



THE COMMITTEE FOR TACTICAL EMERGENCY CARE (C-TECC): EVOLUTION AND APPLICATION OF TCCC GUIDELINES TO CIVILIAN HIGH THREAT MEDICINE

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INTRODUCTION

The Committee for Tactical Emergency Casualty Care (C-TECC) was convened to expedite the appropriate transition of military medical lessons learned from the battlefield to civilian crisis response in order to reduce preventable causes of death in both our first responders and civilian population (Appendix 1: Mission Statement). The Committee for Tactical Emergency Casualty Care (C-TECC) is modeled after the Committee for Tactical Combat Casualty Care (CoTCCC) and is comprised of a broad range of interagency operational and academic leaders in the practice of high threat medicine and fire/rescue from across the nation, including members from emergency medicine, emergency medical services, police, fire, and the military Special Operations community. C-TECC remains an independent civilian entity, but maintains a close relationship with CoTCCC for guidance and support.

The Tactical Emergency Casualty Care (TECC) guidelines are a set of best practice recommendations for casualty management during high threat civilian tactical and rescue operations. The TECC guidelines are based upon the principles of Tactical Combat Casualty Care (TCCC) but account for differences in the civilian environment, resources allocation, patient population, and scope of practice.

BACKGROUND

War and conflict drive advances in trauma care. Historically, the gap in this knowledge transference from the battlefield to the civilian medical setting is significant, up to 10 years by some accounts. However, throughout the current OIF/OEF conflict, extensive and aggressive medical data collection coupled with advanced technology has allowed for more rapid integration of these lessons learned. To date, this important practice evolution has been seen to some extent in civilian trauma centers, but only small advances, mostly in an ad hoc fashion, have been appearing in the prehospital setting. Civilian Tactical Emergency Medical Support (TEMS) has a long and storied history in the United States. During the last decade, enormous progress has been made in developing professional and operational standards within the field. However, to date, there still exists no standard of care within the TEMS specialty. Additionally, current civilian first responder practices and principles do not adequately address the need for point of wounding care in atypical emergency response. Rather they continue to emphasize only scene safety and casualty evacuation without care rendered.

These same gaps existed in military operations as well prior to the mid-1990s. In response to operations in Somalia, medical providers within various military Special Operations Forces (SOF) examined the causes of combat related deaths as well as the manner in which medical care was being delivered in the field. The conclusion was that the broad application of civilian trauma principles in combat often negatively affected mission success and appropriate casualty care. As noted by Capt. Frank Butler, “Good medicine often was bad tactics. And, bad tactics get people killed.”¹ This deficiency led to the creation of the doctrine of Tactical Combat Casualty Care (TCCC) within the Special Operations community.²⁻⁴

Over the past decade of war, TCCC has expanded from SOF into the conventional military population and is now considered the standard of care for prehospital trauma care on the battlefield.⁵ The CoTCCC process and TCCC guidelines have been credited with reducing the case fatality rate (CFR) in current combat operations from approximately 14% in Vietnam to 9.2-9.6% during OIF/OEF.^{6,7}

The proven success of TCCC has led the civilian medical community, both tactical and conventional, to examine closely the tenants of the TCCC doctrine and integrate portions into civilian trauma care. However, the lack of a coordinating body resulted in a fragmented and inefficient transition. There exist some fundamental differences between military and civilian high threat care in terms of the population of patients, available resources, liability and common language. A close examination of these distinctions is required for the successful transition and application of TCCC principles in the civilian setting. The Committee for Tactical Emergency Casualty Care (C-TECC) was convened to address the unique operational gaps specific to medical care and rescue initiated at point of wounding.

STRUCTURE

The C-TECC is comprised of a Board of Directors, an Executive Committee, a Board of Advisors and a Guidelines Committee. Each entity is composed of subject matter experts from more than 55 agencies (Appendix 2). The Guideline Committee, responsible for drafting the actual TECC guidelines, is comprised of 24 voting members and two Co-Chairmen representing an interagency group of leaders with experience in direct operations, doctrine development, and training. This Committee includes physicians, paramedics, EMT's, law enforcement officers, and fire fighters all with an equal vote.

METHODOLOGY

The entire C-TECC meets bi-annually with subcommittee meetings ongoing throughout the year to address specific questions, research topics and operational issues. The inaugural meeting of the overall committee was conducted on May 16 & 17, 2011 in Washington, DC.

