

DRAFT Summary of Remarks

Improving Prehospital Trauma Care: A Federal Interagency Committee on Emergency Medical Services (FICEMS) and Council on Emergency Medical Care (CEMC) Listening Session

**The Westin Washington, DC City Center
1400 M Street NW, Washington, DC
December 6, 2017**

Opening Remarks and Background

*Jon Krohmer, M.D., National Highway Traffic Safety Administration
Brendan Carr, M.D., M.S., Emergency Care Coordination Center*

Dr. Krohmer invited those not representing a federal agency to sit at the main table and all federal employees present to sit in the audience. He explained that this meeting was coordinated by FICEMS and the CEMC to hear from stakeholders. FICEMS ensures coordination of EMS and 911 systems among federal agencies.

This meeting was the result of a recommendation by FICEMS in response to a briefing by members of the National Academies of Sciences, Engineering, and Medicine (NASEM) committee that wrote the recent report, *A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury*. NASEM estimated that 20% of all deaths after injury are preventable. FICEMS recommended better collaboration and coordination at all levels of government to improve trauma outcomes, which would be the subject of this meeting. This meeting was the first to be jointly sponsored by FICEMS and CEMC, and it would be only the beginning of a long-term dialog.

Dr. Carr explained that CEMC focuses on in-hospital emergency care and the interface with the prehospital emergency care services that are the purview of FICEMS. He predicted that CEMC and FICEMS will cosponsor more activities in the future.

Advancing a National Trauma Care System

Autumn Downey, Ph.D., Program Officer, NASEM

The Committee on Military Trauma Care's Learning Health System and Its Translation to the Civilian Sector's charge was to:

- Identify and describe the key components of a learning health system necessary to optimize care of individuals who have sustained traumatic injuries in military and civilian settings

- Characterize the military's Joint Trauma System and Defense Health Program research investment and their integrated role as a continuous learning and evidence-based process improvement model
- Examine opportunities to ensure that advances in trauma care are sustained and built on for future combat operations
- Consider strategies necessary to more effectively translate, sustain, and build upon elements of knowledge and practice from the military's learning health system into the civilian health sector and lessons learned from the civilian sector into the military sector

The committee built on the components of a continuous learning health system described in the Institute of Medicine's 2013 report, *Best Care at Lowest Cost*, to identify the following components of a continuously learning trauma care system:

- Digital capture of the patient care experience
- Coordinated performance improvement and research to generate evidence-based best trauma care practices
- Processes and tools for timely dissemination of trauma knowledge
- Systems for ensuring an expert trauma care workforce
- Patient-centered trauma care
- Leadership-instilled culture of learning
- Transparency and incentives aligned for quality trauma care
- Aligned authority and accountability for trauma system leadership

The committee found that approximately 1,000 fatalities in the Iraq and Afghanistan Wars were from potentially survivable injuries, and 30,000 of the 147,790 US trauma deaths in 2014 might have been preventable with optimal trauma care. The committee also identified opportunities in the military trauma system built on a learning system framework that has achieved unprecedented survival rates for casualties and the organized civilian trauma system that is well positioned to assimilate recent wartime trauma lessons learned and serve as a repository and incubator for innovation during the interwar period. The committee called for a national learning trauma care system that would ensure continuous improvement of trauma care best practices in military and civilian sectors.

The report includes 11 recommendations, available online (<http://www.nationalacademies.org/TraumaCare>).

Discussion

In response to questions from attendees, Dr. Downey explained that NASEM has no role in implementing its recommendations, and the committee recommended that the White House oversee this implementation. To encourage the White House to take on this oversight, FICEMS and others should transmit a clear and unified message about the importance of taking action on this issue. NASEM has provided some support to congressional offices that are writing legislation to ensure that legislation aligns with the report recommendations.

Attendees reported that initiatives are underway to address some of the report's recommendations. For example, the military is identifying the knowledge and skills that general surgeons need to develop and maintain trauma competency.

