Council works on establishing a national TEMS curriculum

By David Rathbun and Kevin Gerold

The National Tactical Officers Association (NTOA) supports the incorporation of well-trained and equipped Tactical Emergency Medical Support (TEMS) elements into tactical teams. TEMS is the provision of preventative, urgent and emergent medical care during high-risk, extended duration and mission-driven law enforcement special operations. Just as law enforcement special operations teams have responded to changing patterns of violence and criminal activity by adopting military-style weapons and tactics, TEMS providers turn increasingly to military-style medical practices when conventional EMS practices fail to address the medical needs of unconventional law enforcement missions.

Tactical Combat Casualty Care (TCCC) guidelines currently form the basis for combat trauma training within the military and these guidelines are increasingly adopted for use by law enforcement operations. First implemented more than 10 years ago and continually updated, these guidelines were initially developed when it became apparent that civilian pre-hospital medical care models, including Advanced Trauma Life Support (ATLS), Basic Trauma Life Support (BTLS) and Advanced Cardiac Life Support (ACLS) were unsatisfactory for providing care during combat missions. In 1993, the Naval Special Warfare Command began researching combat associated deaths due to penetrating trauma. This study was later assumed by the United States Special Operations Command (USSOCOM) and their results were published in a supplement to *Military Medicine* in 1996 (Butler, F.K. Jr. 1996). The findings from this study became the foundation for a combat trauma curriculum intended to combine good medical care with good small unit tactics. Early training was tested during combat operations, updated periodically, and now represents the best practices for providing care during combat missions.

The increasing use of a medical element within tactical law enforcement operations has created a need to define the medical training and competencies necessary to provide care effectively during these operations. Providing medical care inside a law enforcement operation differs significantly from routine EMS operations. Without additional training in Tactical Emergency Medicine (TEMS), highly accomplished EMTs and paramedics often find themselves challenged in their ability to establish priorities and provide care effectively. In the absence of competency-based training, inadequately trained providers may inadvertently compromise law enforcement objectives and may contribute to additional casualties and mission failure.

The absence of a recognized organizational entity tasked with establishing uniform standards for the knowledge, skills and behaviors required of medical providers supporting law enforcement operations is now hindering the advancement of this new medical subspecialty. The presence of such an organization would be positioned to establish clearly defined, evidence-based standards for civilian tactical medicine and champion evidence-based clinical practice guidelines, establish qualifications for instructors and define criteria for the certification and recertification of tactical medical providers. Establishing uniform performance standards and capabilities among TEMS providers would facilitate the interoperability of TEMS elements across jurisdictional lines and within multi-agency operations.

EMS and police agencies deploying TEMS elements into law enforcement operations must ensure that the time and expense of training are well invested in programs that provide high-fidelity, competency-based learning experiences that produce proficient medical providers able to medically support the law enforcement mission. The National Tactical Emergency Medical Support Council was established for the goal of establishing performance-based learning outcomes on which to establish national TEMS curriculum.

Developing a TEMS matrix

In 2009, the National Tactical Officers Association (NTOA) in cooperation with the Center for Operational Medicine (COM) at the Medical College of Georgia (now the Georgia Health Sciences University) initiated a study to identify the core elements of tactical medical programs necessary to support civilian law enforcement operations. Additional participants in this effort included representatives from the Department of Emergency Medicine, Brooke Army Medical Center, the Department of

Emergency Medicine of Saint Vincent's Mercy Medical Center in Toledo, the Department of Emergency Medicine of the Medical College of Wisconsin, and the TEMS Section, American College of Emergency Physicians.

The study group included medical providers (EMTs and physicians), tactical operators (non-medical assaulters, breachers and snipers), commanders (non-medical tactical leaders) and medical directors (physician leaders who provide direction to non-physician medical providers). The investigators included experienced military and non-military tactical operators, medical directors and researchers. These investigators identified 18 domains of medical knowledge and skills relating to TEMS.

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

They went on to identify competencies within each domain. Competencies are the medical knowledge and skills required of each provider type within a TEMS supported law enforcement operation.

Finally, the investigators established terminal learning objectives for each competency. For example, the domain TCCC methodology includes four competencies and terminal learning objective were created for each of the four levels of TEMS providers (operator, medical provider, commander and medical director). This matrix was developed to serve as the foundation for developing TEMS programs and structured training curricula. The results of this study were published in the *Journal of Prehospital Emergency Care,* Volume 15, pp. 67-82, 2011.

National workshop toward establishing a national TEMS curriculum – Concepts and methodologies

In 2011, in an effort to further advance the development of evidence and competency-based standards within the TEMS community, the Center for Operational Medicine at the Georgia Health Sciences University convened a workshop of TEMS leaders entitled "Finalizing a National TEMS Curriculum." Funding for this meeting was provided by NAEMSP, using funds from The Center of Disease Control-Terrorism Injuries Information, Dissemination and Exchange (CDC-TIIDE) Project, and unrestricted funds through the National Disaster Life Support Foundation (NDLSF).