The strength of the C-TECC lies in the process. Based upon the CoTCCC model, the C-TECC began with existing experiential knowledge and medical research. Where the CoTCCC began with COL Ronald F. Bellamy's data and the Battle of Mogadishu,⁸ C-TECC draws upon the vast experience of our returning warriors and the extensive body of work derived from the Joint Theater Trauma System (JTTS). Further, recognizing that the tactical situation must drive any guidelines for high threat medical operations, the C-TECC relies heavily on end-user input and includes front line representatives from law enforcement, fire and rescue on the voting committee.

The C-TECC established small working groups of subject matter experts to review the existing TCCC guidelines, examine current civilian doctrine, conduct a gap analysis and develop preliminary recommendations for the general voting committee. These working groups considered operational goals, mission profiles, wounding patterns, target population, legal restrictions, relevant research and existing terminologies in drafting their proposal. The working group proposals served as the starting point for discussion and review by the general voting committee.

Day one of the C-TECC meeting began with a series of presentations that examined the application and limitations of TCCC in the high threat civilian setting (Appendix 3). The presentations were followed by reports from the pre-conference working groups and facilitated discussion amongst the invitees and voting members of the committee. A significant portion of this discussion revolved around identifying proper terminology and defining the phases of care to insure the broadest interagency applicability. Of critical importance is the acknowledgement that zones of care are situational, not geographic.

Day two of the C-TECC meeting consisted of a structured review of the pre-conference working group recommendations, drafting of initial guidelines and skill set recommendations, and a formal vote for approval. The Committee voted on individual components of the guidelines and then on the TECC guidelines as a comprehensive unit. In accordance with Roger's Rules of Order,⁹ the approval of the guidelines required a 2/3 majority (16 of 24 member) affirmative vote for passage. The TECC guidelines received unanimous approval from the guidelines committee. Completion of the build-out of the guidelines and final approval of the Board of Directors remain as action items at the conclusion of the meeting.

THE GUIDELINES

The Tactical Emergency Casualty Care (TECC) guidelines are a set of best practice recommendations for casualty management during high threat civilian tactical and rescue operations. The TECC guidelines are based upon the principles of Tactical Combat Casualty Care (TCCC) but account for differences in the civilian environment, resources allocation, patient population, and scope of practice. The complete TECC guidelines were voted on by the Guidelines Committee on Tuesday, May 17, 2011 at the George Washington University Hospital in Washington, DC, and will be published in their entirety as soon as the final version is released by the Board of Directors.

A general overview of the TECC guidelines is included in this article. The TECC guidelines take into account that wounding patterns and mechanisms of injury may be similar in civilian incidents involving ballistic and explosive wounding. Accordingly, TECC recommends treatment modalities based on the tactical situation and available assets. The primary TCCC tenants of placing far forward timely medical care, and doing the right thing at the right time, are also paramount in the TECC guidelines. As with TCCC, TECC is divided into three phases of care based on the relationship of the provider, the casualty, and the threat. It is critical to note that these phases of care are dynamic and not linear.

One challenge that the C-TECC identified early dealing with terminology was a basic definition for *tactical*. Tactical has an obvious implied meaning to both civilian and military Special Operations units. However, there are also specific meanings to the word *tactical* used within firefighting, EMS, rescue, and patrol units.

Many agencies have similar descriptions of the adjective *tactical*; the following is a generalized consensus; (1) of or pertaining to tactics, especially unique response, military or naval tactics, (2) characterized by skillful tactics or adroit maneuvering or procedure: tactical movements, (3) of or pertaining to a maneuver or plan of action designed as an expedient toward gaining a desired end or temporary advantage. Using this general description the overarching significance is that it is "pertaining to tactics to a maneuver or a plan of action designed as an expedient toward gaining a desired end or temporary advantage". C-TECC believes this definition permeates to all involved groups and sustains relevance through the full spectrum of crisis response in which these guidelines have been developed.

Voting members of the Guidelines Committee representing Fire, EMS, Rescue and Police agreed that the current phases of care defined by TCCC have broad name recognition but are restrictive in their application in the civilian setting. The C-TECC voted to acknowledge the original terminology, but clarify the phases of care based upon existing threat level. Accordingly, the C-TECC defined the phases of care for high threat, tactical emergency medical response as:

- *Care Under Fire/ Direct Threat Care*
- *Tactical Field Care/ Indirect Threat Care*
- *Evacuation Care*

Care Under Fire/ Direct Threat Care

In the combat arena, Care Under Fire (CUF) is defined as the care rendered while under effective enemy fire. While the CUF terminology is applicable in certain law enforcement scenarios, the C-TECC felt that adding the phrase "Direct Threat Care" broadened the scope of application to all civilian tactical responders and accounted for a wider interpretation of "threat." The priorities of CUF/DTC remain mitigating the threat, moving the wounded to cover or an area of relative safety, and considering the management of external hemorrhage utilizing tourniquets. Additional emphasis was placed on the importance of various rescue and patient movement techniques, as well as rapid positional airway management if tactically feasible. Treatment and operational requirements are the same for all levels of providers during this phase of care.

