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# LAW ENFORCEMENT & TACTICAL MEDICINE

## *An Ongoing Series*

### **A Threat-Based, Statewide EMS Protocol to Address Lifesaving Interventions in Potentially Volatile Environments**

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Local and international events of mass violence, including, but certainly not limited to, active shooter or active assailant situations, as well as dynamic mass casualty events, have forced the emergency medical services (EMS) community to rethink its response strategies to such events.<sup>1</sup> The challenge for emergency personnel to access, identify, and treat those victims who have potentially survivable injuries juxtaposes the traditionally taught practice of waiting for the scene to be clear of all threats. Lessons learned from previous incidents have taught us that waiting for the entire scene to be totally safe and without the possibility of continued threat will result in more lives lost.<sup>2</sup> This urgency has altered the foundation from which conventional prehospital EMS response and operations are based.<sup>3</sup> Beyond such intentional events, the same threat-based principles guiding the timely rendering of lifesaving interventions apply to many other all-hazards incidents. This requires a fundamental change in how we in EMS think about response to situations with the potential for continued threat.

While it is no longer acceptable to wait for the scene to be totally safe and clear of all threats prior to making entry, law enforcement (LE) and EMS agencies should have combined operational preplans and agreements that specifically address medical care as promptly and as close to the point of injury as possible. These efforts must at all times acknowledge the safety of EMS personnel, and evaluate the risk versus benefit of their exposure to potential threats. It is also important to note that terminology such as “safe” from hazards versus “clear” of hazards can have different meanings and must be thoroughly discussed during the preplanning sessions. To address this challenge, various models of integrated medical response have emerged. One such model involves the use of hybridized teams consisting of combined LE and EMS personnel, often called a rescue taskforce, to access areas of indirect threat. The conventional rescue task force is composed of a lead LE officer, two EMS providers,

and a follow-on LE officer. Jurisdictional variability exists regarding the functional and medical capabilities of these hybridized teams, as well as the degree of operational risk tolerance to be taken on scene. Other proposed models include the use of primarily LE personnel to render patient care in this environment. The LE model requires ensuring personnel who may not have a primary medical role have the knowledge, skills, and ability to deliver lifesaving emergency medical care. To maximize responder safety and mission success, use of either model should not be an ad hoc or improvised on-scene decision. Rather, it requires partnership and commitment between EMS and LE agencies well ahead of the incident. Preplans are necessary to ensure a mutual understanding exists regarding mission objectives, role, and responsibilities of providers, as well as consensus on operational procedures and medical care to be performed. Training, exercises, and drills should be used to accurately measure and improve upon the response plan.

In the wake of the tragedy that occurred in New Town, Connecticut, the Maryland Governor’s Interagency Active Assailant Working Group<sup>4</sup> was formed with the intent to produce a guidance document for use by public safety agencies across the state. This committee comprised local, state, and federal officials as well as subject matter experts from academia. Early in the series of meetings, it was identified that caring for patients following such events requires a change in the approach to general patient care as directed by the *Maryland Medical Protocols for Emergency Medical Services Providers* (a single statewide protocol for all EMS providers).<sup>5</sup> A medical subcommittee was created and tasked with researching current scientific evidence and best practices from both military and civilian consensus guidelines for caring for casualties during these events.

The committee was charged with the development of a unique EMS protocol for the administration of lifesaving interventions while in close proximity to, but protected

from, potential threats. That protocol also needed to provide the clinical flexibility for certain circumstances, related to safety and operational constraints, when it would not be possible to perform an intervention otherwise considered to be standard of care. The premise behind this protocol was to provide a mechanism to allow EMS providers to approach these patients in a consistent manner that addressed the most imminent life threats, first based upon the provider's proximity to the real or perceived threat encountered, using a risk mitigation model. As the protocol evolved, the committee quickly realized the "all-hazards applicability" and expanded value of the "warm-zone" concept to other incidents including (but not limited to):

- Active assailant (active shooter/improvised explosive device) and other dynamic situations
- Postblast detonations
- Industrial accident/explosion/fire
- Structural collapse/urban search and rescue situations
- Transportation mishaps with limited scene access
- In the immediate aftermath of a natural disaster such as a tornado

