JSOM

JOURNAL *of* SPECIAL OPERATIONS MEDICINE™

UNCONVENTIONAL WARFARE
UNCONVENTIONAL MEDICINE

THE JOURNAL FOR OPERATIONAL MEDICINE AND COMBAT CASUALTY CARE

Inside this Issue:

> Case Report: SAM® Junctional Tourniquet Use in Afghanistan
> Case Report: AAJT Controls Hemorrhage From Left Groin GSW
> Case Report: Corneal Foreign Body Management at a Role 1 Level
> Case Report: Preparedness for Resuscitation at an Isolated Army TMC
> SAM® Junctional Tourniquet to Control Inguinal Hemorrhage
> Stressors and Unit Support Among U.S. Air Force Pararescuemen
> Muscle Paralysis After IV and IO Succinylcholine in Swine
> TCCC Card Completion by Combat Medic Trainees
> Evaluation of Traction Splints for Battlefield Use
> Treatment of Sea Urchin Injuries
> Little India Riot and Tactical Medicine Among Medics
> Medical Operations of the 6th Ranger Infantry Battalion
> Intra-articular Morphine versus Lidocaine for Acute Knee Pain
> Fast-Roping: Consequences of Vibration
> *Plus our Ongoing Series and more*

*Dedicated to the
Indomitable Spirit
and Sacrifices of
the SOF Medic*

A Peer-Reviewed Journal that Brings Together the Global Interests of Special Operations' First Responders

TacMed UPDATES

Development of a National Consensus for Tactical Emergency Medical Support (TEMS) Training Programs—Operators and Medical Providers

Richard Schwartz, Brooke Lerner, Craig Llewellyn, Andre Pennardt, Ian Wedmore, David Callaway, John Wightman, Raymond Casillas, Alex Eastman, Kevin Gerold, Stephen Giebner, Robert Davidson, Richard Kamin, Gina Piazza, Glenn Bollard, Phillip Carmona, Ben Sonstrom, William Seifarth, Barbara Nicely, John Croushorn, Richard Carmona

ABSTRACT

Introduction: Tactical teams are at high risk of sustaining injuries. Caring for these casualties in the field involves unique requirements beyond what is provided by traditional civilian emergency medical services (EMS) systems. Despite this need, the training objectives and competencies are not uniformly agreed to or taught. **Methods:** An expert panel was convened that included members from the Departments of Defense, Homeland Security, Justice, and Health and Human Services, as well as federal, state, and local law-enforcement officers who were recruited through requests to stakeholder agencies and open invitations to individuals involved in Tactical Emergency Medical Services (TEMS) or its oversight. Two face-to-face meetings took place. Using a modified Delphi technique, previously published TEMS competencies were reviewed and updated. **Results:** The original 17 competency domains were modified and the most significant changes were the addition of Tactical Emergency Casualty Care (TECC), Tactical Familiarization, Legal Aspects of TEMS, and Mass Casualty Triage to the competency domains. Additionally, enabling and terminal learning objectives were developed for each competency domain. **Conclusion:** This project has developed a minimum set of medical competencies and learning objectives for both tactical medical providers and operators. This work should serve as a platform for ensuring minimum knowledge among providers, which will serve enhance team interoperability and improve the health and safety of tactical teams and the public.

KEYWORDS: *Tactical Emergency Casualty Care, TEMS training programs, emergency medical services*

Introduction

Events requiring military or law enforcement based, tactical team response have been occurring with increasing frequency. Tactical teams perform in high-risk, adverse, and nonpermissive environments all over the world. The likelihood of sustaining casualties during these operations is high, despite innovations in safety equipment and tactics. Caring for these casualties in the field involves unique requirements beyond those provided by traditional civilian EMS systems.

Following the lead of military special operations units, many communities and organizations with tactical teams (e.g., Special Weapons and Tactics [SWAT], hostage rescue) have begun to incorporate tactical medical providers into their response teams. Providing medical support for tactical operations requires unique knowledge and skills not provided in conventional EMS education and training programs. This includes the ability to keep the team operationally ready and to provide support during all operational phases without jeopardizing the team's mission or putting the team or the general public at risk.[1,2] There is a need for specialized training for these providers; however, currently, there is no national standardization among programs.

In 2011, an expert panel of leaders in TEMS published a list of competency domains for TEMS, but this list was not operationalized to the level of training competencies and learning objectives.[3] Currently, many courses follow the U.S. Military Tactical Combat Casualty Care (TCCC) guidelines,[4] although a comprehensive TEMS program is broader in scope than what is provided by

these guidelines, and the TCCC guidelines may not always be applicable to the civilian setting.[5] The goals of this project were to develop a minimum set of medical competencies and learning objectives for both tactical medical providers and operators and to serve as the next step in the development of national TEMS standards.

Initiation of the TEMS National Consensus Project

In 2009, a group of experts in tactical operations and emergency medical care developed a list of competency domains for all levels of providers associated with tactical operations.[3] This included operators, medical providers, team commanders, and medical directors. The group developed a draft which listed the broad competency domains that should be taught to each level of provider. The competencies were then reviewed and modified by member of the American College of Emergency Physicians Tactical Emergency Medicine Section using a modified Delphi process. The resulting product included 18 competency domains that could be used as the basic educational standard for designing TEMS training for each of the four target audiences. This effort was intended to be part of an ongoing process for updating the list based on the growing TEMS literature and the involvement of more stakeholders. The group also acknowledged that explicit terminal and enabling learning objectives needed to be developed.

Methods

For the current project, the 2009 panel of experts expanded to ensure broader representation. Panel members from the Departments of Defense, Homeland Security, Justice, and Health and Human Services, as well as federal, state, and local law enforcement officers, were recruited through requests to stakeholder agencies and individuals involved in TEMS or TEMS oversight. The members of the consensus panel are listed in Table 1.

The development process used the previously published TEMS competencies as a starting point for discussion.[3] The available literature addressing the competencies was reviewed and used to reevaluate the domains. During two face-to-face meetings, an independent moderator guided the group through a modified Delphi process wherein the group could suggest additions, deletions, or edits to the 2009 competency domains. An audience response system was used to anonymously vote on each competency domain. To remain, competency domains needed to receive support from more than 80% of the panel members. Domains that received less than 50% were rejected. Support ranging from 50% to 80% resulted in further discussion and modification, and then the vote was repeated.

Table 1 *Expert Panel and Reviewers*

Almeida, Jose	Ashworth, Jason	Ballard, Jed
Beeghly, Drew	Bollard, Glenn	Bowling, F
Brinsfield, Kathryn	Bronson, Brent	Burnett, Thomas
Butler, Frank	Callaway, David	Carmona, Phil
Carmona, Richard	Casillas, Ray	Chapman, Greg
Cohen, Rafael	Colantoni, Tony	Coyne, Scott
Croushorn, John	Davidson, Robert	DuBose, Joseph
Doucette, Stephen	Eastman, Alex	Fabbri, William
Fitzgerald, Denis	Fraiser, Barry	Gandy, John
Gerold, Kevin	Giebner, Stephen	Gilpin, Brad
Godbe, Dan	Halcome, Chuck	Hernandez, Ricky
Holtzman, Liam	Johnson, Kevin	Heath, Chris
Kamin, Richard	Kane, Shawn	Lee, Bradford
Lerner, Brooke	Lewis, Ryan	Llewellyn, Craig
Mazzorana, Vicki	McKay, Sean	McManus, John
McNair, Michael	Meoli, Michael	Mulry, Rob
Nieman, Gary	Nicely, Barbara	Pennardt, Andre
Piazza, Gina	Rathbun, David	Ruiz, Ramon
Ryan, Stephen	Schwartz, Richard	Seifarth, William
Shapiro, Geoffrey	Sonstrom, Benjamin	Soto, Rob
Studley, Chuck	Walsh, Jessica	Wedmore, Ian
Wightman, John	Wilson, Stephen	Wipfler, John
Yeskey, Kevin	Young, Scott	

Once the competency domains were finalized, the panel separated into smaller groups to develop draft competencies for each domain and terminal and enabling learning objectives for each competency. The draft competencies and learning objectives were each reviewed and, if needed, modified by the entire expert panel. An audience response system was again used so that the panel could vote on each of them. The same process for establishing consensus was used; to be considered final, more than 80% of participants had to support a competency or learning objective.

