

EMS and Trauma Systems Overview



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EMS and Trauma Systems Overview

Emergency medical services and trauma care are vitally important to every community in Texas. From its humble beginnings as a patient transport system run by funeral homes, the Texas EMS/Trauma system has evolved into a key player in emergency care both as part of daily life and during disasters. The public now expects EMS to be just a 9-1-1 call away—available quickly, anytime, anywhere. However, because EMS is not defined statutorily as an essential service that must be provided locally, many communities struggle to make this perception of “anytime, anywhere” a reality.

This guide provides an overview of the Texas Emergency Medical Services/Trauma System, including how EMS and trauma systems are funded. Understanding the development of EMS will shed light on the complexities of the EMS and trauma system, so a brief history is included in this guide. It also offers a look at the daily challenges faced by EMS and trauma facilities in serving Texans and visitors when they need it most. Throughout the guide, website addresses are provided as resources for further information and the statutes and rules that address EMS and trauma are provided at the end of the guide.

EMS/Trauma Systems Organization

It is necessary to understand EMS and trauma systems in order to assess emergency medical needs in a community. Patients must reach definitive care within a short period of time to help prevent death or disability. To ensure this occurs, a set of resources must be in place and immediately accessible at all times. These resources include informed citizens, communications systems, prehospital care providers and multidisciplinary trauma teams in emergency departments. With the inclusion of public information, prevention activities and rehabilitation, this coordination of resources is called an EMS/trauma system.

While emergency health care, including some emergency medical services, had been available for many years, the Texas EMS/Trauma System as it exists today began in 1989 with passage of the Omnibus Rural Health Care Rescue Act. Designed to help rural areas gain access to more health resources, that legislation ultimately led to the division of Texas into 22 trauma service areas (TSAs), identified alphabetically from A to V. Regional advisory councils (RACs) have been established

in each TSA. Although RACs were created to improve emergency and trauma health care in the state, they have expanded their focus to include disaster planning and management of all medical emergencies. RACs work with their local EMS providers, hospitals and designated trauma facilities to ensure that guidelines are in place for responding to specific medical emergencies—no matter where the patient is in that geographic area. For example, a RAC’s guidelines may suggest that patients with certain types of injuries be taken to a specialized facility, such as a designated Level I trauma facility.

EMS Personnel

There are five levels of certification and licensure for individual EMS personnel. A ground ambulance, therefore, can be staffed with



many combinations of technicians and medics.

ECA An Emergency Care Attendant is certified by DSHS in the most basic emergency medical response, including a minimum of 40

hours of training in CPR, splinting, oxygen delivery and control of bleeding.

EMT-Basic An Emergency Medical Technician-Basic is certified by DSHS as minimally proficient to perform emergency prehospital care that is necessary for basic life support, which includes the control of hemorrhaging (bleeding) and CPR. EMT-Basics receive no less than 140 hours of specialized training and must pass the National Registry test prior to certification.

EMT-Intermediate An EMT-Intermediate is certified by DSHS as minimally proficient in performing skills required to provide emergency prehospital or interfacility care by initiating and maintaining, under medical supervision, certain procedures that include intravenous (IV) therapy and endotracheal and/or esophageal intubation. EMT-Intermediates receive no less than 160 hours of specialized training and must pass the National Registry test prior to certification.

EMT-Paramedic An EMT-Paramedic is certified by DSHS as minimally proficient in providing emergency prehospital or interfacility care by providing advanced life support that includes initiation

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and maintenance, under medical supervision, of certain procedures that include IV therapy, endotracheal and/or esophageal intubation, electrical cardiac defibrillation and cardioversion, and drug therapy. EMT-Paramedics receive no less than 624 hours of specialized training and must pass the National Registry test prior to certification.

Licensed Paramedic In addition to being certified by DSHS as proficient in the same skills as a certified paramedic, a licensed paramedic has an associate's degree in EMS or a bachelor's or postgraduate degree from an accredited educational institution.