Tactical Field Care/Indirect Threat Care

The Tactical Field Care (TFC) definition was modified to TFC/Indirect Threat Care to illustrate the complex and diverse nature of threats in the civilian environment. The TFC/ITC articulates a set of trauma care priorities relevant during high risk operations when the casualty and the provider are in an area of higher security, such as a casualty collection point (CCP), or in an area protected from the direct threat. Assessment and treatment priorities are similar to those under TCCC TFC; Major Hemorrhage control, Airway, Breathing/Respirations, Circulation, Head & Hypothermia, and Everything Else (MARCH). The C-TECC made recommendations for four different levels of providers based upon the scope of practice, skill sets, level of training and certification.

TACEVAC/Evacuation Care

The final phase of care under TECC is called “Evacuation Care.” During this phase of care, an effort is being made to move the casualty toward a definitive treatment facility. Frequently, additional interventions during this phase of care will be determined by local protocols and are similar to those performed during normal EMS operations. However, major emphasis is placed on reassessment of interventions, hypothermia management, and education of receiving agencies

FURTHER RESEARCH

A major mission of the C-TECC is to provide best standard recommendations and drive research to address operational and knowledge gaps in high threat civilian crisis response. C-TECC identified several areas of patient care that require further research before definitive guidelines can be made. For example, differences in patient population related to tourniquet use and design for pediatric and geriatric patients, hemostatic agent efficacy in patients with anti-coagulated blood, procedures for effective needle thoracostomy in the civilian population (including needle size and positioning).. Until data can be developed, existing standards and recommendations shall remain unchanged. C-TECC will not offer specific product endorsements, but strongly encourages individual agency heads and medical directors to investigate which products best meet their needs using data accumulated by C-TECC. Additionally, the C-TECC identified an operational gap that exists nationwide concerning the rescue and phased treatment guidelines during CBRNE operations. A sub committee was formed to address current best practices and future research projects in this area.

SUMMARY

Civilian Tactical Emergency Medical Support (TEMS) is a rapidly evolving specialty in the United States. The C-TECC guidelines build upon the enormous amount of work conducted by individuals across the nation to rapidly evolve and standardize tactical medicine and rescue. Considerable expertise and effort has gone into the development of a civilian operational medical standard in parallel to the successful guidelines of Tactical Combat Casualty Care. Known as Tactical Emergency Casualty Care, this new standard utilizes evidence and experiences from the military while accounting for the inherent differences of civilian operations. The TECC guidelines will continue to be updated using evidence-based best practices and will remain under the custodianship of the Committee for Tactical Emergency Casualty Care. With ongoing interagency and interdisciplinary support, the Committee for Tactical Emergency Casualty Care can continue to serve as a coordinating body for translating lessons learned from combat into civilian tactical and high threat medicine.

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Appendix 1: MISSION STATEMENT: COMMITTEE FOR TACTICAL EMERGENCY CASUALTY

The charter and mission of the Committee for Tactical Emergency Casualty Care is to develop and promote civilian applications of military casualty care to create best practices in domestic crisis response.

Appendix 2: INAUGURAL COMMITTEE FOR TACTICAL EMERGENCY CASUALTY CARE (C-TECC) LEADERSHIP STRUCTURE

EXECUTIVE COMMITTEE

| | | |
|---------------------|-----------------------|------------------------------------|
| Co-Operating Chair: | E. Reed Smith, MD | Arlington County Fire Department |
| Co-Operating Chair: | David Callaway, MD | The Operational Medicine Institute |
| Secretary: | Brendan Hartford, EMT | Chicago SWAT |
| Treasurer: | Geoff Shapiro, EMT-P | George Washington University |
| At-Large: | Sean McKay, EMT-P | The Asymmetric Combat Institute |