Questions for Discussion

Dr. Krohmer facilitated meeting attendee discussion around a series of questions. The discussion and attendee remarks are summarized below.

1. Should We Set a National Aim for Preventable Prehospital Trauma Deaths?

Dr. Krohmer explained that the NASEM report calls for zero preventable deaths, but achieving this goal will take time. He asked whether interim milestones should be established and a staged approach should be taken.

Goals and Measurement

An attendee distinguished between process and outcome measures. Process measures (e.g., a certain number of military health-care providers have done appropriate rotations in civilian facilities or a certain number of civilian patients have received trauma care in a military facility) could be measured quickly. The report is based on the assumption that this type of ongoing exposure will produce the desired outcomes.

Without measurement, nothing will get done because no landmarks will be established that those doing the implementation can follow. An attendee remarked "that which gets measured, gets done". Everyone involved should work toward zero preventable deaths while consistently measuring how they are doing.

Benchmarks could be established for several categories of preventable deaths. EMS Agencies could measure these outcomes and report their results. Most EMS agencies do not track preventable deaths because they need to obtain this information from hospitals and medical examiners, which requires collaboration.

The National EMS Information System (NEMSIS) offers measurement and analysis opportunities at the state level, and these data could be linked with data from hospitals, trauma registries, and coroner or death certificate data. NASEM's National Cooperative Highway Research Program has a "recipe book" on how to link these various records to create information that could be used to quantify preventable deaths. This is low-hanging fruit, and measurement and analysis must precede the establishment of interim goals.

Any goals established for preventable deaths should be based on the setting and available resources. It will not be feasible to reduce the same proportion of preventable deaths in all settings. According to one attendee, zero preventable deaths is the only acceptable goal. NHTSA has established this goal for deaths related to motor vehicles, and this is the goal that anyone would set for their own family.

Access to and Quality of Care

Resources are needed to provide access to care. Without resources, EMS agencies cannot recruit enough volunteers or provide the ground and air ambulances needed to prevent deaths. Many rural agencies staffed by volunteers struggle to provide the same level of services as their populations age and their tax bases decline. These agencies will have trouble changing their approaches without an infusion of new personnel, expertise, and resources. Furthermore, paramedicine needs to be treated as an essential service. On-scene time (or time from injury to arrival) and access are also important for survivability.

The quality of access is important. Simply having personnel available is not enough—these providers need the appropriate training and infrastructure to identify and provide care for injuries.

It would be easier to teach how to prevent certain types of deaths than all of them. For example, an instructor could offer a course on loss of airway, followed by another one on major hemorrhage. These baby steps make it possible to reach the goal gradually.

Military and Civilian Integration

Perhaps military helicopters could be the primary responders to civilian trauma to keep military trauma teams prepared. These helicopters could fly patients to military or civilian hospitals. A challenge, however, is to ensure consistency if military and civilian systems are integrated is that military providers and equipment will not be available during deployments. The quality of care delivered needs to be consistent.

Military medics who are not deployed are assigned to non-medical responsibilities (such as the motor pool). These medics lack exposure to general medical care, and they provide a huge opportunity for integration of EMS with military personnel.

Washington, DC, provides an opportunity for a natural experiment to address integration. The U.S. Park Police in DC have a medevac mission, but they are not well integrated with the DC trauma system. A small-scale collaboration between the trauma system and the park police could offer a useful model that might serve as a best practice for other areas.

Raising Public Awareness

A challenge is to raise awareness of the importance of the NASEM committee's recommendations. The committee wondered why preventable deaths have not received the same attention as breast cancer and other public health problems. Public support is needed.

Focus Areas

Appropriate clinical focus areas might be:

- Loss of airway;
- Penetrating trauma;

- Catastrophic hemorrhage;
- Spinal cord injuries;
- Pneumothoraces;
- Blunt trauma.

The group also discussed traumatic brain injury, but the ability to affect this type of injury is limited.

