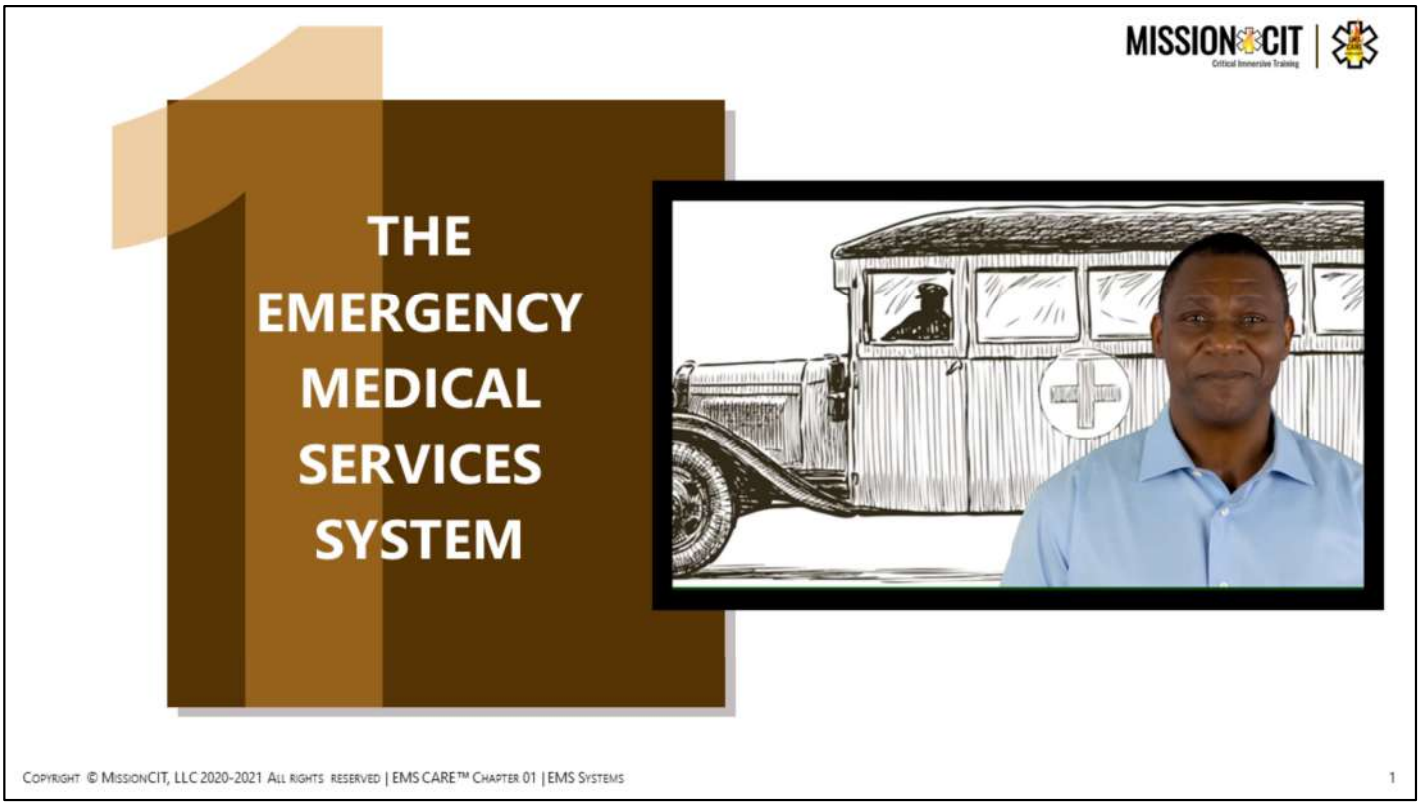