This process required the group to make several overarching assumptions. First, the focus of the project was to identify only the essential skill sets for both tactical operators and medical providers supporting tactical teams, such as Special Weapons and Tactics (SWAT) or Special Response Teams (SRT). Second, the panel assumed that all medical providers had at least Emergency Medical Service-Basic (EMT-B) level knowledge and skills as defined by the National EMS Education Standards published by the National Highway Traffic Safety Administration (NHTSA).

Results

Two face-to-face meetings were convened. At the first meeting, the panel reviewed each of the original competency domains and determined that slight modifications were needed. The panel modified the original competency domains to a list of 17 as shown in Table 2. Most of the changes were made to combine or separate content and to remove redundancy. The four most significant changes were the additions of Tactical Emergency Casualty Care (TECC), Tactical Familiarization, Legal Aspects of TEMS, and Mass Casualty Triage to the competency domains.

Inclusion of TECC in the Competency Domains

One of the key modifications was the incorporation of TECC. In 1996, Butler et al. proposed an evidence-based and consensus-driven system of out-of-hospital care in high-threat, resource-constrained environments called TCCC.[6] These clinical guidelines have evolved under the stewardship of a multidisciplinary committee, and TCCC has been credited with saving thousands of lives on the battlefields of Afghanistan and Iraq.[7] Although initially developed for the Special Operations Community, TCCC has been adopted throughout all U.S. and other military medical services. Due to similarities to many other missions requiring specialized responses, TCCC has been used by many nonmilitary agencies as a framework for providing TEMS to teams working in a wide variety of hazardous settings. More recently, TECC was developed to adapt TCCC for civilian use and increase use of the TCCC principles in nonmilitary tactical environments.[5,8] The TCCC and TECC guidelines are freely available through the Internet and updated as the respective committees modify them.[4,5] The National TEMS Council and the Committee on TECC have both voted to encourage organizations requiring TEMS to use either TCCC or TECC methodologies and to use whichever best suits their needs.

TCCC and TECC use similar terminologies for different situations in which specialized operators and medical providers may provide care. TCCC, being more oriented toward combat environments of various intensities, describes three operational "phases":

Table 2 *Final Competency Domains*

2009 Competency Domains	Updated Competency Domains
Tactical Combat Casualty Care (TCCC) Methodology	Tactical Combat Casualty Care (TCCC)/Tactical Emergency Casualty Care (TECC) Methodology
Remote Assessment and Rescue/Extraction	Remote Assessment and Surrogate Care
	Rescue/Extraction
Hemostasis	Hemostasis
Airway	Airway
Breathing	Breathing
Circulation	Circulation
Vascular Access	
Medication Administration	Medication Administration
Casualty Immobilization	Casualty Immobilization
Medical Planning	Medical Planning
Human Performance Factors\Health Surveillance	Force Health Protection
Environmental Factors	Environmental Factors
Explosions and Blast Injuries	
Injury Patterns and Evidence Preservation	Mechanisms and Patterns of Injury
	Legal Aspects of TEMS
Hazardous Materials Management	Hazardous Materials Management
Remote Surrogate Treatment	
Less-Lethal Injuries	
Special Populations	
	Mass Casualty Triage
	Tactical Familiarization

1. Care Under Fire (CUF): medical care is rendered at the scene of the injury while the rescuer and the casualty are under hostile fire.
2. Tactical Field Care (TFC): medical care is rendered once the casualty is no longer under hostile fire but available medical equipment and expertise is limited.
3. Tactical Evacuation (TACEVAC) care: medical care is rendered while the casualty is being evacuated to a higher level of care.

TECC, similarly describes three phases of care but does not limit the risk to hostile fire:

1. Direct Threat Care (DTC): medical care in areas where there is a direct threat (e.g., hostile fire, unstable structure, or hazardous material).
2. Indirect Threat Care (ITC): medical care in an area where there is no direct threat but still requires protection or security and may have limited medical resources.
3. Evacuation Care (EC): medical care provided en route to a higher level of care.

Inclusion of Tactical Familiarization in the Competency Domains

The majority of medics supporting law enforcement tactical teams are not sworn officers.[9] Thus, personnel who take part in tactical medicine training programs may not have previous tactical experience. This added domain ensures that medical providers have the baseline knowledge and skills to operate in the tactical environment and understand the differences between TEMS and conventional EMS. For example, providers' baseline knowledge should include an understanding of the chain of command, command and control, and each of the team members' roles and responsibilities. Another important component of tactical familiarization is operational security to avoid potential operational compromise.

Inclusion of Legal Aspects of TEMS in the Competency Domains

In law enforcement operations, federal, state, and local laws vary in their recognition of support personnel who are not sworn as officers. A paucity of case law exists to address the legal liability incurred by nonsworn personnel during law enforcement tactical operations. Further, tactical medical providers must understand legal concepts, such as use of force, search and seizure, and preservation of evidence.

It is also important for tactical operators to understand the medicolegal issues pertinent to patient care, such as patient confidentiality. Law enforcement officers may not frequently be involved in patient care during routine patrol duties, butr they may need to provide care or assist with patient care during tactical operations. An understanding of state and federal laws, as they pertain to patient confidentiality, is necessary to prevent violation of a patient's legally supported right to privacy, including knowing when violation of patient confidentiality is acceptable.

The provision of medical care falls under a variety of laws at the state and local levels including issues of licensing and scopes of practice of medical providers. Personnel who can provide procedures considered prudent in the tactical setting may be limited in certain jurisdictions. Treatment protocols developed in concert with a medical director also set the standard of medical care within a given organization. The operator and tactical medical provider should know the limitations on scope of practice based on their level of medical certifications and the jurisdictions in which they operate.

Inclusion of Mass Casualty Triage in the Competency Domains

Tactical teams face the high probability of having to manage mass casualty incidents. All team members must have an understanding of mass casualty triage while working within an Incident Management System (IMS). Integration of multiple agencies into ongoing tactical operations is a key feature when incidents involve multiple jurisdictions. While multiple mass casualty triage systems exist in the United States, the Federal Interagency Committee on EMS has initiated an implementation strategy for standardizing mass casualty triage which will enhance and support this competency domain.

Development of the Terminal and Enabling Learning Objectives

A second face-to-face meeting was held where terminal and enabling learning objectives were developed for each of the competency domains (Appendix 1). Each objective was presented to the entire panel and received greater than 80% approval.

DOMAIN 1: Tactical Combat Casualty Care (TCCC)/ Tactical Emergency Casualty Care (TECC) Methodology

Competency 1.1: Tactical medical skills in the Care Under Fire (CUF)/Direct Threat Care (DTC) phase of TCCC/TECC

Operator TLO 1.1.1: Demonstrate interventions performed during the CUF/DTC phase of TCCC/TECC

ELOs:
- Demonstrate the ability to identify the CUF/DTC scenario
- Demonstrate the ability to return fire
- Demonstrate the ability to conceal and cover
- Demonstrate the ability to stop life threatening external hemorrhage
- Demonstrate the ability to position a casualty in the recovery position and direct a casualty to self-treat
- Demonstrate the ability to remove a casualty from a burning vehicle and stop burn injury to the casualty if needed
- Discuss the possible need to defer airway management until TFC/ITC

Operator TLO 1.1.2: Explain the key elements of hand-off to the next level of care

ELOs:
- Demonstrate the ability to identify injuries
- Demonstrate the ability to provide appropriate interventions
- Demonstrate the ability to report mechanism of injury and interventions to medical providers

Medical Provider TLO 1.1.1: Perform appropriate casualty care at your level of training in CUF/DTC phase of TCCC/TECC

ELOs:
- Demonstrate the ability to identify the CUF/DTC scenario
- Describe the environment during the CUF/DTC phase including the return of fire and elimination of the threat
- Demonstrate the ability to conceal and cover
- Demonstrate the ability to stop life threatening external hemorrhage
- Demonstrate the ability to position a casualty in the recovery position
- Demonstrate the ability to direct casualty to self-treat
- Describe the need to remove casualty from immediate hazards (e.g., burning vehicle)
- Discuss the possible need to defer airway management until TFC/ITC

Competency 1.2: Tactical medical skills in the Tactical Field Care (TFC)/Indirect Threat Care (ITC) phase of TCCC/TECC