2. What Are the Most Promising or Innovative Opportunities to Improve Prehospital Trauma Care?

A variety of in-vehicle technologies, such as telematics, could be used now to transmit data on severe injuries to EMS systems. This would require a public/private partnership involving proprietary systems (e.g., OnStar) and FirstNet, the first responder network authority. The data could be automatically transmitted to a 911 center and relayed to a local EMS agency.

Other opportunities are:

- Rapid extrication of victims and rapid transport to a trauma center, particularly for mass casualty incidents;
- More extensive implementation of Stop the Bleed, basic first aid, and cardiopulmonary resuscitation (CPR) training, including in public schools (e.g., CPR training as a graduation requirement); and
- Better enforcement of seatbelt and helmet laws to improve survivability

3. How Can We Apply the Learning Health System Model to Civilian EMS?

The capture of prehospital data has been critical for the military's ability to make meaningful changes because prehospital patient care offers the greatest opportunity to improve survival rates. The question is how to make the capture of these data easy. The military uses paper cards to capture data, and a low-technology approach like this might be effective.

The heartbeat of the national and local trauma system is the trauma registry. Progress can only be made with an integrated registry that provides detailed information on EMS records and all levels of trauma care facilities; trauma centers will only create such a registry if they are required to do so. The American College of Surgeons requires one dedicated registrar for every 750 admissions, and a similar mandate is needed for trained data abstracters who make sure that the data have the appropriate quality and can be used to identify opportunities for improvement.

The culture of EMS should be focused on high quality patient care. Attendees referred to two House of Representatives bills, the Air Ambulance Quality and Accountability Act (H.R.3780) and the Direct CARE Opportunity Act (H.R.3778), that would require reimbursement to be based on quality outcomes.

Other suggestions were:

- Training for coroners;
- Real-time outcomes data in a single database;

- Broader dissemination of the fact that the Health Insurance Portability and Accountability Act of 1996 (HIPAA) permits hospitals to share data with EMS providers;
- Incentives to make the needed changes, including performance measures and a different reimbursement model;
- Addition of EMS data to health information exchanges;
- Research base for policy decisions; and
- Better understanding of the differences between state trauma systems.

4. Are There Actions We Could Take *Today* in the Prehospital Setting (Such as Promising Interventions) that Could Dramatically Improve Outcomes?

The military is very good at treating pain in the prehospital setting. Pain control needs to move away from opioids, and providers should be encouraged to use the available alternatives. However, very few paramedics in the civilian setting have training in the use of ketamine, even fewer are allowed to use it, and even fewer can use it in pediatric patients. A suggestion was for the relevant professional associations to issue a joint position statement on the administration of alternatives to opioids to treat pain in the prehospital setting and the importance of treating pain. The leaders of EMS systems pay attention to position statements, and they are a good way to get things done in the community.

A recommendation of the Institute of Medicine, in *The Future of Emergency Care in the United States*, was to establish evidence-based guidelines for the prehospital setting. NEMSAC developed three recommendations, including one on prehospital analgesia, which needs to be addressed in prehospital settings. A pilot project supported by the Office of EMS showed that through protocols, it is possible to ensure that prehospital providers treat pain without the need for online medical control. This work that has already been done can be leveraged to make progress in pain treatment in the prehospital setting.

It is also important to build on what the military has learned by making decisions quickly based on good data and translating that information into civilian practice. Evidence-based guidelines must be used when appropriate. Perhaps a civilian and military task force could determine which data and which changes in clinical practices are needed immediately and how to translate evidence from military settings into clinical civilian practice quickly and vice versa. An attendee emphasized starting with clinical practice and then dealing with structural changes later.