EMS Ground Transport

The medical director for each licensed EMS provider is responsible for determining the service's scope of practice and thus the levels of ambulances the service will provide. Each level of ambulance is determined by the personnel working on the ambulance. Six levels of care can be provided by EMS ground crews.



BLS (Basic Life Support) When response-ready or in-service, authorized EMS vehicles operating at the BLS level shall be staffed at a minimum with two emergency care attendants (ECAs).

ALS (Advance Life Support) When response-ready or in-service, authorized EMS vehicles operating at the ALS level shall be staffed at a minimum with one EMT-Basic and one EMT-Intermediate.

MICU (Mobile Intensive Care Unit) When response-ready or in-service, authorized EMS vehicles operating at the MICU level shall be staffed at a minimum with one EMT-Basic and one EMT-Paramedic.

BLS with ALS capability When response-ready or in-service below ALS, staff will include at least two ECAs. Full ALS status becomes active when staffed by at least an EMT-Basic and an EMT-Intermediate.

BLS with MICU capability When response-ready or in-service below MICU, staff will include at least two ECAs. Full MICU status becomes active when staffed by at least an EMT-Basic and a certified or licensed paramedic.

ALS with MICU capability When response-ready or in-service

below MICU, staff will include at least one EMT-Basic and one EMT-Intermediate. Full MICU status becomes active when staffed by at least an EMT-Basic and a certified or licensed paramedic.

EMS Air Transport

Air medical transport is provided by two means—fixed wing (airplanes) and rotor wing (helicopters). Patients being transported



longer distances usually go by fixed-wing aircraft, which are faster and can fly farther. Rotor-wing aircraft can go directly to a scene and land, then transport the patient to the nearest appropriate facility. Typically, rotor-wing aircraft don't transport great distances, but are used for shorter inter-facility transports, as well as on-scene flights. The medical crew aboard either type of aircraft usually includes a registered nurse with EMS certification and a paramedic. Additional medical staff may be incorporated as needed, including respiratory technicians, specialty nurses or doctors. Any hospital located near an airport or a landing strip has access to fixed-wing transport. Rotor-wing services are typically located in or near cities with a higher concentration of people and may fly out to treat patients in rural areas.

First Responder Organizations

A first responder organization (FRO), formally, is a group or association of certified emergency medical services personnel that does not transport patients but works in cooperation with a licensed emergency medical services provider to: routinely respond to medical emergency situations; utilize personnel who are EMS-certified by DSHS; and provide on-scene patient care to the ill and injured.

In practice, FROs are most commonly created where geography or the needs of the local population demand a supplement for the designated EMS provider. An FRO can be established by a person or organization able to respond to a specific area quickly. The personnel must hold at least ECA certification and be directly affiliated with a licensed EMS provider. An FRO does not transport patients but is able to give care appropriate to the provider's certification level until

EMS arrives. For example, if a small town in a large rural county determines that the nearest base for the county EMS provider is too far away to give immediate care, the town may establish its volunteer fire department as an FRO.

Hospital Designations

Each type of prehospital care provider works in conjunction with local hospitals as specified by the provider's medical director and the area RAC. Part of the coordination of care comes from a clear outline of a hospital's capabilities. Currently, DSHS-licensed hospitals, state-owned hospitals and military facilities are eligible to become designated trauma facilities or designated stroke facilities, which helps direct specific medical or trauma emergency patients to the most appropriate care facility. Other hospital subspecialties such as burn centers may also impact where a patient may be treated.

Designated Trauma Facilities

DSHS can designate a health care facility as a trauma facility at four levels, based on specific criteria related to the available level of care. All designated trauma facilities must participate in a RAC and submit data to DSHS as requested.



Comprehensive (Level I) Trauma Facility A regional resource trauma center that is a tertiary care facility central to the trauma care system. This facility must have the capability of providing leadership and total care for every aspect of injury, from prevention through rehabilitation. In addition to acute care responsibilities, Level I trauma centers have the major responsibility of providing leadership in education, research and system planning to all hospitals caring for injured patients in their regions. Physicians are available in-house 24 hours a day, seven days a week.