The objectives of the meeting were to 1) bring together subject matter experts within tactical medicine to assist with developing competency and evidence-based curricula, and 2) establish a national steering committee within the TEMS community able to provide leadership in the formulation of national

TEMS policies. This would include identifying best practices, promoting data collection and research, providing legislative oversight and serving as a liaison to the law enforcement community and industry.

The workshop was directed by Richard Schwartz, MD, FACEP, Chairman of the Department of Emergency Medicine and Interim Director of COM at Georgia Health Sciences University. The workshop was co-chaired by Richard Carmona, MD, FACS, MPH, and Craig Llewellyn, MD, MPH, Col. MC USA (ret).

Dr. Carmona was the 17th Surgeon General of the United States. He is a trauma surgeon and a former U.S. Army Special Operations and law enforcement operator. Dr. Carmona has extensive combat and tactical law enforcement experience and served as an instructor in early TEMS training courses including CONTOMS.

Dr. Llewellyn is the Emeritus Professor of Military and Emergency Medicine at the Uniformed Services University of the Health Sciences School of Medicine. He is a former Special Operations physician with extensive operational and combat experience, co-founder of the CONTOMS program, and contributed to many of the innovations in Special Operations medicine.

Invited to the TEMS workshop were participants from law enforcement, fire and EMS organizations representing local, state and federal jurisdictions and included representatives from the TCCC committee, Department of Justice, Department of Homeland Security, Department of Health and Human Services, Department of State and the Department of Defense. Also included were senior representatives from the American College of Emergency Physicians (ACEP), the National Association of EMS Physicians (NAEMSP), the National Association of EMTs (NAEMT) and the National Association of State EMS Officials (NASEMSO). All participants were experienced tactical practitioners, researchers and administrators representing most regions of the United States.

Consensus development

Following introductions by the workshop's director and co-chairs, the three-day meeting began with a discussion of the original 18 TEMS competencies. The Delphi method was used throughout the meeting to build consensus among the invited experts. The Delphi method is a widely used and accepted method for achieving convergence of opinion concerning real-world knowledge solicited from a group of experts within a certain topic area for the purpose of goal-setting or identifying policies.

Issues before the workgroup were discussed and modified until consensus was achieved, as defined by an 80 percent or greater agreement within the group. Competencies were modified, deleted or added by the group using this method. After careful consideration, the workshop participants agreed on 17 competencies. Once there was general agreement on the core competencies, the workshop was divided into six smaller work groups to develop terminal learning and enabling learning objectives for each competency.

Once this work was completed, the workshop reconvened as a group to refine terminal and enabling objectives (TLO/ELO), again using the Delphi methodology. The majority of the competencies, TLOs and portions of the ELOs were successfully reviewed and modified as necessary to achieve consensus.

Workshop results

The original 18 domains were reduced to 17:

1. Tactical Combat Care Methodology
2. Remote Assessment and Surrogate Care
3. Rescue/Extraction
4. Hemostasis (hemorrhage control)
5. Airway
6. Breathing
7. Circulation
8. Medication Administration
9. Casualty Immobilization
10. Medical Planning
11. Force Health Protection
12. Environmental Factor
13. Mechanisms and Patterns of Injury
14. Medico-legal aspects of TEMS
15. Hazardous Materials
16. Mass Casualties
17. Tactical Familiarization

At the conclusion of the meeting, there was general agreement among attendees on the need for a national TEMS council. This council would serve as a leadership organization, assisting with the establishment of medical best practices and support outcomes-based research initiatives relating to the medical support of law enforcement operations.

Also considered was the establishment of an American College (or Society) of Tactical Medicine. Such an organization would serve as a forum for medical providers supporting law enforcement operations. The National Association of EMS Physicians, the National Disaster Life Support Foundation and the Center of Operational Medicine-Georgia Health Sciences University expressed a willingness to provide additional administrative support during the formative period of such organizations. The National Tactical Officers Association fully endorsed the concept

of a national TEMS council and agreed to provide continuing support for its efforts.

Results and conclusions

The workshop and its committees achieved or exceeded expectations in meeting its objectives. During group discussions, participants agreed to the value of establishing national standards for TEMS practices in order to define competencies among medical personnel supporting law enforcement operations.

The workshop concluded the completion of competencies for the medics and operators, and plans to complete the team leader and medical officer competencies in the near future.

Discussions within the working group identified a previously unidentified need for establishing medical competencies for patrol officers. The recent experiences by patrol officers responding to the Gifford shooting in Tucson, Arizona called attention to the need for patrol officers to have basic medical survival skills. Patrol officers are frequently first medical responders to active shooter, natural disaster and mass casualty situations. Experience from existing training programs such as the course taught by the Pima County Sheriff's Department suggests that such a course can occur in one or two days. At the completion of their training, deputies are issued Individual First Aid Kits (IFAKs).