After reviewing the scientific literature as well as best practices guidelines, including those from the Committee for Tactical Emergency Casualty Care,<sup>6</sup> the US Department of Defense Committee for Tactical Combat Casualty Care,<sup>7</sup> and the Hartford Consensus,<sup>8</sup> the subcommittee's work product was a clinical protocol for EMS personnel appropriate for the realities of a civilian response environment. This unique prehospital protocol is threat based, meaning the type of intervention to be provided depends on the proximity of the patient to the threat, the ability or inability to immediately extract that patient to safety, and the risk/benefit of performing an intervention in the warm-zone environment. The concept of threat is dynamic and has the potential to change at any time. Such rapid changes in conditions and the overarching need to evacuate personnel and patients may interfere with the delivery of the interventions directed within this protocol. A salient feature of this protocol is that it provides latitude for the occasional, but not insignificant, circumstance when EMS personnel may inadvertently find themselves in a volatile situation. Examples of this include, but are not limited to, domestic violence situations and other all-hazards situations previously described. This protocol does not replace or supersede the general patient care practices in other sections of the Maryland EMS protocols, which are still to be followed once the conditions resume a routine level of operations. Of note, a separate tactical medical protocol exists in Maryland for authorized tactical EMS personnel who are trained and equipped to function as an embedded member of tactical LE team in direct-threat environments.

The final product was presented to Governor's Interagency Active Assailant Working Group and included in the group's final work product.<sup>9</sup> This protocol, entitled "Potentially Volatile Environments with Life Sustaining Interventions," was approved for use by the Maryland's EMS Board through Maryland Institute for Emergency Medical Services Systems and included in the 2015 *Maryland Medical Protocols for Emergency Medical Services Providers*.<sup>10</sup> As indicated by its title, the latitude afforded by this protocol provides the clinical flexibility and adaptability for EMS personnel to deliver lifesaving care in a variety of real-world scenarios. The protocol represents one of the first statewide EMS protocols to address the threat-based need for mainstream prehospital EMS personnel to be able to render care under such circumstances (protocol follows the references).

### Disclosures

The authors have nothing to disclose.

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## PROTOCOL

### 28. POTENTIALLY VOLATILE ENVIRONMENTS WITH LIFE-SUSTAINING INTERVENTIONS

#### a. BACKGROUND

1. A review of past active assailant incidents has shown that the conventional prehospital practice of not entering the scene until it is deemed safe by law enforcement (LE) has been associated with additional loss of life.
2. This protocol is designed to be all-hazards in nature. It is meant to provide a clinical concept of operations that empowers trained and equipped, but not necessarily tactical, EMS prehospital providers, to access casualties and expedite life-sustaining interventions closer to the point and time of injury. For active assailant and other LE-related incidents, EMS providers shall be under LE escort. EMS providers shall use appropriate personal protective equipment as defined by local jurisdiction.
  - (a) Examples of such potentially volatile environments include, but are not limited to:
    - (i) Active assailant (active shooter/IED) situations
    - (ii) Post-blast detonations
    - (iii) Intentional release of a chemical agent
    - (iv) Industrial accident/explosion
    - (v) Hazardous materials incident
    - (vi) Structural collapse/urban search and rescue situations
    - (vii) Transportation mishaps with limited scene access
    - (viii) In the immediate aftermath of a natural disaster such as a tornado

#### b. INTRODUCTION

1. This protocol provides guidelines for the type of intervention and care that should be rendered at various proximities to a threat in a potentially volatile environment.
2. By definition, potentially volatile environments are dynamic in nature. Scene conditions may change and emergent evacuation of responders and patients may interfere with the delivery of interventions described in this protocol.

#### c. INDICATIONS

1. This protocol does not replace or supersede the general patient care practices in *The Maryland Medical Protocols for EMS Providers*, which are still to be followed once the concern of active threat has been mitigated.
2. Use of this protocol is an acknowledgement by the EMS provider that the situation is:

- (a) Unique, austere, and different than the conventional environment of care in which EMS medicine is usually rendered AND
  - (b) The application of standard prehospital emergency practices could unnecessarily jeopardize the safety of the patient and/or medical provider.
3. An active assailant incident or Potentially Volatile Environments with Life-Sustaining Interventions (PVE/LSI) protocol is declared.