Major (Level II) Trauma Facility A hospital that also is expected to provide initial definitive trauma care, regardless of the severity of injury. Depending on geographic location, patient volume, personnel, and resources, however, the Level II trauma center may not be able to provide the same comprehensive care as a Level I trauma center.

Physicians are available in-house 24 hours a day, seven days a week.

Advanced (Level III) Trauma Facility A hospital that provides resuscitation, stabilization and assessment of injury victims and either provides treatment or arranges for appropriate transfer to a higher level designated trauma facility; provides ongoing educational opportunities in trauma related topics for health care professionals and the public; and implements targeted injury prevention programs. The administrative commitment of a Level III trauma facility includes developing processes that define the trauma patient population evaluated by the facility and track patients throughout the course of their stay. Physicians are available on call 24 hours a day, seven days a week.

Basic (Level IV) Trauma Facility A hospital that provides resuscitation, stabilization, and arranges for appropriate transfer of major and severe trauma patients to a higher level trauma facility when medically necessary; provides ongoing educational opportunities in trauma related topics for health care professionals and the public, and implements targeted injury prevention programs. The administrative commitment of a Level IV trauma facility includes developing processes that define the trauma patient population evaluated by the facility and track patients throughout the course of their stay. Physicians are not required to provide surgery call coverage.

Designated Stroke Facilities

DSHS can designate a health care facility as a stroke facility at three levels, based on specific criteria related to the available level of care. Facilities seeking Comprehensive, Primary or Support stroke facility designation are surveyed through The Joint Commission's primary stroke center stroke certification program or another organization approved by the department to verify that the facility is meeting department-approved support stroke facility standards. All designated stroke facilities must participate in a RAC and submit data to DSHS as requested.

Comprehensive Stroke Facility Designation, Level I The facility meets the current Brain Attack Coalition recommendations and will maintain neurosurgery capabilities, neurointerventional surgery capabilities, neurology capabilities, anesthesiology, emergency

physicians, stroke medical director, stroke nurse coordinator/program manager and a stroke registry.

Primary Stroke Facility Designation, Level II The facility meets the current Brain Attack Coalition recommendations and will maintain neurology capabilities, emergency physicians, stroke medical director, stroke nurse coordinator/program manager and a stroke registry.

Support Stroke Facility Designation, Level III The facility meets the Support Stroke Facility Designation Criteria for an accredited support stroke facility and will maintain neurology capabilities, emergency physicians, stroke medical director, stroke nurse coordinator/program manager and a stroke registry.

EMS/Trauma System Advisory Council

In 1999, the Texas Legislature created a 15-member council to advise and make recommendations to DSHS on the rules and standards for emergency medical services



and trauma systems. The council met for the first time in January 2000 and now meets quarterly as the Governor's EMS and Trauma Advisory Council (GETAC). The council members are appointed by the governor, and each member represents a different role in the EMS/trauma system, including fire chief, trauma surgeon or nurse, rural trauma facility, EMS educator, general public (2), emergency physician, private EMS provider, EMS medical director, EMS air medical service, fire department, urban trauma facility, county EMS provider, pediatrician and EMS volunteer.

The council has ten standing committees: Air Medical Committee, Cardiac Care Committee, Disaster/Emergency Preparedness Committee, Education Committee, EMS Committee, Injury Prevention Committee, Medical Directors Committee, Pediatrics Committee, Stroke Committee, and Trauma Systems Committee. The committees are comprised of up to 11 members; the Council chair and standing committee chair jointly appoint committee members from a pool of applicants. GETAC members are encouraged to attend all committee meetings to understand the agenda items that may be presented to the Council. The committees meet regularly, under the open meetings

guidelines, and are tasked with fulfilling their part in meeting the overall GETAC mission: To promote, develop, and maintain a comprehensive EMS/trauma system that will meet the needs of all patients and that will raise the standards for community health care by implementing innovative techniques and systems for the delivery of emergency care for the entire population.