Operator TLO 1.2.1: Describe appropriate casualty care, assistance, and protection of the medical provider and the casualty collection point (CCP)

ELOs:
- Demonstrate the ability to appropriately disarm a casualty
- Demonstrate the ability to conduct a tactical primary survey using the MARCH mnemonic (Massive Hemorrhage, Airway, Respiration, Circulation, Hypothermia/ Head Injury), prioritize and treat casualties
- Demonstrate the ability to provide security for the CCP

Medical Provider TLO 1.2.2: Perform appropriate casualty care at your level of training in the TFC/ITC phase of TCCC/ TECC

ELOs:
- Describe the TFC/ITC environment
- Identify when it is appropriate to search and disarm a casualty and how to remove weapons and render them safe
- Demonstrate the ability to conduct a tactical primary survey using the MARCH mnemonic, prioritize and treat casualties
- Describe key care that should be provided during the TFC/ITC phase including: inspect and dress wounds, splint fractures and recheck pulses, reassess tourniquets, establish intravenous (IV) access, administer medications and fluids as indicated, and apply rigid eye shield for a casualty with penetrating eye injury after performing field expedient visual acuity exam

Competency 1.3: Tactical medical skills in the Tactical Evacuation Care (TACEVAC)/Evacuation (EVAC) phase of TCCC/ TECC

Operator TLO 1.3.1: Describe appropriate assistance and protection of the medical provider and the CCP

ELOs:
- Demonstrate the ability to provide security for both the medical provider and casualties
- Demonstrate the ability to assist with physical transfer of patients to TACEVAC/EVAC platform

Medical Provider TLO 1.3.1: Perform appropriate casualty care at your level of training in the TACEVAC/EVAC phase of TCCC/TECC

ELOs:
- Demonstrate the ability to reassess the casualty (e.g., the MARCH mnemonic and secondary assessment)
- Demonstrate the ability to re-evaluate all interventions

Medical Provider TLO 1.3.2: Describe the actions to arrange casualty evacuation by both ground and air

ELOs:
- Demonstrate the ability to transfer casualties to the landing zone or medical exchange point for transport to the next level of care according to the prearranged medical plan

Medical Provider TLO 1.3.3: Describe the key elements of handoff to the next level of care

ELOs:
- Demonstrate the ability to provide documentation of care rendered
- Demonstrate the ability to deliver an organized verbal report during transfer of care

Competency 1.4: Use of TCCC/TECC as a system in the tactical environment

Operator TLO 1.4.1: Describe the components of the individual first aid kit (IFAK)

ELOs:
- Describe the components of your agency-provided IFAK and the purposes of each (e.g. nasal airway device, pressure dressing, gauze, chest seal, tourniquet, hemostatic dressing, casualty documentation card with permanent marker, 2" utility tape, gloves, catheter for chest decompression)
- Demonstrate use of the items included in your IFAK

(continues)

Medical Provider TLO 1.4.1: Describe the relevance of the TCCC/TECC methodology in the law enforcement setting

ELOs:
- Describe the relevant aspects and limitations of military medicine to responses to acute injury and illness in the law enforcement setting.

Medical Provider TLO 1.4.2: Describe the components of the IFAK

ELOs:
- Describe the components of the IFAK and the purposes of each (e.g. nasal airway device, pressure dressing, gauze, chest seal, tourniquet, hemostatic dressing, casualty documentation card with permanent marker, 2" utility tape, gloves, catheter for chest decompression)
- Demonstrate use of the items included in your agency-provided IFAK

DOMAIN 2: Remote Assessment and Surrogate Care

Competency 2.1: Remote assessment methodology (RAM)
Operator TLO 2.1.1: Perform a remote assessment of a casualty

ELOs:
- Identify when a remote assessment is appropriate
- Identify appropriate resources for determining a casualty's condition remotely (e.g., binoculars, spotting scope, night vision optics)
- Determine a casualty's condition remotely
- Determine situational variables impacting rescue
- Communicate findings to command staff for integration into an extraction plan

Medical Provider TLO 2.1.1: Perform a remote assessment of a casualty

ELOs:
- Identify when a remote assessment is appropriate
- Identify appropriate resources for determining a casualty's condition remotely (e.g., binoculars, spotting scope, night vision optics)
- Determine a casualty's condition remotely
- Determine situational variables impacting rescue
- Communicate findings to command staff for integration into an extraction plan

Competency 2.2: Providing medical care by proxy or surrogate
Operator TLO 2.2.1: Describe the concept and potential need for surrogate care

ELOs:
- Describe who might direct surrogate care
- Describe surrogate care
- Describe the information that should be communicated when acting as a surrogate
- Demonstrate the ability to direct a surrogate to provide basic medical care

Medical Provider TLO 2.2.1: Demonstrate the ability to perform assessment of illness/injury and to provide treatment via a surrogate without the use of your hands or visual cues

ELOs:
- Demonstrate the ability to effectively and concisely direct a surrogate to assess the need for life saving medical care
- Demonstrate the ability to effectively and concisely direct a surrogate to provide life saving medical care

- Demonstrate the ability to communicate relevant medical information to command

DOMAIN 3: Rescue/Extraction

Competency 3.1: High threat extraction techniques
Operator TLO 3.1.1: Demonstrate high threat extraction techniques

ELOs:
- Describe appropriate extraction technique for the phase of care
- Demonstrate personal extraction techniques
- Demonstrate single- or multiple-person drag or carry techniques
- Describe the extraction techniques outlined in TCCC/TECC (e.g., one-person drag/two-person drag, Hawes carry, SEAL Team 3 carry, vertical extraction, etc.)
- Demonstrate the ability to assess and utilize pre-rigged and improvised equipment to facilitate extraction (e.g. vest, webbing, soft litter, rigid litter)

Operator TLO 3.1.2: Describe alternative methods of ingress and egress

ELOs:
- Describe examples where alternative methods of ingress and egress may be needed
- Describe alternative methods for ingress and egress (e.g., evacuation through drywall, cinderblock, window)
- Describe basic building construction and how it relates to ingress and egress
- Demonstrate the ability to utilize common breaching equipment
- Describe how selection of extraction method is affected by egress route

Medical Provider TLO 3.1.1: Demonstrate high threat extraction techniques

ELOs:
- Describe appropriate extraction technique for the phase of care
- Demonstrate personal extraction techniques
- Demonstrate single- or multiple-person drag or carry technique
- Describe the extraction techniques outlined in TCCC/TECC (e.g., one-person drag/two- person drag, Hawes carry, SEAL Team 3 carry)
- Demonstrate the ability to assess and utilize pre-rigged and improvised equipment to facilitate extraction (e.g. vest, webbing, soft litter, rigid litter)
- Describe the importance of reassessment after extraction

Medical Provider TLO 3.1.2: Describe alternative methods of ingress and egress

ELOs:
- Describe examples where alternative methods of ingress and egress may be needed
- Describe alternative methods for ingress and egress (e.g., evacuation through drywall, cinderblock, window)
- Describe basic building construction and how it relates to ingress and egress
- Demonstrate the ability to utilize common breaching equipment

(continues)

- Describe how selection of extraction method is effected by egress route
- Describe which extraction methods will require modification of medical care
- Describe how selection of extraction method is affected by the casualty's specific injuries

DOMAIN 4: Hemostasis

Competency 4.1: Conventional hemorrhage control including: tourniquet, direct pressure, wound packing, wound dressing and pressure dressing

Operator TLO 4.1.1: Perform effective hemorrhage control techniques for self-aid, buddy-aid, and to assist a medical provider

ELOs:
- Demonstrate basic hemorrhage control techniques (including tourniquets)
- Explain the limitations of basic hemorrhage control in the tactical environment (including when these techniques should be bypassed)
- Recognize failure of basic hemorrhage control techniques

Medical Provider TLO 4.1.1: Perform hemorrhage control at your level of training, and evaluate adequacy of hemorrhage control performed by operators

ELOs:
- Demonstrate basic hemorrhage control techniques (including tourniquets)
- Explain the limitations of basic hemorrhage control in the tactical environment (including when these techniques should be bypassed)
- Recognize failure of basic hemorrhage control techniques

Competency 4.2: Identification of life threatening hemorrhage

Operator TLO 4.2.1: Understand the characteristics of life-threatening hemorrhage