#### d. CONTRAINDICATIONS

1. Absent the presence of perceived or actual threat, standard general patient care practices should be followed.

#### e. ZONES OF CARE/OPERATIONS

1. The zones described below are intended to standardize the terminology used by responding emergency medical providers in Maryland and to establish a common understanding of the interventions to be performed within each zone.
2. Hot Zone (Direct Threat): (Integrated Tactical EMS) Operational area with a direct and immediate threat to personal safety or health
  - (a) The overarching priority in the Hot Zone is mitigation of active threat. Medical care is a secondary function to threat mitigation.
  - (b) Medical providers must be an integrated tactical medic (i.e., TEMS) to operate in this environment. Medical priorities are to prevent casualties and responders from sustaining additional injuries and include prompt evacuation to a more secure zone.
    - (i) If at all possible, casualties should self-evacuate.
    - (ii) Goals of care include keeping the response team engaged in neutralizing the threat, minimizing public harm, and controlling life-threatening extremity hemorrhage.
      - a. Control of severe hemorrhage in the direct threat environment is best accomplished with commercially available tourniquets.
      - b. Tourniquet should be placed as high up on the limb as possible without taking the time to expose the area.
      - c. For full or partial amputation, immediately place a tourniquet if possible.
      - d. Cardiopulmonary resuscitation (CPR) is not indicated in this environment.
    - (iii) In circumstances of chemical agent exposure, administration of Nerve Agent Antidote Kits (NAAK/MARK-1) might be warranted if available.
3. Warm Zone (Indirect Threat): (Limited LSI) Area with a potential threat to personal safety or health
  - (a) Evacuation of patients to a completely safe area is the primary objective of care in this area. The following care guidance is dependent on the availability of equipment, supplies, and the appropriate level providers. Extrication should NOT be delayed to provide advanced or involved treatment measures.

- (i) The Warm Zone typically exists between the Hot Zones and Cold Zones, but is not geographic and depends on the evolving situation.
  - (ii) Responders must remain cognizant that scene security can change instantly.
  - (iii) A focused and deliberate approach to providing patient care should occur.
  - (iv) The potential benefits of providing medical care in these zones must outweigh the risks of the ongoing tactical operation and/or delaying opportunity to evacuate the patient.
  - (v) Care in the Warm Zone typically occurs at or near the point of injury once scene stabilizing measures have occurred. Care may also take place at a casualty collection point (CCP).
  - (vi) A CCP is a location concealed and covered from immediate threat where victims can be assembled for movement from areas of risk to the triage/treatment area. Multiple CCPs may be required, which may be located in the Warm or Cold Zone. CCPs should be established and locations communicated as early as possible through operations to ALL responders.
  - (vii) If possible, an abbreviated triage system should be set up to identify the priority for the extrication of patients. The use of ribbons or markers to clearly identify immediate and delayed (red and yellow, respectively) patients is highly recommended. Deceased individuals should also be labeled/tagged appropriately to prevent repeat assessments by multiple providers.
  - (viii) Medical care in the Warm Zone should be limited to essential interventions only and is guided by the mnemonic “MARCHED”
    - a. M – Massive Hemorrhage Control
      - i. Massive hemorrhage remains the greatest threat to life in most trauma patients. Attaining hemorrhage control is the top priority.
      - ii. Tourniquets remain the preferred means of hemorrhage control for life-threatening bleeding in this environment.
        - 1. If a tourniquet was applied in the Hot Zone, it should be reassessed.
        - 2. Tourniquets applied over clothing are not as effective and may need to be adjusted.
        - 3. Tourniquets should only be discontinued by an appropriately trained ALS provider in consultation with medical control.
        - 4. Other methods of hemorrhage control include deep wound packing with either sterile gauze or hemostatic impregnated gauze.
    - b. A – Airway management
      - i. Patients in the Warm Zones with airway issues are high priority for evacuation due to their often intense resource requirements
      - ii. Consider applying oxygen if available and indicated.
      - iii. Unconscious casualty without airway obstruction:
        - 1. Chin lift or jaw thrust maneuver
        - 2. Nasopharyngeal airway
        - 3. Place casualty in the recovery position
      - iv. Casualty with airway obstruction or impending airway obstruction:
        - 1. Chin lift or jaw thrust maneuver
        - 2. Nasopharyngeal airway
        - 3. Allow casualty to assume position that best protects the airway, including sitting up or leaning forward
        - 4. Place unconscious casualty in the recovery position
      - v. If previous measures unsuccessful, if time and resources permit, consider per protocol:
        - 1. Supraglottic Devices (e.g., King LT™, EASYTube®, or CombiTube™).
        - 2. Oro/nasotracheal intubation
        - 3. Surgical cricothyroidotomy
    - c. R – Respirations
      - i. The chest/upper abdomen should be assessed for any evidence of an open chest wound and an occlusive dressing should be applied accordingly.
      - ii. Tension pneumothorax remains a significant cause of preventable death in trauma patients.
        - 1. In suboptimal environments that interfere with complete physical assessment, any patient with significant blunt or penetrating chest trauma who displays dyspnea should be treated as a developing tension pneumothorax and receive needle decompression, if appropriate.
        - 2. To be effective, needle decompression needs to be performed using at least a 3.25 inch, 14g
5. Vascular injuries in the neck, groin, and axilla (i.e., junctional zones) are not amenable to traditional extremity tourniquets. In addition, effective pressure dressings are often extremely difficult to apply. Hemostatic impregnated dressings with direct pressure (minimum 5 minutes with continuous pressure is preferred) have shown useful in such situations.

