

# Integration of Tactical Emergency Casualty Care Into the National Tactical Emergency Medical Support Competency Domains

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## ABSTRACT

Tactical emergency medical support (TEMS) is a critical component of the out-of-hospital response to domestic high-threat incidents such as hostage scenarios, warrant service, active shooter or violent incidents, terrorist attacks, and other intentional mass casualty-producing acts. From its grass-roots inception in the form of medical support of select law enforcement special weapons and tactics (SWAT) units in the 1980s, the TEMS subspecialty of prehospital care has rapidly grown and evolved over the past 40 years. The National TEMS Initiative and Council (NTIC) competencies and training objectives are the only published recommendations of their kind and offer the opportunity for national standardization of TEMS training programs and a future accreditation process. Building on the previous work of the NTIC and the creation of acknowledged competency domains for TEMS and the acknowledged civilian translation of TCCC by the Committee for Tactical Emergency Casualty Care (C-TECC), the Joint Review Committee (JRC) has created an opportunity to bring forward the work in a form that could be operationally useful in an all-hazards and whole of community format.

**KEYWORDS:** *National TEMS Initiative and Council; tactical emergency medical support; Committee for Tactical Emergency Casualty Care; incidents, domestic high-threat*

## Introduction

TEMS is a critical component of the out-of-hospital response to domestic high-threat incidents such as hostage scenarios, warrant service, active shooter or violent incidents, terrorist attacks, and other intentional mass casualty-producing acts. From its grass-roots inception in the form of medical support of select law enforcement SWAT units in the 1980s, the TEMS subspecialty of prehospital care has rapidly grown and evolved over the past 40 years.<sup>1</sup>

As TEMS becomes increasingly professionalized, national efforts continue to standardize core competencies and create common language to improve interoperability. TEMS standardization facilitates response capabilities by increasing agency concurrence, enhancing adherence to evidence and consensus based clinical practice standards, and ensuring communities of validated responder competence. Despite the understanding that the most effective response framework is a whole community, all-hazards approach and major efforts by multiple government agencies and professional organizations, as of 2016 there are still no nationally agreed-on standards for responder training, competency, certification, and practice. This is true even within the hyperspecialized TEMS sphere.

In order to address this gap, the NTIC and the C-TECC have collaborated to ensure development of common language recommendations and guidelines that are foundational for both TEMS and broader all-hazards response programs. This article briefly outlines the evolution of the TEMS Core Competencies and proposes a new consolidated national standard founded on the principles of tactical emergency casualty (TECC).

## Background

In 2009, the National Tactical Officers Association (NTOA) and the Center for Operational Medicine (COM) of the Medical College of Georgia spearheaded an effort to identify the core competencies required to successfully support civilian law enforcement operations through tactical medical programs. Additional participants in this collaborative effort included the TEMS section of the American College of Emergency Physicians (ACEP) and the departments of emergency medicine at Brooke Army Medical Center in Fort Sam Houston, Saint Vincent's Mercy Medical Center in Toledo, and the Medical College of Wisconsin. A study group of tactical medical providers, tactical operators,

tactical team commanders, and TEMS medical directors identified 18 critical competency domains required to provide successful TEMS (Figure 1). The study group additionally identified the medical knowledge and skills (i.e., domains) within each domain that applied to four categories of personnel involved with TEMS during law enforcement tactical operations (operator, medical provider, team commander, and TEMS medical director). Working group consensus on this matrix was developed through a modified Delphi method, which is a widely used and accepted means of incorporating cycles of structured group face-to-face and/or electronic feedback to achieve a convergence of expert opinion.<sup>2</sup>