EMS and Trauma Systems Funding

EMS and trauma systems are funded in many different ways throughout the state.

EMS providers

County/City department An EMS provider may be funded by the county or city with tax money from the general budget and the revenue



it generates. Staffing may be paid, volunteer, or a combination; 9-1-1 service is typically the main function of the department, although some patient transfer services may also be offered.

Private, for-profit company Private EMS companies can contract with a county or city to provide services and may receive a subsidy from the county or city or both. They are staffed by paid personnel. A private EMS company may be contracted to provide 9-1-1 service or it may exist only as a patient transfer service (non-emergency delivery to a care facility or transfers between care facilities).

Hospital-based An EMS provider may be funded by hospitals or hospital districts and the revenue they generate, and may receive additional tax funding. Staffing may be paid, volunteer, or a combination.

Emergency service districts Created by local voters, emergency service districts (fire and/or EMS) are funded by a dedicated tax. The ESD tax rate is set by the voters up to a statutory maximum. Staffing may be paid, volunteer, or a combination. The funds may be used to contract with an existing nearby service or may be used to create a new local service.

State grant programs Three grant programs administered by

DSHS serve EMS; each is dependent on funding from the Legislature for each biennium. The DSHS Local Projects Grant Program distributes \$2.6 million per biennium to pay for EMS personnel certification training; specialty training related to prehospital health care management; communication equipment; patient care equipment, including ambulances and non-disposable supplies; injury-prevention projects and continuing education programs. The Extraordinary Emergency Fund helps EMS, hospitals, and first responder organizations recover if unforeseeable events severely reduce or incapacitate emergency response capability. Finally, DSHS distributes \$50,000 per year to sponsor ECA training in rural and frontier areas.

Trauma systems

The regional trauma systems and the designated trauma facilities within those systems receive funding from designated trauma funds that are distributed by the state. The resources for trauma systems come from the Tobacco Endowment (a portion of interest earned on the endowment is set aside as a permanent fund for EMS and Trauma care), the Driver Responsibility Program (Designated Trauma Facility and EMS Account), the 9-1-1 Equalization Surcharge Funds (EMS and Trauma Care System Account), Regional Trauma Account (Red Light Camera Funds) and the \$100 DUI/DWI Conviction Surcharge Funds (Fund for EMS, Trauma Facilities, and Trauma Care Systems). The

For more information on...

Texas EMS and Trauma Systems funding programs

<http://www.dshs.state.tx.us/emtraumasystems/DSHSFinancingAttach3.0EMSTSFundingPrograms.pdf>

Texas EMS and Trauma Systems funding streams flow chart

<http://www.dshs.state.tx.us/emtraumasystems/DSHSFinancingAttach3.1TexasEMSTSSystemFundingStreams.pdf>

DSHS webpage for EMS and Trauma Systems funding

<http://www.dshs.state.tx.us/emtraumasystems/efunding.shtm>

DSHS homepage for EMS and Trauma Systems

<http://www.dshs.state.tx.us/emtraumasystems/default.shtm>.

state then distributes funds to each of the 22 RACs through contract agreements for trauma system development and grants, to eligible EMS providers for equipment and non-disposable supplies through the local RAC, and to trauma facilities that have met designation criteria and have completed yearly applications requesting reimbursement for uncompensated trauma care.