- needle/catheter or needle decompression thoracostomy kit.
  - d. C – Circulation
    - i. In general, healthy adult trauma patients with a radial pulse and normal mentation do not need IV therapy in the Warm Zone.
    - ii. Patients with evidence of hypotension:
      - 1. If the patient displays signs of a closed head injury, IV fluid therapy is indicated to maintain at least a radial pulse or SBP of at least 90mmHg.
      - 2. Patients in hypovolemic shock should receive a one-time 500mL bolus of IV fluid.
    - iii. Patients in traumatic cardiac arrest should be considered deceased and no CPR should be performed in this zone.
  - e. H – Hypothermia
    - i. Hypothermia in trauma patients has been associated with increased mortality. Hypothermia is easier to prevent than treat.
      - 1. Patients should be moved to a warmed location if possible.
    - 2. Efforts should be made to minimize heat loss.
  - f. E – Everything else
    - i. Consider Mark I/DuoDote for suspected organophosphate/nerve agent exposure.
    - ii. Dependent upon resource availability, burns, eye injuries, and acute pain should be managed per The Maryland Medical Protocols for EMS Providers.
  - g. D – Documentation
    - i. Key findings and interventions should be conveyed to the next phase of care.
4. **Cold Zone:** (Traditional Patient Care Protocols) Area surrounding the Warm Zone. Responders can operate without concern of danger or threat to personal safety or health.
- (a) Casualties are moved from the Warm Zone to the Cold Zone by way of an evacuation corridor(s).
    - (i) Evacuation Corridor: An area transitioning between the Warm and Cold Zone that is secured from immediate threat and allows for a mitigated risk in transporting victims from the CCP to the triage/treatment area beyond the outer perimeter.
  - (b) Once in the Cold Zone, casualties will require retriage, particularly assessing for the development of a life-threatening condition and effects of Warm Zone therapy.
    - (i) If massive hemorrhage has not been addressed or has been ineffectively managed, it should be immediately readdressed with strategies mentioned above.
  - (c) Patients should be triaged and transported per standard practices.
  - (d) Medical care in the Cold Zone should be dictated by resource availability and, when possible, equate to the general patient care standards in *The Maryland Medical Protocols for EMS Providers*.
  - (e) CPR may have a larger role during the evacuation phase especially for patients with electrocution, hypothermia, nontraumatic arrest, or near drowning; however, it is still casualty count/resource dependent.

**KEYWORDS:** law enforcement; emergency medical services; emergency medical services, prehospital; active shooter

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