In 2011, the Centers for Disease Control and Prevention–Terrorism Injuries Information, Dissemination, and Exchange (CDC-TIIDE) Project funded a collaborative workshop led by the National Association of EMS Physicians (NAEMSP) and the COM, titled “Finalizing a National TEMS Curriculum.” Participants included representatives of the Department of Justice (DOJ), Department of Health and Human Services (DHHS), Department of State (DOS), Department of Defense (DOD), Committee on Tactical Combat Casualty Care (CoTCCC), National Association of State EMS Officials (NASEMSO), National Association of EMTs (NAEMT), NAEMSP, ACEP, and law enforcement, fire, and EMS agencies of various local, state, and federal jurisdictions. The diverse workshop participants reviewed and discussed the original 18 critical competency domains before modifying them into 17 domains. One key change was the incorporation of the best practice TECC methodology in recognition that the tactical combat casualty care (TCCC) guidelines designed for military combat operations did not adequately meet the needs of the civilian law enforcement community.<sup>3</sup> This expert group evolved to become the NTIC (Figure 2).<sup>2</sup>

Concurrently, in 2010, the C-TECC formed as a best practice development group for the provision of trauma care in high-threat, civilian prehospital environments. A core C-TECC mission was, and continues to be, the effective and appropriate translation of combat lessons learned to civilian high-threat trauma response.<sup>4</sup> High reliability organizations (HROs), which excel in complex, high-risk environments such as TEMS, are characterized by a preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and deference to experience. Using HRO principles, C-TECC brought together a diverse group of policy, education, and operational leaders to craft a set of operationally sensitive, TEMS-specific, evidence-based guidelines. TECC accounts for the operational and threat situation as it relates to the need for life-saving interventions and focuses on expeditious point of wounding care. The initial TECC guidelines were

**Figure 1** Existing NTIC Core Competencies.

1. Tactical Combat Casualty Care Methodology
2. Remote Assessment and Rescue/Extraction
3. Hemostasis
4. Airway
5. Breathing
6. Circulation
7. Vascular Access
8. Medication Administration
9. Casualty Immobilization
10. Medical Planning
11. Human Performance Factors/Health Surveillance
12. Environmental Factors
13. Explosion and Blast Injuries
14. Injury Patterns and Evidence Preservation
15. Hazardous Materials Management
16. Remote/Surrogate Agreement
17. Less Lethal Injuries

**Figure 2** Proposed Updated NTIC Core Competency Domains (2016).

1. TECC methodology and TECC threat-based trauma interventions
a. Hemostasis
b. Airway
c. Respiration/breathing
d. Circulation
e. Vascular access
f. Medication administration
g. Casualty immobilization and packaging
2. Medical planning
3. Remote medical assessment and surrogate treatment
4. Force health protection
5. Legal aspects of TEMS
6. Hazardous materials management
7. Environmental factors
8. Mass casualty triage
9. Tactical familiarization
10. Operational rescue and casualty extraction

based on the successful military TCCC guidelines. A core constituency of C-TECC members remains actively engaged in the CoTCCC to ensure expeditious analysis of military lessons learned. A modified Delphi technique was used to create the initial guidelines. The C-TECC working groups review emerging data and propose revisions to the 24-member C-TECC Guidelines Committee

on a semiannual basis. A two-thirds majority vote from the Guidelines Committee is required to approve any changes to the existing TECC guidelines.<sup>4</sup>

Since the first publication of the guidelines, over 150,000 law enforcement, fire department, EMS, physicians, nurses, and laypersons have been trained in TECC.<sup>5</sup> A variety of government and professional organizations including the Department of Homeland Security (DHS), the InterAgency Board (IAB), the Joint Counterterrorism Awareness Workshop (JCTAWS), the NTOA, the Special Operations Medical Association (SOMA), the International Association of Fire Fighters (IAFF), the International Association of Fire Chiefs (IAFC), and the International Association of Chiefs of Police (IACP) support, endorse, or incorporate TECC. This broad support has resulted in wide dissemination of the guidelines at the local, state, regional, and national levels. Because the TECC principles are the civilian translation of the military TCCC guidelines, they have become a critical component of modern TEMS. Importantly, however, the TECC principles apply beyond the traditional “tactical” environment and as such have laid the foundation for the development of a more consistent, integrated prehospital response.