History

EMS

As late as the 1960s, EMS was not viewed as a component of the health care system, but rather as a transport method comparable to the manner injured soldiers were removed from the battlefield during the Civil War 100 years earlier. During the last 30 years, EMS has transformed from a patient retrieval service operated by funeral homes, staffed by a single person with a few hours of training to, in many communities, a state of the art, out-of-hospital health care provider resembling a mobile emergency department. In 1966 Congress passed the Highway Traffic Safety Act and the National Academy of Sciences—National Research Council published a paper, *Accidental Death and Disability: The Neglected Disease of Modern Society*, reviewing the status of initial care and emergency medical services. The two worked together to draw attention to the need for increased government and community involvement in emergency services. The Department of Transportation-National Highway Traffic Safety Administration (DOT-NHTSA) was assigned responsibility for and oversight of guideline development related to the provision of EMS. This included the first attempt at standardizing curriculum development and designing standards for ambulances and communication systems. In 1967, the President's Commission on Law Enforcement and Administration of Justice recommended that a single number be established for reporting emergencies. In 1968, the telephone industry agreed on the digits 9-1-1 as the universal emergency number. Other programs, such as the Military Assistance to Safety and Traffic (MAST) program, created in 1970 to authorize military aviation units to provide emergency helicopter transportation to civilian communities (augmenting preexisting medical systems), helped to expand the EMS infrastructure.

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In 1970 a Texas registry for EMS personnel was established under the name Division of Emergency Medical Services. The 1973 EMS Act, Vernon's Texas Civil Statutes, provided for the development of a state plan, the establishment of EMS delivery areas with at least one hospital designated as a trauma center, the identification of all public and private agency EMS stakeholders and a plan for an interagency communication system.

The 1980s brought continued growth and standardization for EMS, especially for patient care techniques and training. New advances in treatments for cardiac patients were incorporated into training and practice. Cardiopulmonary resuscitation (CPR) became the focus of a new public education drive, and the American Heart Association (AHA) developed an Advanced Cardiac Life Support (ACLS) course that increased the impact that prehospital personnel could have on cardiac patients. EMS began to be identified as an integral part of health care. Local governments and medical professionals laid the groundwork for the current prehospital system.

In 1983 the EMS Act of 1973 was amended to require two certified EMS personnel aboard an ambulance, personnel certification and vehicle permits, and the establishment of the Bureau of Emergency Management.

By 1987 the Commission on State Emergency Communications (CSEC) had been created to preserve and enhance public safety and health in Texas by providing reliable access to emergency communications services through the 9-1-1 program. The agency continues to work with the telecommunications industry and local 9-1-1 administrators to administer the statewide 9-1-1 program.

In 1989 legislation directed the Bureau of Emergency Management to establish a statewide trauma system and create the Trauma Technical Advisory Committee (TTAC). However, no resources were appropriated. The first trauma facility designation came in 1993, and development of trauma regional advisory councils (RACs) continued. By 1995 RACs were established in all 22 trauma service areas. All participation was voluntary.

Legislation enacted in 1997 created the first funding: an EMS/Trauma System Fund of \$4 million for the 1998/1999 biennium. Based on the revenue streams listed in the funding sections, allocations have

increased since 1998 to enable the TSAs to develop active trauma systems and partnerships with local EMS providers.

Challenges Facing EMS and Trauma Systems in Texas

Texas: A Big State with Large Rural/Frontier Areas

The health care system in Texas provides care to one of the largest and most diverse populations in the country, bordering four states and Mexico. Texas has a population total of about 25 million people, making up almost 8 percent of the total population of the United States. Additionally, Texas has approximately 3.2 million people residing within its rural and frontier counties.

For more information on...

Population data

www.quickfacts.census.gov/qfd/states/48000.html

Recruitment/Retention Challenges

Lower salaries Salaries for EMS personnel are low in comparison with other health care fields, especially in rural and frontier areas. At the same time, the cost and time required to meet educational requirements can be high. Each individual interested in attending an EMS course must take into account the necessary steps to become certified, and balance the possible hardships, including the financial and time burdens. Especially in rural and frontier areas, these burdens can deter individuals from pursuing EMS as a career.

Reliance on volunteers in rural/frontier areas Because call volume and city/county income can be very low in sparsely populated areas, many areas in rural and frontier Texas rely on volunteer personnel to provide EMS, and recruitment can be especially difficult.

For more information on...