ELOs:
- Recognize wound types/mechanisms associated with high-risk for life-threatening hemorrhage, both internal and external

Medical Provider TLO 4.2.1: Identify and reassess casualties who require hemorrhage control

ELOs:
- Recognize wound types/mechanisms associated with high-risk for life-threatening hemorrhage, both internal and external
- Demonstrate ongoing reassessment of efficacy of previously employed hemorrhage control techniques

Competency 4.3: Application of a tourniquet (TQ), commercial and improvised

Operator TLO 4.3.1: Demonstrate proficiency and understanding of the use of tourniquets, both commercial and improvised

ELOs:
- Perform self-application of an effective tourniquet in both a light and a dark environment, on each extremity, with one hand
- Perform application of a commercial tourniquet on a casualty in both a light and a dark environment
- Perform application of an effective improvised tourniquet
- Identify or discuss options to address tourniquet failure

Medical Provider TLO 4.3.1: Demonstrate TQ application

ELOs:
- Identify and reassess casualties who require hemorrhage control
- Perform self-application of an commercial tourniquet in both a light and dark environment, on each extremity, with one hand
- Perform application of a commercial tourniquet on a casualty in both a light and a dark environment
- Perform application of an effective improvised tourniquet
- Assess tourniquet for adequacy of application
- Identify or discuss options to address tourniquet failure
- Assess casualty for tourniquet removal

Competency 4.4: Application/administration of hemostatic agents

Operator TLO 4.4.1: Understand indications and administration of available hemostatic agents

ELOs:
- Describe the indications for the use of hemostatic agents
- Demonstrate the proper application/administration of hemostatic agents
- Re-evaluate the effectiveness of hemostatic agent hemorrhage control initiated previously

Medical Provider TLO 4.4.1: Understand indications, use and available hemostatic agents

- Describe the indications for hemostatic agents
- Perform the proper application/administration of hemostatic agents
- Reevaluate the effectiveness of hemostatic agent hemorrhage control initiated previously

DOMAIN 5: Airway

Competency 5.1: Management of the airway including: casualty positioning (rescue position, chin-lift, jaw-thrust), basic airway clearance techniques, airway adjuncts (nasopharyngeal airway (NPA), supraglottic airway (SGA) device, surgical airway (cricothyroidotomy), and endotracheal (ET) intubation

Operator TLO 5.1.1: Identify airway compromise during initial survey

ELOs:
- Demonstrate the ability to determine a patient's level of consciousness
- Demonstrate the ability to utilize the look, listen and feel technique to determine an unresponsive patient's airway status
- Demonstrate the ability to examine the upper airway for trauma or obstructions, and clear as appropriate

Medical Provider TLO 5.1.1: Identify airway compromise during initial survey

ELOs:
- Demonstrate ability to assess the airway during initial survey

Operator TLO 5.1.2: Establish a patent airway

ELOs:
- Demonstrate appropriate airway management given patient and tactical conditions (e.g., Allow a conscious patient to assume a position of comfort; if the patient is

(continues)

unconscious, utilize positioning to open the airway via head tilt-chin lift or jaw thrust in the event of suspected spinal injury; properly place NPA as indicated; place patient into the recovery position; verify correct placement of the NPA and reassess as appropriate)

Medical Provider TLO 5.1.2: Establish a patent airway

ELOs:
- Demonstrate appropriate airway management given patient and tactical conditions (e.g., Allow a conscious patient to assume a position of comfort; if the patient is unconscious, utilize positioning to open the airway via head tilt-chin lift or jaw thrust in the event of suspected spinal injury; repeatedly reassess the need for suctioning of the upper airway; properly place NPA if indicated; place patient into recovery position; properly place SGA if indicated; provide bag valve mask respirations; properly place and secure ET tube if indicated; perform cricothyroidotomy if indicated; verify correct placement of adjunct and secure and reassess as appropriate)

DOMAIN 6: Breathing

Competency 6.1: Identify and treat thoracic injuries and respiratory distress
Operator TLO 6.1.1: Identify the presence of respiratory distress

ELOs:
- Identify abnormal breathing (e.g., increased effort, abnormal sounds)
- Identify inadequate breathing

Operator TLO 6.1.2 Seal penetrating thoracic wounds.

ELOs:
- Identify potential penetrating thoracic injuries
- Demonstrate the selection of a properly sized occlusive dressing
- Demonstrate preparation of the site prior to application of dressing
- Demonstrate placing an occlusive dressing over the wound to prevent air entrance

Operator TLO 6.1.3: Identify suspected tension pneumothorax.

ELOs:
- Describe the signs and symptoms of a tension pneumothorax
- Describe the treatment options for a tension pneumothorax
- Demonstrate decompression at the site of the wound (i.e., "burping the occlusive dressing")

Medical Provider TLO 6.1.1: Demonstrate the ability to identify the presence of respiratory distress in the tactical setting

ELOs:
- Demonstrate the ability to determine respiratory rate, depth, quality and symmetry in the tactical setting
- Identify when it is tactically appropriate to use available equipment for monitoring respiratory status

Medical Provider TLO 6.1.2: Identify presence of thoracic injuries in the tactical setting.

ELOs:
- Describe when it is appropriate to evaluate a patient for thoracic injury based on the operational situation
- Demonstrate the methods for identifying thoracic injury based on the operational situation

Medical Provider TLO 6.1.3: Seal penetrating thoracic wounds in the tactical setting

ELOs:
- Demonstrate the ability to select a properly sized occlusive dressing
- Demonstrate the ability to prepare the site prior to application of dressing.
- Demonstrate the ability to place an occlusive dressing over the wound
- Demonstrate the ability to replace protective equipment based on the operational situation
- Describe the importance of reassessing the patient and monitoring for potential development of a subsequent tension pneumothorax.

Medical Provider TLO 6.1.4: Treatment of suspected tension pneumothorax in the tactical setting

ELOs:
- Demonstrate decompression at the site of the wound (i.e., "burping the occlusive dressing")
- Demonstrate the ability to select proper equipment to perform a needle thoracostomy.
- Demonstrate the ability to perform needle decompression
- Describe the indications for bilateral decompression
- Demonstrate the ability to reassess patient status and repeat the procedure or consider other treatments if required

DOMAIN 7: Circulation

Competency 7.1: Recognition and treatment of shock.
Operator TLO 7.1.1: Recognize the signs/symptoms of inadequate perfusion/shock.

ELOs:
- Identify at-risk mechanism of injury for shock
- Recognize altered/absent peripheral pulse
- Recognize altered mental status
- Describe the potential for internal bleeding and its associated risks

Operator TLO 7.1.2: Discuss the differences in assessment in the various phases of TCCC/TECC

ELOs:
- Perform a tactically correct assessment of circulation status

Operator TLO: 7.1.3 Demonstrate ability to provide initial treatment of hypoperfusion.

ELOs:
- Identify and correct, if possible, the etiology of hypoperfusion

Medical Provider TLO 7.1.1: Demonstrate the ability to do both a basic and an advanced assessment of the adequacy of circulation (e.g., monitoring, physical exam)

ELOs:
- Describe potential causes of shock
- Perform tactically appropriate assessment of circulation status
- Identify signs and symptoms of hemodynamic compromise including changes in vital signs (where tactically appropriate)
- Apply tactically appropriate advanced monitoring techniques (e.g., blood pressure, pulse oximetry)

(continues)

Medical Provider TLO 7.1.2: Demonstrate proficiency in basic and advanced treatment of hypoperfusion

ELOs:
- Follow tactically appropriate resuscitation guidelines
- Perform continual assessment of adequacy of intervention—monitor vital signs and mental status

Competency 7.2: Vascular access
Operator TLO 7.2.1: Describe the potential need for IV access

ELOs:
- Recognize specific clinical situations where IV access is needed including, inadequate profusion, severe pain, potential for rapid decompensation.

Operator TLO 7.2.2: Describe the potential need for IO access

ELOs:
- Describe the equipment that would be used for IO placement

Medical Provider TLO 7.2.1: Describe the indications for and tactical considerations of obtaining IV access

ELOs:
- Recognize specific clinical situations where IV access is needed including, inadequate profusion, severe pain, potential for rapid decompensation.