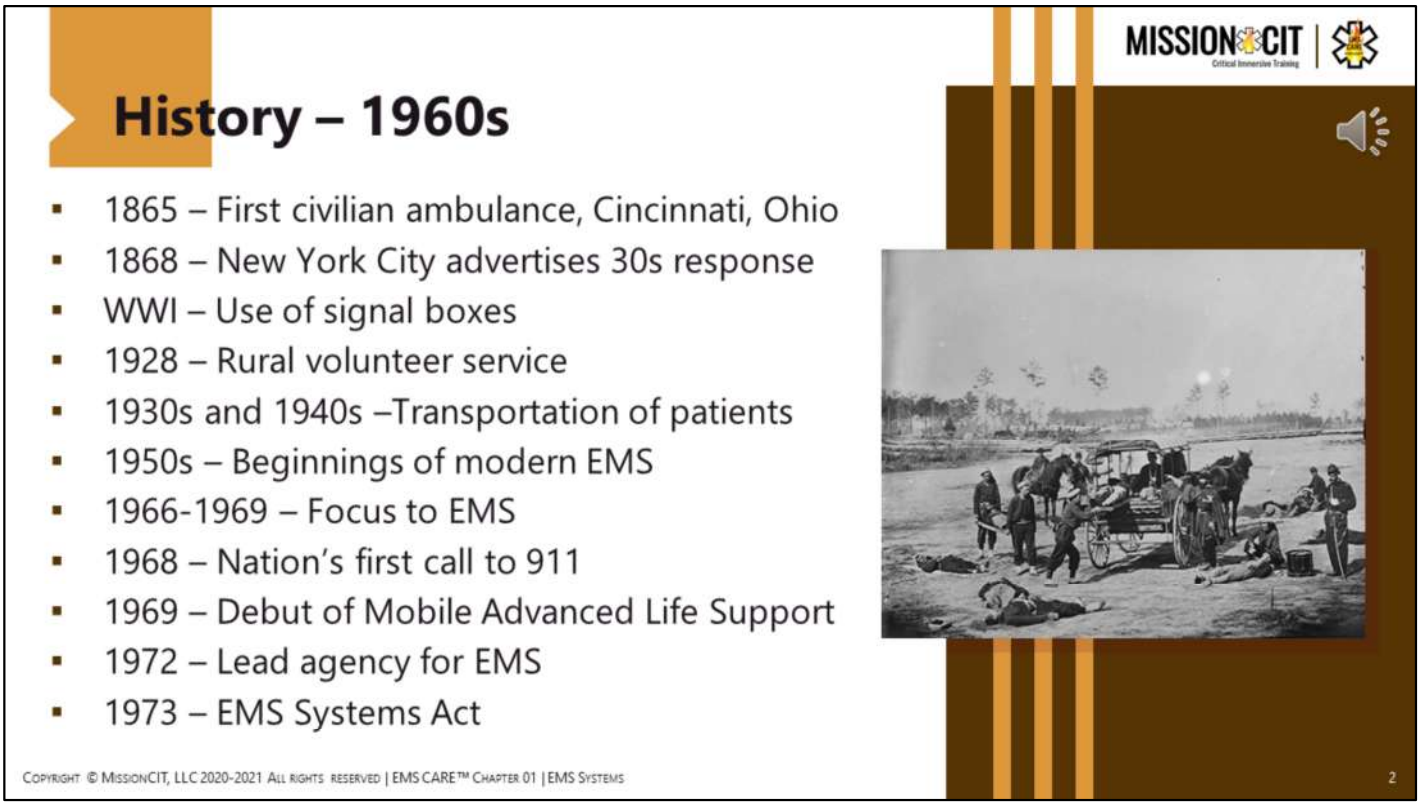