EMS certification

www.dshs.state.tx.us/hcqs/ems/scertlic.htm

EMS job descriptions

www.dshs.state.tx.us/hcqs/ems/jobdesc.htm

Training may be costly or difficult to access Specific to rural and frontier Texas, problems such as the lack of initial training, especially advanced training, and fewer opportunities for continuing education can hamper local efforts to train EMS crews and keep certifications current.

Over-use in urban areas Challenges to employee recruitment and retention in urban areas include high call volumes, rapid job burnout and a high turnover rate of employees. Daily traffic congestion and related transportation problems getting to and during a shift make it easy to understand how a career in urban areas can be as challenging as one in rural areas.

EMS/Trauma Systems Are Costly

Staff training Providing staff training can be a costly, though vital, part of operating an EMS organization. Although initial training is typically paid for by the individual employee, many providers offer continuing education as a way to ensure their employees remain fully qualified. For those who choose to renew certifications via continuing education, specific hours must be earned every four years in a variety of subjects. ECAs must complete 36 hours, EMT-Basics must complete 72 hours, EMT-Intermediates must complete 108 hours, and EMT-Paramedics and licensed paramedics must complete 108 hours.

In addition, designated trauma and stroke facility personnel are required to maintain certain certifications such as Advanced Trauma Life Support.

Maintaining equipment Many ambulances are old, and costs to repair them are prohibitive for smaller departments. In addition, hospitals must provide certain equipment to maintain trauma and stroke designations.

Reliance on city/county/state funding The need for adequate funding affects EMS and trauma systems across the state regardless of location. All EMS providers and trauma facilities have seen an increased demand for services in the last few years, usually without an increase in funding. As outlined in the Funding section, EMS providers depend mostly on local funding, and the trauma system, including the designated trauma facilities, depends mostly on state disbursed funds. Changes in the budgets for cities, counties and the

state frequently have a direct impact on the levels of service Texas citizens can expect.

The Future of EMS in Texas

The Texas EMS/Trauma System brings many partners to the table: DSHS, Governor's EMS and Trauma Advisory Council, 22 Regional Advisory Councils, trauma and stroke facilities, and thousands of health care and emergency medical personnel. Texas can build a unified, comprehensive, and effective EMS/Trauma system through a combination of partnerships, funding and support of education for emergency personnel and for the public. This vision of the future includes an EMS/Trauma System poised to move beyond 9-1-1 response into disaster response, using paramedics to alleviate staff shortages in emergency departments and providing community preventative care services as part of the emergency health care system in Texas.

For more information on...

Laws that impact EMS and Trauma Systems, adopted EMS and trauma rules, and proposed and pending EMS/Trauma System rules
www.dshs.state.tx.us



EMS-related Health and Safety Codes

CHAPTER 771. STATE ADMINISTRATION OF EMERGENCY COMMUNICATIONS

CHAPTER 772. LOCAL ADMINISTRATION OF EMERGENCY COMMUNICATIONS

CHAPTER 773. EMERGENCY MEDICAL SERVICES

CHAPTER 774. LOCAL PROVISION OF EMERGENCY MEDICAL SERVICES

CHAPTER 775. EMERGENCY SERVICES DISTRICTS

CHAPTER 776. EMERGENCY SERVICES DISTRICTS IN COUNTIES OF 125,000 OR LESS

CHAPTER 778. EMERGENCY MANAGEMENT ASSISTANCE COMPACT

CHAPTER 779. AUTOMATED EXTERNAL DEFIBRILLATORS

CHAPTER 281. HOSPITAL DISTRICTS IN COUNTIES OF AT LEAST 190,000

CHAPTER 282. HOSPITAL DISTRICTS IN COUNTIES OF 75,000 OR LESS

CHAPTER 283. OPTIONAL HOSPITAL DISTRICT LAW OF 1957

CHAPTER 284. SPECIAL PROVISIONS RELATING TO HOSPITAL DISTRICT BONDS

CHAPTER 285. SPECIAL PROVISIONS RELATING TO HOSPITAL DISTRICTS

CHAPTER 286. HOSPITAL DISTRICTS CREATED BY VOTER APPROVAL

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