Medical Provider TLO 7.2.2: Demonstrate familiarity with obtaining IV access commensurate with scope of practice

ELOs:
- Describe the differences in obtaining IV access in the tactical environment
- Perform or assist with obtaining IV access in the tactical environment

Medical Provider TLO 7.2.3: Describe the indications for attempting IO access

ELOs:
- List specific indications where it is appropriate to place an IO including need for vascular access when unable to rapidly obtain adequate IV access

Medical Provider TLO 7.2.4: Demonstrate familiarity in obtaining IO access commensurate with scope of practice

ELOs:
- Describe the differences in obtaining IO access in the tactical environment
- Perform or assist with obtaining IO access in the tactical environment

Competency 7.3: Fluid resuscitation
Operator TLO 7.3.1: Describe the use of oral resuscitation for volume depletion during times of delayed definitive care.

ELOs:
- Explain the indications for oral resuscitation
- Explain the contraindications to oral resuscitation
- Explain the appropriate volume and composition of oral resuscitation fluid

Medical Provider TLO 7.3.1: Describe the use of oral resuscitation for volume depletion during times of delayed definitive care.

ELOs:
- Explain the indications for oral resuscitation
- Explain the contraindications to oral resuscitation
- Explain the appropriate volume and composition of oral resuscitation fluid

Medical Provider TLO 7.3.2: Demonstrate familiarity in providing IV/IO fluid resuscitation in the tactical setting commensurate with scope of practice

ELOs:
- Describe the different resuscitative fluid options available in the tactical setting including crystalloid, colloid, and blood products
- Describe the timing of fluid resuscitation in relation to the operational situation and the patient's condition
- Determine an appropriate endpoint of resuscitation based on injury and patient type (e.g., controlled hemorrhage, uncontrolled hemorrhage, head injury, or pediatric patients)
- Describe the risks of fluid resuscitation (e.g., exacerbation of hypothermia, pulmonary edema)

DOMAIN 8: Medication Administration

Competency 8.1: Administration of oxygen.
Operator TLO 8.1.1: Describe when it is appropriate to provide oxygen therapy in a given tactical situation.

ELOs:
- Describe when oxygen is medically indicated and appropriate in a tactical environment
- Demonstrate the administration of oxygen

Medical Provider TLO 8.1.1: Describe when it is appropriate to provide oxygen therapy in a given tactical situation.

ELOs:
- Describe the process for conducting a mission analysis to determine if it is safe and necessary to bring oxygen into the tactical setting.
- Describe when oxygen is medically indicated and appropriate in a tactical environment

Competency 8.2: Administration of analgesia
Operator TLO 8.2.1: Describe use of an analgesic for a given tactical situation.

ELOs:
- Describe the implications of administration of analgesia in a tactical setting. (i.e. operational status under analgesia, ease of evacuation of patient, etc.)

Medical Provider TLO 8.2.1: Select an appropriate analgesic for a given patient and tactical setting.

ELOs:
- Describe how to conduct a mission analysis to determine types and amount of analgesia appropriate for a given mission. (i.e. location of mission – urban vs. rural, duration of mission, number of personnel involved, need to distribute medication to operators pre-mission, etc.)
- Describe the implications of administration of analgesia to a patient in a tactical setting. (i.e. operational status of patient under analgesia, ease of evacuation of patient, hemodynamic status, etc.)

Competency 8.3: Appropriate and safe use of over the counter (OTC) medications in the tactical setting

(continues)

Medical Provider TLO 8.3.1: Select appropriate OTC medications for a given patient population and mission profile within medical guidelines.

ELOs:
- Describe how to conduct a mission analysis to determine types and amounts of OTC medications appropriate for a given mission. (i.e. location of mission – urban vs. rural, duration of mission, number of personnel involved, need to distribute mediations to operators pre-mission, etc.)
- Describe the implications of administration of OTC medications to a patient in a tactical setting

Competency 8.4: Implementation of medical formulary
Medical Provider TLO 8.4.1: Utilization of a medical formulary in tactical operations.

ELOs:
- Describe medications likely to be needed during tactical operations and communicate those needs to the medical director
- Describe the importance of communicating the implication of drug administration to the tactical commander when it may affect mission readiness
- Describe indications, contra-indications, allergic reactions, cross-drug interactions and other considerations for approved formulary medications
- Establish and implement procedures for accountability, expiration rotation, disposal of expired medications

DOMAIN 9: Casualty Immobilization

Competency 9.1: Evaluation and management of suspected central nervous system (CNS) or spine injuries
Operator TLO 9.1.1: Demonstrate proficiency in the recognition of common mechanisms of CNS/spine injuries

ELOs:
- Identify mechanisms that are most likely to result in spinal injury
- Identify mechanisms that are most likely to result in brain injury

Operator TLO 9.1.2: Demonstrate proficiency in neurologic assessment

ELOs:
- Describe when it is necessary to assess neurologic status
- Demonstrate assessment of mental status of a casualty (e.g., ability to follow commands)
- Demonstrate assessment of extremity movement

Operator TLO 9.1.3: Demonstrate proficiency in providing manual spine protection

ELOs:
- Identify when it is tactically feasible to provide spinal immobilization
- Describe the risks and benefits of spinal immobilization during tactical operations
- Describe how the circumstances can change the risks and benefits of spinal immobilization during tactical operations
- Demonstrate proficiency in applying manual spinal immobilization

Medical Provider TLO 9.1.1: Demonstrate proficiency in the recognition of common mechanisms of CNS/spine injuries

ELOs:
- Identify mechanisms that are most likely to result in spinal injury
- Identify mechanisms that are most likely to result in brain injury

Medical Provider TLO 9.1.2: Demonstrate proficiency in neurologic assessment

ELOs:
- Describe when and how to assess neurologic status in an operational situation

Medical Provider TLO 9.1.3: Demonstrate proficiency in providing spine protection

ELOs:
- Identify when it is appropriate to provide spinal immobilization in the tactical setting
- Describe the risks and benefits of spinal immobilization during tactical operations
- Demonstrate proficiency in applying improvised spinal immobilization

Competency 9.2: Fracture splinting and extremity neurovascular assessment
Operator TLO 9.2.1: Demonstrate proficiency in basic splinting of potential fractures or dislocations

ELOs:
- Identify when splinting is needed and tactically feasible
- Demonstrate basic splinting techniques

Medical Provider TLO 9.2.1: Demonstrate proficiency in orthopedic injury management, including splint application and traction splinting in the tactical environment

ELOs:
- Identify when splinting is tactically feasible
- Identify the most appropriate splint (eg, standard, traction, pelvic binder) given the tactical situation
- Describe the use of commercial and improvised splinting materials

DOMAIN 10: Medical Planning

Competency 10.1: Medical planning and analysis of medical intelligence
Operator TLO 10.1.1: Understand the role of medical planning and its importance for individual health and mission completion

ELOs:
- State common threats during an operational mission including: hostile threats, safety risks, and environmental threats
- Identify the impact of special populations on the operation
- Describe the elements of the medical plan, including medical assets and the integration with public safety and public health resources
- Describe the importance of identifying health threats
- Describe the importance of integrating prevention and risk mitigation into operation plans

Medical Provider TLO 10.1.1: Define the components of a medical plan for tactical operations

ELOs:
- Identify likely operational hazards, including but not limited to, hostile threats, environmental threats, safety risks, infectious risks, and CBRNE/HAZMAT threats.
- Describe mitigation strategies for likely operational hazards
- Analyze internal and external assets to determine medical capabilities
- Describe the process of preplanning and coordinating with other agencies and organizations within operational security guidelines
- Describe how to plan appropriate medical treatment and evacuations for a tactical scenario (e.g., locations of casualty collection points and landing zones)
- Identify medical needs associated with special populations and the unique equipment or capabilities they may require
- Identify the social needs, such as adult and child protective services, potentially required by some populations and their impact on the operation
- Define the inherent risks in mission execution (to include infiltration, actions at the objective, and exfiltration) and their impact on medical planning
- Demonstrate the ability to incorporate all of these components into a medical plan and conduct a briefing

DOMAIN 11: Force Health Protection

Competency 11.1: Monitoring work/rest/sleep cycles
Operator TLO 11.1.1: Understand the importance of sleep management and work/rest cycles in the tactical setting

ELOs:
- Describe how to identify personal and team fatigue that may limit effectiveness
- Communicate potential degradation in capability to medical provider and chain of command
- Describe the importance of work/rest/sleep cycles in sustained operations and environmental extremes

