emergency department, the operating room, or the intensive care unit.

To specifically address the needs of combat situations, a division of military medicine was added to PHTLS. It incorporates the initial work of Michael Cowan, MD, which was expanded to include the Tactical Combat Casualty Care (TCCC) program developed in 1996 by Capt Frank Butler and the Special Operations medical community.[8] The principles of TCCC were added to those of PHTLS and are referred to as Military PHTLS (MPHTLS). The information within MPHTLS has been used in the Hartford Consensus to highlight the management provided by first responders in a disaster situation, such as an active shooter incident.

EVOLUTION OF MILITARY PREHOSPITAL TRAUMA CARE

During the Vietnam conflict, many US casualties died because they failed to receive prehospital trauma care interventions as simple as placing a tourniquet on a bleeding extremity. A Vietnam-era medical author noted that, "...little if any improvement has been made