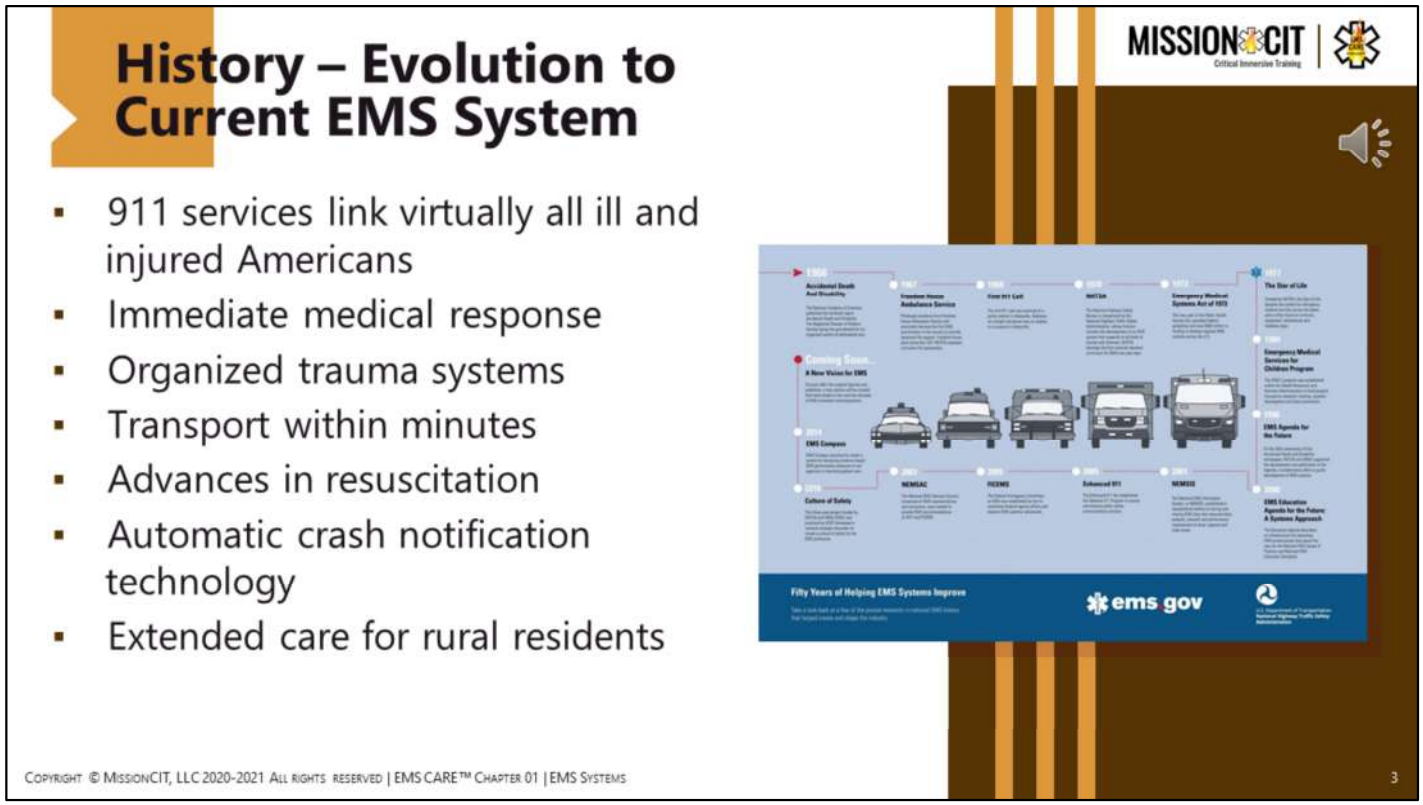
Hello there! The Emergency Medical Services System is a network of highly skilled pre-hospital care providers. These providers deliver care, stabilization, and transportation to someone experiencing a Medical Emergency. For more than 150 years, dedicated people have made themselves the first line of defense in dealing with medical emergencies “so that others might live.” Welcome to the first lesson where we talk about the Emergency Medical Services System.