Medical Provider TLO 11.1.1: Understand the importance of sleep management and work/rest cycles in the tactical setting

ELOs:
- Describe how to identify personal and team fatigue that may limit effectiveness
- Communicate potential degradation in capability to chain of command
- Describe the importance of work/rest/sleep cycles in sustained operations and environmental extremes
- Describe how to assess fatigue that may limit effectiveness
- Describe methods for the management of fatigue including the potential use of medications during sustained operations

Competency 11.2: Health monitoring and surveillance
Operator TLO 11.2.1: Identify the importance of an effective health monitoring and surveillance program

ELOs:
- Describe the importance of communicating injuries, illnesses, and health data to medical director or provider

Operator TLO 11.2.2: Describe the signs and symptoms of acute stress reaction and PTSD and the immediate and long term interventions

ELOs:
- Describe the signs and symptoms of acute stress reaction and PTSD
- Describe the available resources for the prevention and mitigation of acute stress reaction and PTSD
- Describe the appropriate response for an acute stress reaction

Medical Provider TLO 11.2.1: Understand the importance of an effective health monitoring and surveillance program

ELOs:
- Describe the need for documentation and routine capture of health data for team members
- Identify the data that are pertinent to capture as part of an effective health monitoring and surveillance program (e.g., allergies, prescription medication, chronic conditions)
- Describe the importance of updating the medical director and team commander
- Describe the need for secure but ready access to health data
- Describe the importance of appropriate documentation, reporting to medical director and commander, and follow-up of illness and injury

Medical Provider TLO 11.2.2: Describe the signs and symptoms of acute stress reaction and PTSD and immediate and long term interventions

ELOs:
- Describe the signs and symptoms of acute stress reaction and PTSD
- Describe the available resources for the prevention and mitigation of acute stress reaction and PTSD
- Describe the appropriate response for an acute stress reaction

Competency 11.3: Preventive medicine
Operator TLO 11.3.1: Identify the importance of preventive medicine for the individual and team readiness

ELOs:
- Recognize the importance of participating in a preventive medicine program on team functioning

Medical Provider TLO 11.3.1: Identify the importance of preventive medicine for the individual and team readiness

ELOs:
- Identify pertinent immunizations and chemoprophylaxis (e.g., malaria prophylaxis) for a given team and setting
- Describe the importance of hydration and nutrition including the implications of an extended operation
- Describe the importance of food safety, and sanitation including the implications of an extended operation
- Describe the importance of strategies to prevent environmental injury (e.g., heat and cold injuries, insect bites, sun burn)
- Recognize the importance of monitoring the team's physical fitness and mental well being (e.g., excessive alcohol use, suicide risk) and developing intervention strategies

Competency 11.4: Injury prevention (e.g., personal protective equipment (PPE))
Operator TLO 11.4.1: Identify the importance of injury prevention for the individual and team readiness

(continues)

ELOs:
- Identify the importance of using appropriate personal protective equipment and other safety device for specific mission conditions
- Describe mitigation techniques for reducing musculoskeletal, ophthalmologic, auditory, and other common injuries
- Describe the importance of replacing body armor after a medical evaluation or intervention

Medical Provider TLO 11.4.1: Describe importance of injury prevention for the individual and team readiness

ELOs:
- Identify the importance of using appropriate personal protective equipment and other safety device for specific mission conditions
- Describe mitigation techniques for reducing musculoskeletal, ophthalmologic, auditory, and other common injuries
- Describe the importance of replacing body armor after a medical evaluation or intervention
- Demonstrate the ability to provide a pre-mission medical safety briefing (based on your medical plan) to the team

DOMAIN 12: Environmental Factors

Competency 12.1: Management of specific threats from the environment (e.g., heat, cold, altitude, plants, animals, geography)

Operator TLO 12.1.1: Identify the risk factors and symptoms of heat and cold related injuries

ELOs:
- Describe the risk factors and mitigation strategies for heat and cold related injury
- Describe the signs and symptoms heat and cold related injury and the importance of seeking appropriate medical care

Operator TLO 12.1.2: Describe the symptoms and risk factors of altitude related illness and injury (cerebral edema, pulmonary edema, acute mountain sickness).

ELOs:
- Describe the risk factors and mitigation strategies for altitude related illness and injury
- Describe the signs and symptoms altitude related illness and injury and the importance of seeking appropriate medical care

Operator TLO 12.1.3: Identify common plants that may cause injury or illness and related signs and symptoms

ELOs:
- Describe how to identify common plants that may cause and injury or illness (e.g., poison oak, sumac, and poison ivy)
- Describe the signs and symptoms of common plant related injury or illness and the importance of immediate self-care if exposed

Operator TLO 12.1.4: Recognize the potential harm of insect bites, stings, wild/domestic animal bites and/or venomous wildlife specific to the operating environment

ELOs:
- Describe the risk factors, signs and symptoms, and mitigation strategies for bites and stings

- Describe the importance of seeking appropriate medical care or self/buddy-aid for a bite or sting

Medical Provider TLO 12.1.1: Describe the risk factors, signs and symptoms, and treatment for heat and cold related injuries

ELOs:
- Describe the risk factors and mitigation strategies for heat and cold related injury in the tactical setting
- Describe heat and cold related injury and appropriate medical care in a tactical setting

Medical Provider TLO 12.1.2: Describe the risk factors, signs and symptoms, and treatment of altitude related illness and injury (cerebral edema, pulmonary edema, acute mountain sickness).

ELOs:
- Describe the risk factors and mitigation strategies for altitude related illness and injury in the tactical setting
- Describe altitude related illness and injury and appropriate medical care in a tactical setting

Medical Provider TLO 12.1.3: Identify common plants that may cause injury or illness and related signs and symptoms

ELOs:
- Describe how to identify common plants that may cause and injury or illness (e.g., poison oak, sumac, and poison ivy)
- Describe the signs and symptoms of common plant related injury or illness and the importance of immediate self-aid and/or treatment if exposed

Medical Provider TLO12.1.4: Recognize the potential harm of insect bites, stings, wild/domestic animal bites and/or venomous wildlife specific to the operating environment

ELOs:
- Describe the risk factors, signs and symptoms, and mitigation strategies for bites and stings in the tactical setting in the tactical setting
- Describe appropriate medical care or self/buddy-aid for a bite or sting

Competency 12.2: Identification and management of severe allergic reactions (anaphylaxis)

Operator TLO 12.2.1: Describe signs and symptoms of anaphylaxis

ELOs:
- Identify skin, airway, breathing and systemic findings of a severe allergic reaction

Medical Provider TLO 12.2.1: Describe signs, symptoms and treatment of anaphylaxis

ELOs:
- Identify skin, airway, breathing and systemic findings of a severe allergic reaction
- Describe severe allergic reaction with epinephrine, antihistamines, IVF, and steroids

DOMAIN 13: Mechanisms and Patterns of Injury

Competency 13.1: Recognition and treatment of blunt, penetrating, thermal, electrical, blast, and crush injuries.

Operator TLO 13.1.1: Describe the clinically and tactically significant injuries that could result from blunt, penetrating, thermal, electrical, blast, and crush injuries.

(continues)

ELOs:
- Identify the mechanisms that may cause severe injuries (e.g., spinal injuries, traumatic brain injury, external and internal hemorrhage, and difficulty breathing, thoracic injuries, and burns)

Medical Provider TLO 13.1.1: Describe the clinically and tactically significant injuries that could result from blunt, penetrating, thermal, electrical, blast, and crush trauma and treatment within the tactical medical provider's scope of practice.

ELOs:
- Identify the mechanisms unique to the tactical environment (e.g., blast) that may cause severe injuries (e.g., spinal injuries, traumatic brain injury, external and internal hemorrhage, and difficulty breathing, thoracic injuries, and burns)

Competency 13.2: Recognition and treatment of injury associated with less-lethal weapons

Operator TLO 13.2.1: Describe the medical risks associated with less-lethal weapons

ELOs:
- Describe the risks associated with chemical munitions (including secondary exposure), electrical conductive weapons, impact weapons, and distraction devices

Medical Provider TLO 13.2.1: Describe the medical risks associated with less-lethal weapons

ELOs:
- Describe the risks and injury pattern associated with chemical munitions (including secondary exposure), electrical conductive weapons, impact weapons, and distraction devices
- Describe the potential exacerbation of pre-existing medical conditions associated with less-lethal weapons
- Describe when less-lethal technology may be contraindicated based on medical intelligence

DOMAIN 14: Legal Aspects of TEMS

Competency 14.1: Medical Legal issues (including proportional use of force, search, seizure, detention and arrest, obligations of the police to a person in custody or arrest, medical evaluation on an arrestee prior to detention, implication of using sworn versus civilian personnel)

Operator 14.1.1 TLO: Guide civilian medical providers in legal aspects of their participation in law enforcement operations.