Final Thoughts

Dr. Krohmer asked stakeholders to identify their top issue. The responses were as follows:

- Evidence-based guideline dissemination to basic life support and advanced life support providers
- More rapid evacuation to trauma centers
- Financial support for volunteer services
- State trauma systems
- Funding for provider education
- Staffing and leadership
- Physician oversight and leadership

- Paramedicine as an essential service
- Continuum of data
- Recognition of limitations of smaller volunteer providers
- Access to outcomes data for providers
- Solid, reproducible research on prehospital care and the continuum of care
- Systematic way to implement new data-driven clinical approaches from military settings in civilian ones and vice versa
- Pediatric readiness throughout the prehospital and hospital system
- Legislative efforts, such as Mission Zero, that allow cross-pollination of techniques and innovations
- Leadership and advocacy role for state health agencies and commissioners

Dr. Krohmer thanked participants for their comments and invited them to send him additional ideas and suggestions.

Appendix A: Meeting Agenda

Improving Prehospital Trauma Care: A FICEMS and CEMC Listening Session

December 6th

10am-12pm

Westin Washington Center

Agenda

A recent report by the National Academies of Sciences, Engineering, and Medicine (NASEM), *A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury*, estimates that as many as 20% of the nearly 200,000 annual trauma deaths in the United States could be prevented.

During our meeting, the Federal Interagency Committee on Emergency Medical Services (FICEMS) and the Council on Emergency Medical Care (CEMC) would like to hear from you about the challenges facing prehospital trauma care, especially in rural settings, and how to better integrate military and civilian EMS systems. An integrated national trauma care system would allow lessons learned from the battlefield to be translated to civilian EMS and provide opportunities for improved patient care.

Introductions

Opening Remarks and Background

Questions for discussion:

- 1) Should we set a national aim for preventable prehospital trauma deaths?
 - i. Value of interim goals
- 2) What are the most promising or innovative opportunities to improve prehospital trauma care?
 - i. Rural
 - ii. Military
- 3) How can we apply the Learning Health System model to civilian EMS?
- 4) Are there actions we could take today in the prehospital setting (such as promising interventions) that could dramatically improve outcomes for patients who are:
 - suffering from traumatic pain;
 - severely injured in a rural crash; or
 - suffering from traumatic brain injury.

Appendix B: Meeting Attendees

Attendees:

Jon Krohmer (*National Highway Traffic Safety Administration*)
Brendan Carr (*U.S. Department of Health and Human Services/Office of the Assistant Secretary for Preparedness and Response*)
Dave Wade (*U.S. Department of Homeland Security/Office of Health Affairs*)
Rick Niska (*U.S. Department of Health and Human Services/Centers for Disease Control and Prevention*)
Autumn Downey (*National Academies of Science, Engineering, and Medicine/Health and Medical Division*)
Gerrit Bakker (*Association of State and Territorial Health Officials*)
Annette Bertelson (*Trauma Center Association of America*)
Paul Brooks (*U.S. Department of Homeland Security/Office of Health Affairs*)
Dave Finger (*National Volunteer Fire Council*)
Dan Hankins (*Association of Air Medical Services*)
Rob Kramer (*Emergency Nurses Association*)
Michael Millinn (*American Red Cross and American College of Emergency Physicians*)
Brent Myers (*National Association of EMS Physicians*)
James Robinson (*International Association of EMS Chiefs*)
Dennis Rowe (*National Association of Emergency Medical Technicians*)
Babak Sarani (*American College of Surgeons/Committee on Trauma*)
Roslyne Schulman (*American Hospital Association*)
Brian Solada (*Air and Surface Transport Nurses Association*)
Joseph Wright (*American Academy of Pediatrics*)
Nicole Zimbelman (*Association of Public Safety Communications Officials*)
Evan Davis (*International Association of Fire Chiefs*)
Chris Shimer (*International Association of Fire Chiefs*)
Kevin Collopy (*International Association of Flight and Critical Care Paramedics*)
Dia Gainor (*National Association of State EMS Officials*)
Anne Montera (*National EMS Advisory Council*)
Vince Robbins (*National EMS Management Association*)
Ezekiel Peters (*International Association of EMS Chiefs*)
Drew Dawson (*National Registry of Emergency Medical Technicians*)
Robert McClintock (*International Association of Fire Fighters*)