The workgroup participants agreed that the final national TEMS curricula should include medical training modules for operators/medical providers (EMT through physician), commanders, medical directors, and patrol officers. Future work will include producing educational tools for evaluating the competencies and identifying preferred teaching methods. At the completion of the meeting, the initial Steering Committee was renamed the National TEMS Council. The National TEMS Council will include working committees (education/training, research, etc.), and is considering the need for a working group able to

investigate law enforcement injuries, provide a medical assessment of the event, collect data and present recommended changes in medical training and operations. Termed the NTTAB (National Tactical Trauma Assessment Board), such an investigative board would operate in a manner similar to the National Transportation Safety Board that investigates aircraft accidents.

Future meetings will focus on finalizing a national TEMS curriculum with further follow-on of a transition to a National TEMS Council to further enhance and support the collective TEMS field. It is important to recognize that the purpose of the national TEMS Council is *not* to exercise statutory or similar authority, but to work with other organizations, such as the Committee on Tactical Emergency Casualty Care (C-TECC), to establish national standard guidelines from which tactical medical programs can construct and evaluate their programs.

Continuation toward finishing the curriculum

At the two-day meeting held in December 2011, the workgroup finished the medical provider and operator curriculum. A subcommittee was formed to begin the work of distilling the pertinent content from the operator curriculum to create a draft patrol officer curriculum. The draft of the curriculum was finished in the spring of 2012, with the goal of an online Delphi vote by the entire group which could result in a finished product by September 2012.

Members of the National TEMS Council also met with the C-TECC to discuss a possible teaming or merger agreement. Both organizations pledged to continue to work in collaboration in their efforts. ■

Contributing Resources:

Llewellyn, C., MD

Butler, F., MD, TCCC Chairman

Carmona, R., MD

Kester, D., Capt., NTOA Board of Directors

Callaway, D., MD

NTOA Board of Directors' Meeting Briefing

IACP Physicians' Section Meeting Notes

NTOA TEMS Position Paper

NAEMSP TEMS Position Paper

ACEP TEMS Policy Paper

Callaway, D. and the Committee for Tactical Emergency Care (C-TECC). "Evolution and Application of TCCC Guidelines to Civilian High Threat Medicine," *Journal of Special Operations Medicine,* Vol. 11, Ed. 2, Spring/Summer 2011.

Schwartz, R., McManus, J., Croushorn, J., Piazza, G., Coule, P., Gibbons, M., Bollard, G.,

Ledrick, D., Vecchio, P., Lerner, E. "Tactical Medicine Competency-Based Guidelines," *Prehospital Emergency Care,* pp. 1567-82, 2011.

Deputy Sheriff Richard Carmona, MD, FACS, MPH, 17th Surgeon General of the United States, is a 25-year veteran of the Pima County Sheriff's Department where he served as a detective, SWAT team operator, medic, training officer and team leader. He is also a combat decorated former U.S. Army Special Operations medic and weapons specialist. He was a leader and instructor in early TEMS training courses including CONTOMS, and is the one of the founders of the NTOA TEMS training program. Mr. Carmona is TEMS Chair Emeritus for NTOA.

David Rathbun is a retired deputy from Los Angeles County Sheriff's Department. For the last 31 years, he served as a member of LASD's Emergency Services Detail. His duties included Special Weapons Team, TEMS, Underwater Search and Recovery, Search and Rescue, and Helicopter Tactics and Rescue. He helped create and develop the separate and distinct role of the tactical paramedic in LASD's Special Weapons Team. Mr. Rathbun currently serves as the TEMS chairman for NTOA.

Craig Llewellyn, MD, MPH, Col. MC USA (ret.), is an Emeritus Professor of Military and Emergency Medicine at the Uniform Services University School of Medicine, a Special Operations physician with extensive operational and combat experience, co-founder of the CONTOMS Program and a pioneer in many innovations in the field of special operations medicine.

Philip A. Carmona is a nationally registered EMT-P, registered nurse and a decorated retired U.S. Army Special Forces Senior Operator and Special Forces Medic (18D). He has practiced as a critical care RN at the Burn Center at Vanderbilt University Medical Center and is currently an adjunct faculty member at the Vanderbilt School of Nursing. He is the Associate Director, Chief Operations Officer and Administrative Services Director for the Center of Operational Medicine at the Medical College of Georgia, Georgia Health Sciences University where his duties include teaching medical providers in tactical medicine.

Kevin B. Gerold, DO, JD, MA (Ed), is the program medical director and tactical physician for the Maryland State Police's Tactical Medical Unit. He is also director of critical care medicine for the Surgical and Burn Intensive Care Units at the Johns Hopkins Bayview Medical Center in Baltimore, MD.