ELOs:
- Describe local, state and federal laws regarding civilian TEMS medical providers assisting in law enforcement operations.

Medical Provider 14.1.1 TLO: Describe the legal aspects of their participation in law enforcement operations.

ELOs:
- Describe the general principles of local, state and federal laws related to their participation in law enforcement operations

Competency 14.2: Prevent the destruction and/or contamination of evidence when rendering medical care during a law enforcement operation and maintaining the chain of custody

Operator 14.2.1 TLO: Guide civilian medical providers in proper evidence preservation and chain of custody

ELOs:
- Describe how a civilian TEMS medical provider should integrate preserving evidence and maintaining chain of custody while caring for a casualty

Medical Provider 14.2.1 TLO: Describe the medical provider role in proper evidence preservation and maintaining chain of custody

ELOs:
- Describe how a civilian TEMS medical provider should integrate preserving evidence and maintaining chain of custody while caring for a casualty

Competency 14.3: Privacy of protected health information

Operator 14.3.1 TLO: Describe the importance of confidentiality regarding protected health information

ELOs:
- Describe what constitutes protected health information
- Describe with whom and under what circumstances it is appropriate to share protected health information

Medical Provider 14.3.1 TLO: Describe how to protect health information during a tactical operation

ELOs:
- Describe with whom and under what circumstances unique to tactical operations it is appropriate to disclose protected health information including consideration of the legal and ethical issues

Competency 14.4: Definition of scope of practice

Operator 14.4.1 TLO: Define scope of practice

ELOs:
- Describe scope of practice and how it relates to the medical care an operator or medical provider can perform
- Describe why medical care outside of training and/or authorization should not be preformed

Medical Provider 14.4.1 TLO: Describe the scope of medical care that they can provide in a tactical situation and under whose authority they are providing that care.

ELOs:
- Describe why medical care outside of training and/or authorization should not be preformed
- Describe under which protocols and whose authority they are providing care when operating in the tactical setting

Competency 14.5: Issues related to practicing in a different jurisdiction

Medical Provider 14.5.1 TLO: Describe how local, state, and federal laws affect the jurisdictions where they can provide care and what care can be provided

ELOs:
- Describe how local, state, and federal laws affect the jurisdictions where they can provide care and what care can be provided

DOMAIN 15: Hazardous Materials Management

Competency 15.1: Recognition of potential presence of chemical, biological, and radiological hazards

Operator TLO 15.1.1: Identify potential chemical, biological, and radiological hazards within your area of operations, and list signs and symptoms of accidental exposure

(continues)

ELOs:
- Recognize common signs and symptoms from chemical, biological, and radiological exposures
- Describe how to identify potential chemical, biological, and radiological hazards within your response area
- Describe how you would protect yourself from possible exposure to chemical, biological, and radiological hazards

Operator TLO 15.1.2: During mission planning/medical threat assessment identify potential chemical, biological, and radiological threats

ELOs:
- Describe how to incorporate identified chemical, biological, and radiological hazards into your mission planning
- Describe procedures to mitigate potential chemical, biological, and radiological hazards including requesting assistance with isolating and securing a hazard (e.g., HAZMAT teams, WISER).
- Identify Local and regional resources to utilize in the event of an anticipated or actual chemical, biological, and radiological exposure

Medical Provider TLO 15.1.1: Identify potential chemical, biological, and radiological hazards within your area of operations, and list signs and symptoms of accidental exposure

ELOs:
- Recognize common signs and symptoms from chemical, biological, and radiological exposures
- Describe how to identify potential chemical, biological, and radiological hazards within your response area
- Describe how you would protect yourself and your team from possible exposure to chemical, biological, and radiological hazards
- Describe prophylaxis and post-exposure treatments for persons exposed to hazardous chemical, biological, and radiological materials

Medical Provider TLO 15.1.2: During mission planning/medical threat assessment identify potential chemical, biological, and radiological threats

ELOs:
- Describe how to incorporate identified chemical, biological, and radiological hazards into your mission planning
- Describe procedures to mitigate potential chemical, biological, and radiological hazards including requesting assistance with isolating and securing a hazard (e.g., HAZMAT teams, WISER).
- Identify Local and regional resources to utilize in the event of an anticipated or actual chemical, biological, and radiological exposure

Competency 15.2: Selecting appropriate personal protective equipment (PPE)

Operator TLO 15.2.1: Describe the importance of selecting and using the appropriate level of PPE for an anticipated encounter with a chemical, biological, or radiological hazard

ELOs:
- Describe the importance of selecting and using the appropriate level of PPE for an anticipated encounter with a chemical, biological, or radiological hazard
- Describe operational limitations related to using PPE for an anticipated encounter with a chemical, biological, or radiological hazard

Medical Provider TLO 15.2.1: Describe the importance of selecting and using the appropriate level of PPE for an anticipated encounter with a chemical, biological, or radiological hazard

ELOs:
- Describe the importance of selecting and using the appropriate level of PPE for an anticipated encounter with a chemical, biological, or radiological hazard
- Describe operational limitations related to using PPE for an anticipated encounter with a chemical, biological, or radiological hazard
- Describe the importance of pre- and post- PPE physical assessments

Competency 15.3: Performing field expedient decontamination

Operator TLO 15.3.1: Describe field expedient decontamination

ELOs:
- Describe the importance of proper decontamination in relation to exposure
- Describe when dry versus wet decontamination is appropriate
- Describe the potential implications of equipment decontamination

Medical Provider TLO 15.3.1: Describe field expedient decontamination

ELOs:
- Describe the equipment and techniques that may be used for appropriate field expedient decontamination
- Describe when dry versus wet decontamination is appropriate
- Describe the potential implications of equipment decontamination

Competency 15.4: Immediate clinical interventions for the victims of chemical, biological, and radiological exposures

Operator TLO 15.4.1: Describe the role of clinical interventions after chemical, biological, and radiological exposure

ELOs:
- Describe the role of clinical interventions after chemical, biological, and radiological exposure

Medical Provider TLO 15.4.1: Describe the selection and appropriate use of clinical interventions after chemical, biological, and radiological exposure

ELOs:
- Describe the different types of clinical interventions for chemical, biological, and radiological exposure that might be needed in a tactical scenario
- Identify signs/symptoms of exposure
- Identify indications for clinical interventions
- Describe the different types of auto injectors and demonstrate the use of an auto injector
- Describe when operators should carry auto-injectors and how to provide just in time training for their use

DOMAIN 16: Mass Casualty Triage

Competency 16.1: Mass casualty triage

Operator TLO 16.1.1: Utilize a mass casualty triage scheme

ELOs:
- Describe why mass casualty triage is important and when it is tactically appropriate

(continues)

- Describe a mass casualty triage scheme
- Demonstrate proficiency at prioritizing patients for treatment/transport
- Demonstrate proficiency at communicating the pertinent details of the situation to the chain of command

Medical Provider TLO 16.1.1: Utilize a mass casualty triage scheme

ELOs:
- Describe the unique aspects of a mass casualty incident in a tactical environment
- Demonstrate proficiency at communicating the pertinent details of the situation to the chain of command

Competency 16.2: Casualty Collection Point (CCP) setup and control
Operator TLO 16.2.1: Describe a CCP and an operator's potential roles at a CCP

ELOs:
- Describe the function of a CCP
- Describe where a CCP should be placed
- Describe an operator's potential roles at a CCP

Medical Provider TLO 16.2.1: Demonstrate proficiency at establishing and managing a CCP

ELOs:
- Describe the location, organization, and function of a CCP in a tactical setting
- Demonstrate the ability to establish and manage all aspects of a CCP including the ability to communicate the needed resources to other team members and other agencies

Competency 16.3: Evacuation prioritization
Operator TLO 16.3.1: Describe how casualties are prioritized for evacuation

