Prehospital Assessment of Trauma

Joshua Brown, MD, MSc[a], Nitin Sajankila, BS[b], Jeffrey A. Claridge, MD, MS[c,*]

KEYWORDS

• Prehospital • Emergency medical services • Trauma • Triage • Air medical • Transport

KEY POINTS

- A significant amount of variability exists between the various prehospital trauma systems that provide early postinjury care in the United States.
- This variability includes differences in emergency medical services provided, types of transport available, protocols guiding care, and cooperation between hospitals and providers involved.
- Although advances have been made to prehospital care, more research is necessary to see how uniformly these advances are implemented.
- Further research on determining the best care practices and the development of uniform protocols is also necessary.

INTRODUCTION AND HISTORY OF PREHOSPITAL TRAUMA CARE

As with many of the advancements in trauma care, prehospital trauma care has evolved significantly with periods of military conflict. Most credit Baron Dominique Jean Larrey, Napoleon's surgeon, with the concept of the ambulance in 1792.[1] The genesis of an organized ambulance corps in the military, however, was not until the United States Civil War. This experience was furthered in World War II, when medical personnel were assigned to combat companies to provide care at the point of wounding, becoming the first combat medics. It was then during the Korean War and Vietnam conflict that en route care by medics for the wounded solider became the standard, alongside the rapid transport of patients to higher levels of care through air evacuation.[2]

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[a] Department of Surgery, University of Pittsburgh Medical Center, 200 Lothrop Street, Pittsburgh, PA 15213, USA; [b] Department of Surgery, MetroHealth Medical Center, Case Western Reserve University School of Medicine, 2500 MetroHealth Drive, Cleveland, OH 44109, USA; [c] Division of General Surgery, Trauma, and Surgical Critical Care, Department of Surgery, MetroHealth Medical Center, Case Western Reserve University School of Medicine, 2500 Metrohealth Drive, Cleveland, OH 44109, USA
* Corresponding author.
E-mail address: jclaridge@metrohealth.org

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In the United States, the National Academy of Sciences' 1966 white paper *Accidental Death and Disability: The Neglected Disease of Modern Society* is considered the birth of modern civilian emergency medical services (EMS) and prehospital trauma care. This landmark paper called for standardized training, funding, and organization of ambulance services.[3] Dr J.D. Farrington brought these issues to surgeons' attention when he published "Death in a Ditch" in the June 1967 *American College of Surgeons Bulletin*; in this piece, he outlines simple first aid techniques that he taught to local rescue volunteers.[4] The EMS Systems Act of 1973 identified key elements of an EMS service and provided funding and authorization for the Department of Health, Education, and Welfare to establish EMS systems throughout the United States. As trauma care and systems developed through the 1960s and 1970s, EMS systems continued to grow.

The advent of the Advanced Trauma Life Support course in 1978 was followed shortly by the first Prehospital Trauma Life Support course in 1984, aimed at training prehospital providers in the systematic approach to the injured patient.

PREHOSPITAL TRAUMA SYSTEMS

Since the early days of EMS and trauma systems, significant advancements in technology and medical practice have matured these services. In the United States, tremendous variation exists in prehospital trauma systems owing to differences in resource availability and varying levels of regional need. Regulatory authority for EMS systems, including treatment protocols and licensure of individual providers, is at the state level. Many states designate regional EMS councils to provider further local oversight. A recent survey demonstrated 38 states had either mandatory or model treatment protocols for EMS agencies, and the remainder allowed the development of protocols at the local level.[5]

Prehospital trauma care is provided by a variety of agencies. Some areas provide prehospital care and transport through the local fire department. EMS providers may comprise a separate division within the fire department or may be fully cross-trained as firefighters. Other areas may have separate standalone EMS agencies. These agencies exclusively provide prehospital medical care and often work with local fire departments, which then provide first response before the arrival of dedicated EMS personnel.

Another distinction is the EMS agency ownership. Many areas use municipal EMS agencies that fall under the jurisdiction of the city or town. In more rural areas, a county itself may provide EMS services. Municipal services are usually subsidized by taxes of the municipality residents. Other areas use private EMS agencies. Several large private EMS corporations exist throughout the United States that contract with municipalities directly to provide emergency prehospital care or supplement the local municipal EMS agency's response capacity.

Depending on the demand for service, EMS agencies may be composed of paid or volunteer providers. Larger services with a higher volume generally hire paid EMS personnel. More rural or less active services often employ volunteer members. These members may take block volunteer shifts or provide service on an on-call basis when the EMS agency is activated for a response. Finally, a number of agencies employ a core of paid providers with coverage supplemented by volunteers.

EMERGENCY MEDICAL SERVICES LEVEL OF CARE

Perhaps the greatest distinction of prehospital trauma care is the scope of practice. At the provider level, this ranges from the emergency medical technician (EMT) providing