EMS in America can be traced back to the Civil War era. All military personnel had to be examined by medical officers to qualify for duty. Also, ambulances were assigned based on the size of the regiment. Each ambulance team was trained in patient care to better take care of the soldiers. Here is a quick look at the history of EMS.

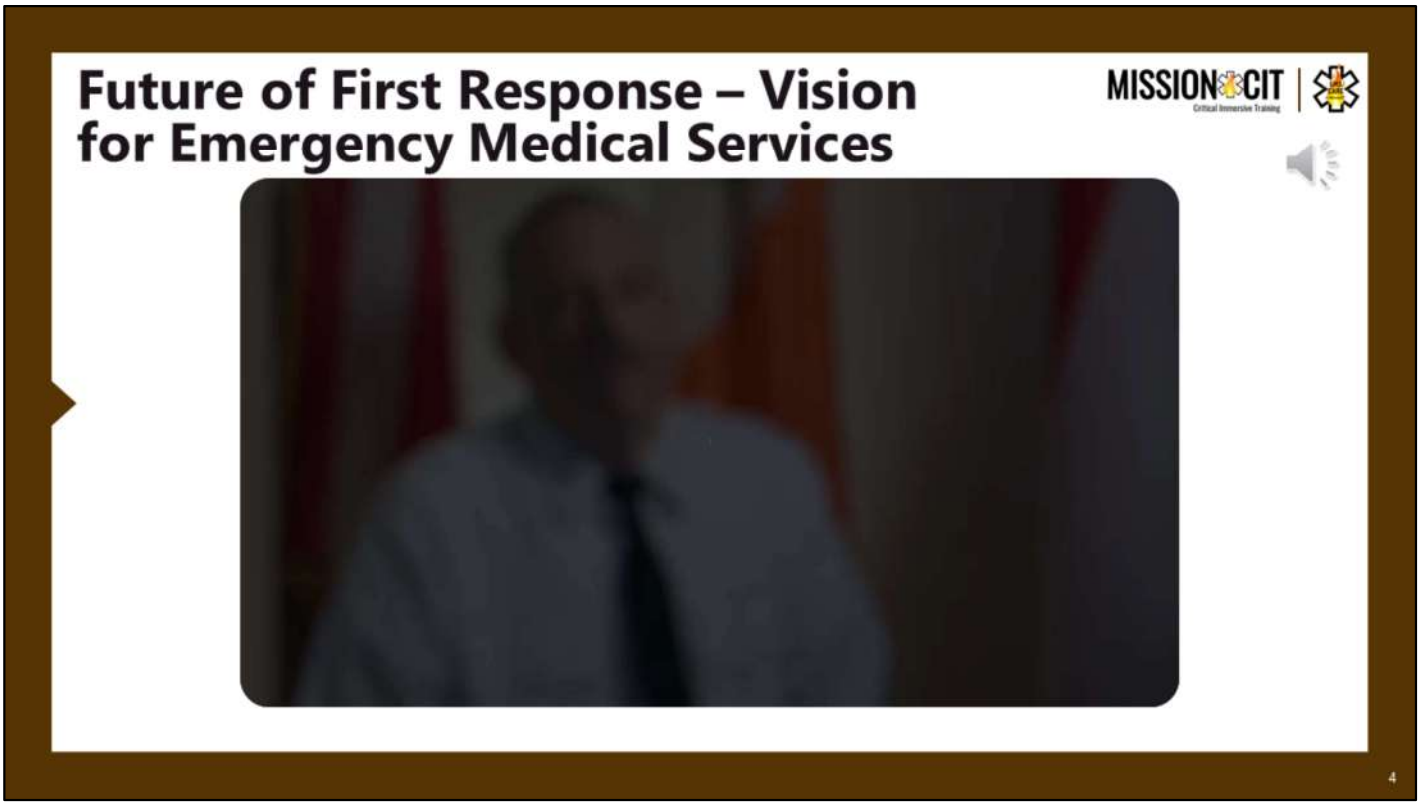
- 1865 – Cincinnati, Ohio establishes the first civilian ambulance service.
- 1868 – New York City advertises 30-second response by an Ambulance Surgeon.
- WWI – Wounded soldiers on the battlefield use signal boxes to summon medical help. Service uses electric, steam and gasoline-driven ambulances to transport wounded.
- 1928 – Rural volunteer service begins with Roanoke, VA life-saving and first aid crews. Other states follow, but quality and kind of service varies widely.
- 1930s and 1940s – Unregulated hodgepodge of service emerges at state and local levels with fire departments, hospitals, funeral homes, towing companies, and volunteers setting own standards. Transportation of patients remains primary focus until after mid-century.
- 1950s – Beginnings of modern EMS. Funeral homes begin patient care and operate nearly half of country's ambulances.

- 1966-1969 – Modern EMS evolves from landmark National Academy of Science study, Accidental Death and Disability: The Neglected Disease of Modern Society. Shift begins from transportation focus to emergency medical service. Federal legislation standardizes training requirements, introduces the term Emergency Medical Technician.
- 1968 – Nation's first call to 911 received at a police station in Haleyville, Alabama.
- 1969 – Mobile Advanced Life Support debuts in New York City and Miami. Columbus, Portland, Seattle and Los Angeles follow soon after.
- 1972 – Health Services and Mental Health Administration under the Dept of Health, Education, and Welfare becomes the lead agency for EMS, formalizing shift from primarily transportation service to emergency medical service.
- 1973 – EMS Systems Act establishes 300 EMS systems throughout the country. Department of Transportation adapts training curricula for EMT, EMT-P, and first responders. New rules establish EMS radio communications and introduce ambulance specifications.



EMS care has made important advances in recent years. Emergency 911 services now link virtually all ill and injured Americans to immediate medical response; through organized trauma systems, patients are transported to advanced, life-saving care within minutes; and advances in resuscitation and life-saving procedures yield outcomes unheard of a decade ago.

Automatic crash notification technology, while still nascent, allows for immediate emergency notification of crashes in which vehicle air bags have deployed. And medical equipment, including air ambulance service, has extended the care available to emergency patients, for example, by bringing rural residents within closer range of emergency and trauma care facilities.