## Methods

From January 2015 through January 2016, a JRC of subject matter experts (SMEs) from the NTIC and C-TECC executive teams convened to review existing NTIC domains and determine feasibility of domain consolidation. The group reviewed existing NTIC competencies and C-TECC recommendations, evaluated emerging scientific evidence regarding prehospital trauma interventions, examined existing practice patterns, and solicited feedback from a variety of professional organizations. The group also evaluated both organizational procedures for developing and updating recommendations. The SME group consisted of national leaders with backgrounds in emergency medicine, critical care, trauma surgery, EMS medical direction, TEMS, law enforcement, and public policy.

## Results

The JRC determined that the TECC guidelines represent the existing best practice for the provision of trauma care in civilian high-threat and dynamic environments for several reasons. First, the JRC recognized that the TECC recommendations incorporate the most realistic balance of evidence-based and expert consensus available.<sup>6</sup> Second, the JRC supports the academically and professionally rigorous process that C-TECC and NTIC use for updating their guidelines. Finally, the JRC concluded that TECC is now the de facto national standard in civilian high-threat trauma care given the widespread

adoption and support of TECC guidelines by the DHS Office of Health Affairs, the Federal Emergency Management Agency (FEMA), the National Association of EMTs (NAEMT), the IAB, the JCTAWS, the NTOA, the IAFF, and dozens of other agencies at the federal, regional and local levels.<sup>7-9</sup>

The JRC also recognized that although the existing NTIC domains were valid and the trauma care recommendations are consistent with TECC, the presence of 17 domains likely created unnecessary redundancy and barriers to broad implementation. The JRC recommended consolidation of the medical/trauma care domains into a single domain titled Tactical Emergency Casualty Care. Within this domain, the specific trauma care competencies and learning objectives would remain unchanged (e.g., hemorrhage control, management of respiratory and airway emergencies, etc.); however, certain key civilian-specific considerations would be emphasized. For example, though hemorrhage remains the major cause of potentially preventable death in trauma, emerging evidence suggests that civilian and combat mortality patterns differ even in high-threat scenarios.<sup>10</sup> This naturally impacts recommendations. Additionally, certain TCCC recommendations such as Hextend for resuscitation were removed given US Food and Drug Administration black box warning against its use in critically ill patients or those with potential coagulopathy.<sup>11</sup> Finally, the JRC also recommended that the C-TECC become the primary source for recommended updates to the NTIC training standards related to Domain 1.

## Discussion

TEMS providers historically have a variety of operational roles and distinct functional responsibilities.<sup>12</sup> Certainly the most visible and easily recognizable role is the provision of lifesaving interventions to the casualties resulting from operations in a high-threat environment. Less visible, but no less important, roles include the provision of preventive medicine services to tactical teams and other responders in order to limit personnel degradation secondary to operational factors such as heat, cold, dehydration, and exhaustion. TEMS providers are expected to provide medical planning and advocacy for complex operations to ensure seamless continuity of care and expedited extraction and transport of casualties from the point of injury to trauma centers with definitive care capabilities. They are also repositories of operational and tactical medicine knowledge that can be relied on to provide initial and sustainment training in casualty care to tactical responders, such as law enforcement officers, who do not have a primary medical mission.

The consolidation of the NTIC domains from 17 to 10 and the inclusion of TECC as the core trauma care

domain offer several policy, operational, and tactical advantages for TEMS. On the policy level, it is critical to acknowledge that relying on specifically trained TEMS providers to provide the response to high-threat and hard to anticipate events is dangerous. It is the conventional prehospital medical responders that are increasingly called on to respond to high-threat incidents such as ongoing acts of violence, active shooter incidents, and dynamic terror attacks. Specialized teams of TEMS personnel were not first on scene at the Fort Hood shooting, the Aurora massacre, the Boston bombing, or a majority of active violent incidents. In addition, a majority of TEMS providers are primarily conventional EMS/fire medics who are activated during high-threat SWAT missions. Therefore, a common trauma response framework based on TECC for EMS, fire, law enforcement, and SWAT teams is critical to create more efficient training administration and validation, improve consistency across mission profiles, and reduce errors commonly associated with infrequently utilized protocols. This realization does not diminish the role of TEMS but rather makes it a more important and complex specialty requiring professional standards. TEMS providers frequently have additional higher-level training, a dedicated training mission, and an important role as force multipliers. They serve as the drivers of innovation and the repositories of historical knowledge.