ELOs:
- Describe why evacuation prioritization is important and when evacuation can occur during an ongoing tactical operation
- Describe the operator's role in helping to ensure safe evacuation
- Describe the various modes of evacuation and how to utilize them safely, including safely identifying a helicopter landing zone

Medical Provider TLO 16.3.1: Demonstrate proficiency prioritizing casualty evacuation

ELOs:
- Describe why evacuation prioritization is important and when evacuation can occur during an ongoing tactical operation
- Describe the medical provider's role in helping to ensure safe evacuation
- Describe the various modes of evacuation specific to tactical operations and how to utilize them safely, including safely identifying a helicopter landing zone

Competency 16.4: Incident command and interface with other agencies
Operator TLO 16.4.1: Describe how incident command and other agencies are integrated into tactical operations

ELOs:
- Describe the Incident Command System
- Describe how to integrate other agencies into tactical operations

Medical Provider TLO 16.4.1: Describe how incident command and other agencies are integrated into tactical operations

ELOs:
- Describe the Incident Command System
- Describe how to integrate other agencies into tactical operations

DOMAIN 17: Tactical Familiarization

Competency 17.1: Tactical team operations, objectives, and team structure
Medical Provider TLO 17.1.1: Describe TEMS and how it differs from conventional EMS

ELOs:
- Describe TEMS
- Describe the basic difference between TEMS operations and daily EMS operations

Medical Provider TLO 17.1.2: Understand the tactical team member roles and the types of situations to which they may respond

ELOs:
- Describe the tactical considerations for various scenarios (e.g., serving high risk warrants, barricaded subject, active shooter, hostage situation, protective detail)
- Describe the various roles within a tactical team (e.g., team commander, TEMS provider, breacher, sniper, entry)

Competency 17.2: Tactical team command and control and communication
Operator TLO 17.2.1: Describe how a TEMS provider fits in the team structure and their chain of command

ELOs:
- Describe the TEMS provider's roles and responsibilities
- Describe the TEMS provider's chain of command

Medical Provider TLO 17.2.1: Describe a typical team structure and chain of command

ELOs:
- Describe a typical team structure and chain of command

Medical provider TLO 17.2.2: Describe the use of verbal and non-verbal communications and how they are appropriately employed within the tactical environment

ELOs:
- Describe various means of communication within the tactical team (e.g., radio communication, non-verbal)
- Describe various means of communication across the barricade (e.g., "throw phone")

Medical Provider TLO 17.2.3: Importance of operational security and the potential for compromise

ELOs:
- Describe appropriate use of communication to maintain security
- Describe the risks of social networking
- Describe the security of various forms of communication
- Define operational security

Competency 17.3: Description of tactical team equipment
Operator TLO17.3.1: Give examples of specialized medical and rescue equipment used in tactical operations

(continues)

ELOs:
- Describe specialized medical and rescue equipment for tactical operations

Medical Provider TLO 17.3.1: Give examples of specialized equipment and its use in tactical operations and TEMS

ELOs:
- Describe tactical PPE and uniforms
- Describe breaching and diversionary equipment
- Describe firearms and weapons including less-lethal weapons
- Describe the importance of having the ability to make weapons safe and secure during a tactical response
- Describe the types of vehicles used for tactical operations
- Describe equipment used for remote assessment
- Describe night observation and target acquisition equipment
- Describe specialized medical and rescue equipment for tactical operations

Competency 17.4: Situational awareness and basic tactical movement

Operator TLO 17.4.1: Understand basic tactical movement techniques and their importance to team safety

ELOs:
- Describe the operator's role in patient and medical provider safety

Medical Provider TLO 17.4.1: Understand situational awareness and basic tactical movement techniques and their importance to team safety

ELOs:
- Define the term situational awareness
- Demonstrate individual tactical movements (e.g., high crawl, low crawl, rush, and skylining)
- Demonstrate tactical team movements (e.g., stack, wedge, clearing threats)
- Describe immediate action drills (IAD's) for evolving tactical scenarios
- Describe the importance of the medical providers not revealing team location (noise and light discipline)
- Describe the difference between cover and concealment
- Describe the process for securing a suspect (i.e., the 5 S's: seize, secure, search, segregate, speed to the rear)

Discussion

Providing medical support for military or law enforcement tactical teams requires unique knowledge and skills that are not provided in conventional emergency medical services education and training programs. Additionally, there is a need for interoperability between units and for medical providers and operators to meet defined outcome competencies. Despite the existence of multiple tactical medicine training programs, the minimum set of competencies and skills that medical providers and operators need has not been well established. This report provides a framework for tactical medicine training programs to use in the creation of their curricula. By using the outcome competencies and the training objectives defined here, a common standard for tactical medicine education can be established. Units that respond to incidents can be assured of interoperability and have an understanding of the expected competency of tactical medics and operators. Organizations and industry will have the freedom to develop training programs, and schoolhouses can crosswalk their respective curricula.

This report addresses only tactical medicine training for the tactical medical provider and operator that support special operations teams (such as SWAT or SRT). The next step is to repeat this process for the patrol officer, team commander, and the medical director supporting law enforcement units. Once this process is complete, a comprehensive document will exist to guide all tactical medicine training, nationally. Additionally, the standards and domains will serve as a living document that will grow as operational and medical knowledge expands. Coordination of lessons learned, practice advancements, as well as TCCC and TECC updates, should be integrated into these domains to keep the standards relevant and allow for the dissemination of best practices. The criteria should be validated by subsequent reviews and updated on an ongoing basis. By managing the nonproprietary domains globally, all training programs and providers will benefit from the most current

scientific data through a nationally accepted and validated standard.

One of the limitations of the development of this document is the relative lack of peer-reviewed scientific literature to support the outcome competencies. If scientific literature lacking consensus was used, an attempt was made to include the majority of national leaders in tactical medicine as part of this process; however, it is possible that key opinion leaders were not included.

The project's panel members are working to develop a national organization whose mission will be to (1) develop and maintain the competencies, (2) maintain and expand the involvement of all TEMS leaders and stakeholder representatives, and (3) serve to encourage the expansion of the TEMS literature base. As the base grows, the curriculum recommendations will evolve and improve including the need for developing a research agenda to identify tactical medicine knowledge gaps and support research endeavors.

In conclusion, this project has developed a minimum set of medical competencies and learning objectives for both tactical medical providers and operators. This work should serve as a platform for ensuring minimum knowledge among providers, enhancing team interoperability, and improving the health and safety of tactical teams and the public.

References

1. Heck JJ, Pierluisi G. Law enforcement special operations medical support. *Prehosp Emerg Care*. 2001;5:403–406.
2. Tang N, Kelen GD. Role of tactical EMS in support of public safety and the public health response to a hostile mass casualty incident. *Disaster Med Public Health Prep*. 2007;1(Suppl):S55–S56.
3. Schwartz RB, McManus JG Jr, Croushorn J, et al. Tactical medicine: competency-based guidelines. *Prehosp Emerg Care*. 2011;15:67–82.
4. Committee of Tactical Combat Casualty Care. Tactical Combat Casualty Care Guidelines: 28 October 2013. http://www.usaisr.amedd.army.mil/assets/pdfs/TCCC_Guidelines_131028.pdf
5. Committee on Tactical Emergency Casualty Care. Tactical Emergency Casualty Care Guidelines. http://c-tecc.org/tactical-emergency-casualty-care-guidelines.
6. Butler FK Jr, Hagmann J, Butler EG. Tactical Combat Casualty Care in Special Operations. *Mil Med*. 1996;161 (Suppl):3–16.
7. Butler FK, Jr., Holcomb JB, Giebner SD, et al. Tactical Combat Casualty Care 2007: evolving concepts and battlefield experience. *Mil Med*. 2007;172(Suppl):1–19.
8. Callaway DW, Smith ER, Cain J, et al. Tactical Emergency Casualty Care (TECC): guidelines for the provision of prehospital trauma care in high threat environments. *J Spec Oper Med*. 2011;11:104–122.
9. Bozeman WP, Morel BM, Black TD, Winslow JE. Tactical emergency medical support programs: a comprehensive statewide survey. *Prehosp Emerg Care*. 2012;16:361–365.

Correspondence to: Richard B. Schwartz, MD, FACEP; e-mail: RSCHWARTZ@gru.edu.