BOARD OF DIRECTORS

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|----------------------------------|----------------------------------|------|
| Chairman (Hon) Captain Jeff Race | FDNY HazTac Unit | FIRE |
| Chief Skip Kirkwood | Wake County EMS Division | EMS |
| Chief James Schwartz | Arlington County Fire Department | FIRE |
| Robert Shesser, MD | Medical Faculty Associates | MD |
| Dean Margaret Plack, PhD | George Washington University | EDU |
| LT Mark L. Donald (Ret), PA-C | U.S. Navy, Special Warfare | MIL |
| LTC Bob Mabry, MD | U.S. Army, JTTS | MIL |
| David Davis, EMT-P | DHS | FED |
| Nelson Tang, MD | Johns Hopkins University | MD |

BOARD OF ADVISORS

| | | |
|------------------------|------------------------------------|------|
| Frank Butler, MD | CoTCCC | MD |
| John Holcomb, MD | UTHealth | MD |
| Norman McSwain, MD | PHTLS | MD |
| Paul Pepe, MD | UT Southwestern | EMS |
| Thomas Scalea, MD | R. Adams Cowley Shock Trauma | MD |
| Ali Raja, MD | Brigham and Women's Hospital | MD |
| C. Crawford Mechem, MD | Philadelphia Fire Department | EMS |
| Roger Band, MD | University of Penn | MD |
| Daniel Fagbuyi, MD | Children's National Medical Center | MD |
| John Freese, MD | Fire Department New York (FDNY) | FIRE |
| Gary Kibbee, EMT-P | South San Francisco Fire Dept | FIRE |
| Michael Copass, MD | Seattle/King County Medic One | EMS |
| Brent Myers, MD | Wake County EMS | EMS |
| Jose Henao, MD | U.S. Navy | MIL |
| William Gephart, PA-C | U.S. Army Special Operations | MIL |
| SA John Pi, MD | FBI | FED |

VOTING COMMITTEE

Co Chairman: Dr. David Callaway
Dr. Reed Smith

| | | |
|---------------------------|----------------------------------|----------|
| Mark Gibbons, EMT-P | Maryland State Police | TEMS |
| David Davis, EMT-P | DHS | TEMS/FED |
| Jeff Cain, MD | Emergency Medicine | TEMS |
| Richard Schwartz, MD | Medical College of Georgia | TEMS |
| Alex Eastman, MD | Dallas Police Department | TEMS |
| Tom Burnett, MD | Virginia Tech, MCG | TEMS |
| Matt Stzankycer, MD | Mayo Clinic | TEMS |
| Mel Otten, MD | Cincinnati SWAT | TEMS |
| LTC Bob Mabry, MD | U.S. Army, JTTS | MIL |
| Barry Frasier, EMT-P | U.S. Air Force | MIL |
| Capt. John Delaney, EMT | Arlington County Fire Department | FIRE |
| Scott Weir, MD | Fairfax County Fire Department | FIRE |
| Chief Chris Heiser, EMT-P | Carlsbad Fire Department | FIRE |
| Michael Marino, EMT-P | Prince George Fire Department | EMS |
| David Tan, MD | Washington University | EMS |
| Mark Anderson, EMT-P | Seattle/King County Medic One | EMS |
| Keith Monosky, PhD | Central Washington University | EDU |
| Jeff Lindsey, PhD | 24-7 EMS Training | EDU |
| William Bozeman, MD | Wake Forest University | MD |
| Nelson Tang, MD | Johns Hopkins | MD |
| Joshua Bobko, MD | Loma Linda University | MD |
| Howard Champion, MD | University of Maryland Surgery | MD |
| Mike Shertz, MD | Oregon Emergency Physicians | MD |

Appendix 3: COMMITTEE FOR TACTICAL EMERGENCY CASUALTY CARE AGENDA

Day 1

| | |
|-----------|--|
| 0800-0830 | C-TECC Overview and Mission statement: Starting Assumptions TEMS Overview |
| 0830-0900 | Medic Presentation: TECC beyond tactical |
| 0900-0930 | Medic Presentation: Application of TECC principles at Virginia Tech |
| 1000-1100 | Committee Methodology Overview of proposed language for CUF, TFC, CASEVAC/TACEVAC. Designation of working groups |
| 1100-1130 | Application of TECC outside of LEO |
| 1130-1200 | TECC in Disasters: Katrina |
| 1200-1300 | Lunch |
| 1300-1330 | VALOR Project: How Officers and First Responders die and future research directions |
| 1330-1400 | Extraction and high threat rescue |
| 1400-1430 | TECC in Blast and explosives |
| 1430-1500 | TCCC Overview and TECC Transition initiative |
| 1500-1530 | TECC in MCI |
| 1530-1600 | TECC in active shooter response |
| 1615-1645 | Working groups (Voting members/ Advisors - invites welcome) |