Operationally, perhaps the most important advantage is that the creation of a common language among responders allows for more effective interagency training and operations. Medical reports suggest that around 24% of US military prehospital deaths during recent conflicts in Afghanistan and Iraq were potentially preventable.<sup>13</sup> The rate of potentially preventable deaths was found to be approximately 15% for US Special Operation Forces deaths between 2001 and 2004. However, between 2001 and 2010 for the 75th Ranger Regiment, the rate was only 3%. The Ranger First Responder (RFR) program was a key component for achieving this significant reduction in combat mortality.<sup>14</sup> The 75th Ranger Regiment has proven very successful in terms of integrating trauma care as a fundamental soldier skill. Reducing potentially preventable mortality in high-threat civilian trauma requires common operating language and principles that can be rapidly scaled in times of crisis. This approach is modeled after the RFR program for TCCC that is largely credited with the 75th Ranger Regiment achieving the lowest rate of potentially preventable combat deaths in recorded military history. The analogous civilian application of TECC employs the Chain of Survival model to provide leaders with an operational framework for tiered application of TECC across skills sets.<sup>15</sup> In this model, TEMS providers are a critical link in the chain of survival functioning as subject matter experts, instructors, operational liaisons, and force multipliers.

Finally, on the tactical level, the TECC guidelines represent the most current evidence and best practice based recommendations for reducing potentially preventable trauma mortality in the high-threat civilian environment. The guidelines are consistent with existing national standards of care and represent skill sets that can be trained, sustained, and executed in a realistic fashion. Further, the guideline development and implementation process is rooted in the principles of HROs. The integration of the HRO principles of deference to expertise, sensitivity to operations, and reluctance to simplify are particularly important to the success of TECC and to the future of TEMS standardization.

It is critical to recognize that the medical skills of a tactical medic extend beyond those of the TECC guidelines. Domains 2 through 10 of the NTIC address these expanded training and operational competencies and are an important guiding framework. The JRC recommendations provide the initial platform on which to continue building towards a national standard framework for TEMS education, training, and operations. The political, regulatory and operational complexity of implementing a “national standard” in TEMS are well known and include state versus federal authority, competing financial interests, funding, and, sadly, individual personalities. This proposal, and the coordinated efforts of two of the major grass-roots high-threat response organizations, offers a set of broad common sense standards developed over many years while allowing for flexible implementation.

### Limitations

The JRC represents a core group of individuals intimately familiar with NTIC, C-TECC, medical education, and public policy. However, the JRC does not have the authority to speak formally for NTIC, C-TECC, or any government agency. The recommendations in this report will be presented to the C-TECC and NTIC at their semiannual meetings at the Special Operations Medical Association Scientific Assembly. If the committees vote to approve these recommendations, the NTIC and C-TECC will officially endorse the proposal. At that point, the consolidated NTIC domains as a National TEMS Blueprint will be debated at the Special Operations Medical Association–Department of Homeland Security Office of Health Affairs Summit on TEMS Standardization.

### Conclusion

The NTIC competencies and training objectives are the only published recommendations of their kind and offer the opportunity for national standardization of TEMS training programs and a future accreditation process.

As TEMS has matured, the specialty now has an obligation to move from a cloistered set of individual experts, to a national standard of care. Recognizing that the unique mission profiles related to TEMS preclude rigid protocols, the JRC believes the 10 NTIC Core Competency Domains reflect a commonsense, practical framework for the future. Building on the previous work of the NTIC and the creation of acknowledged competency domains for TEMS and the acknowledged civilian translation of TCCC by the C-TECC, the JRC has created an opportunity to bring forward the work in a form that could be operationally useful in an all-hazards and whole-of-community format. The opportunity to build on preexisting work and lessons learned in a collaborative and engaging manor should not be missed. If not capitalized on now we could be looking back at this point in time with the understanding that we had the components of a plan at our disposal but did not execute an effective amalgamation.

## Disclosures

The authors have nothing to disclose.

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- › Single, Wider, and Paired Tourniquet Pressures
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