The Department of Homeland Security Science and Technology Directorate shows a glimpse of some of the potential future technologies, like a light breathable layer to protect from gunshots that will help the emergency medical technician of the future.

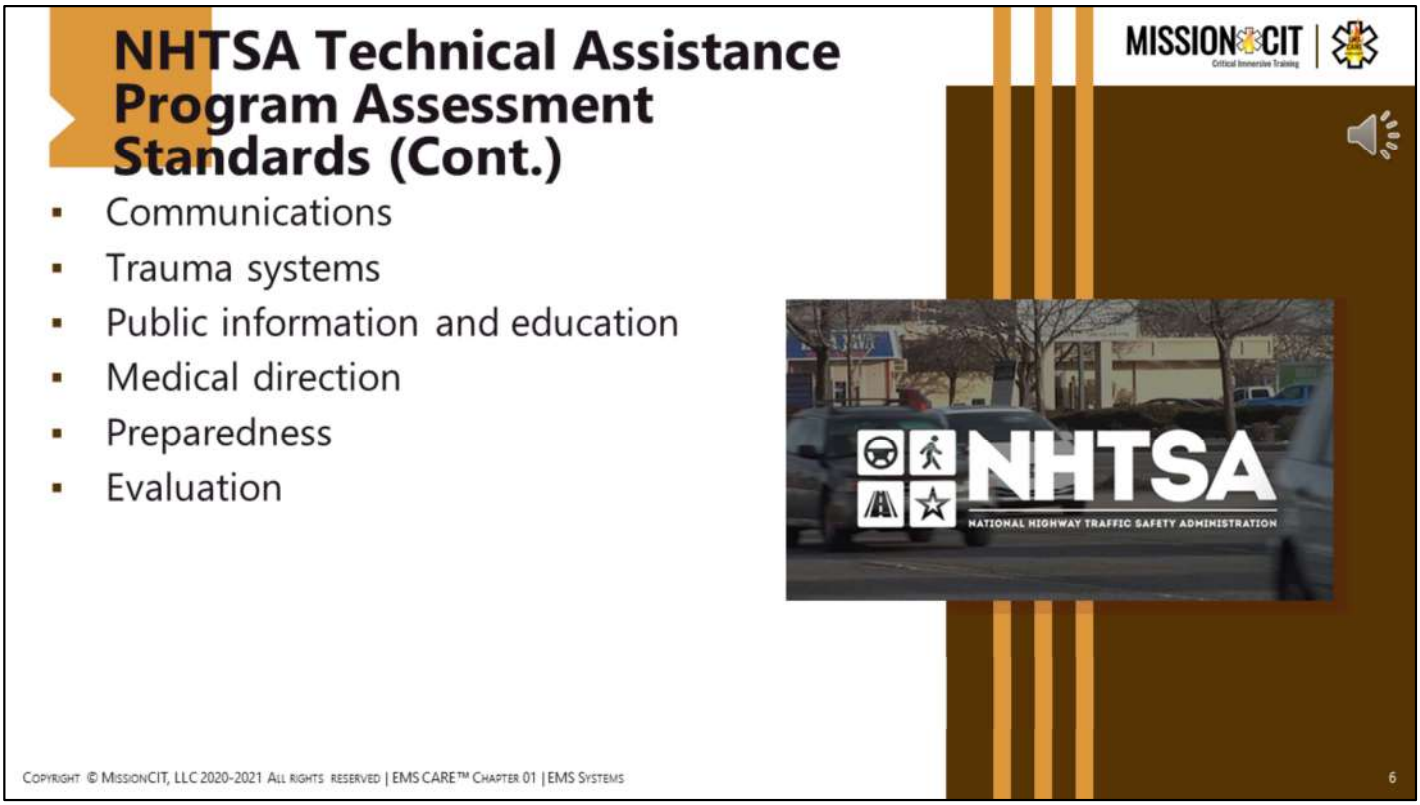


The National Highway Traffic Safety Administration (NHTSA) Technical Assistance Program Assessment Standards for EMS systems address the resource management component by stating that each state must have central control of EMS resources so that each locality and all patients have equal access to acceptable emergency care. The standards include:

- Regulation and policy: Each State should embody comprehensive enabling legislation, regulations, and operational policies and procedures to provide an effective state-wide system of emergency medical and trauma care.
- Resource management: Each State EMS lead agency should identify, categorize, and coordinate resources necessary for establishment and operation of regionalized, accountable EMS and trauma systems.
- Human resources and training: Each State should ensure that its EMS system has essential trained and certified/licensed persons to perform required tasks. These personnel include: first responders (e.g., police and fire), prehospital providers (e.g., emergency medical technicians and paramedics), communications specialists, physicians, nurses, hospital administrators, and planners. Each State should provide a comprehensive statewide plan for assuring a stable EMS workforce including consistent EMS training and recruitment/retention programs with effective local and regional support.
- Transportation: Each State should require safe, reliable EMS transportation. Most patients can be effectively transported by ground ambulances. Other patients require rapid

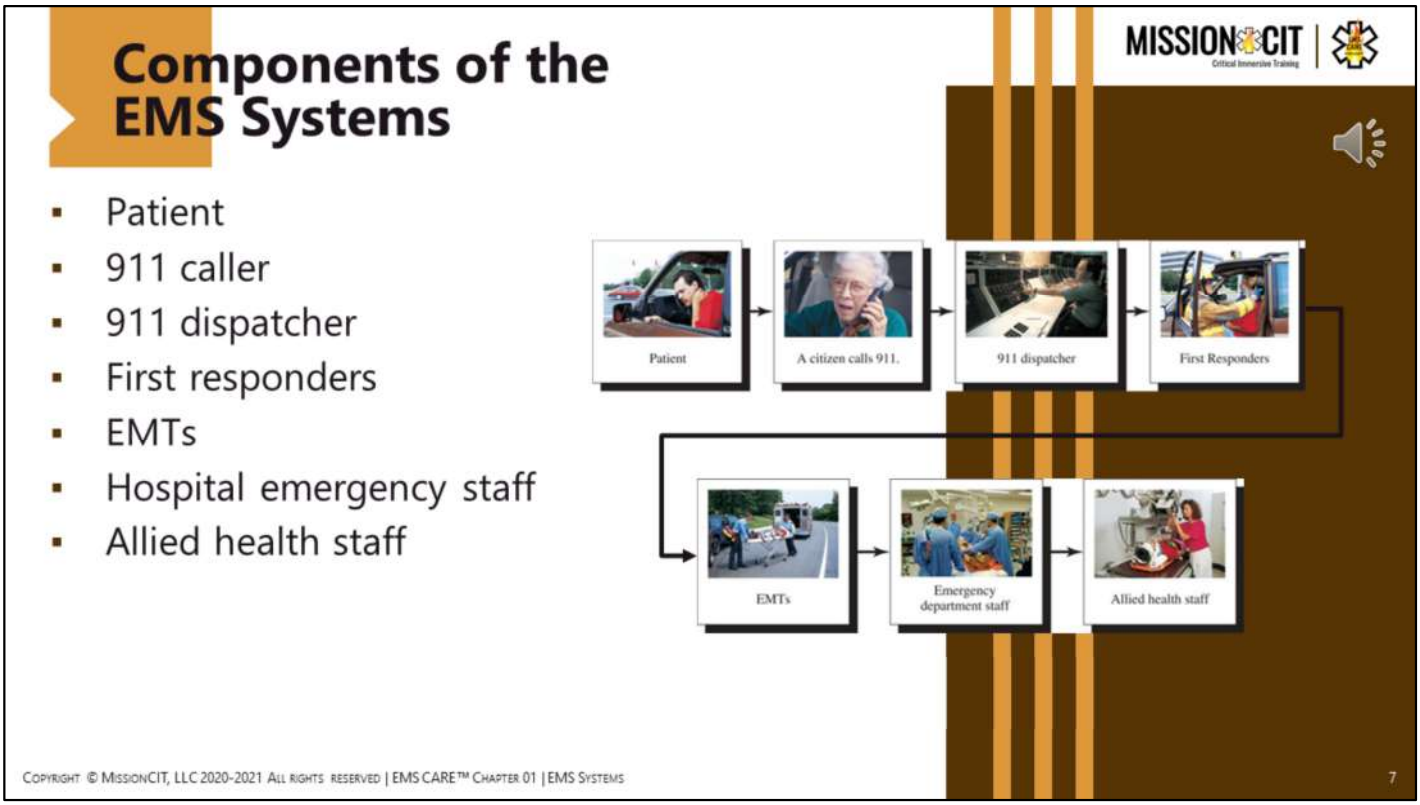
transportation, or transportation from remote areas, by helicopter or airplane.

- Facilities: It is imperative that the seriously injured (or ill) patient be delivered in a timely manner to the closest appropriate facility.



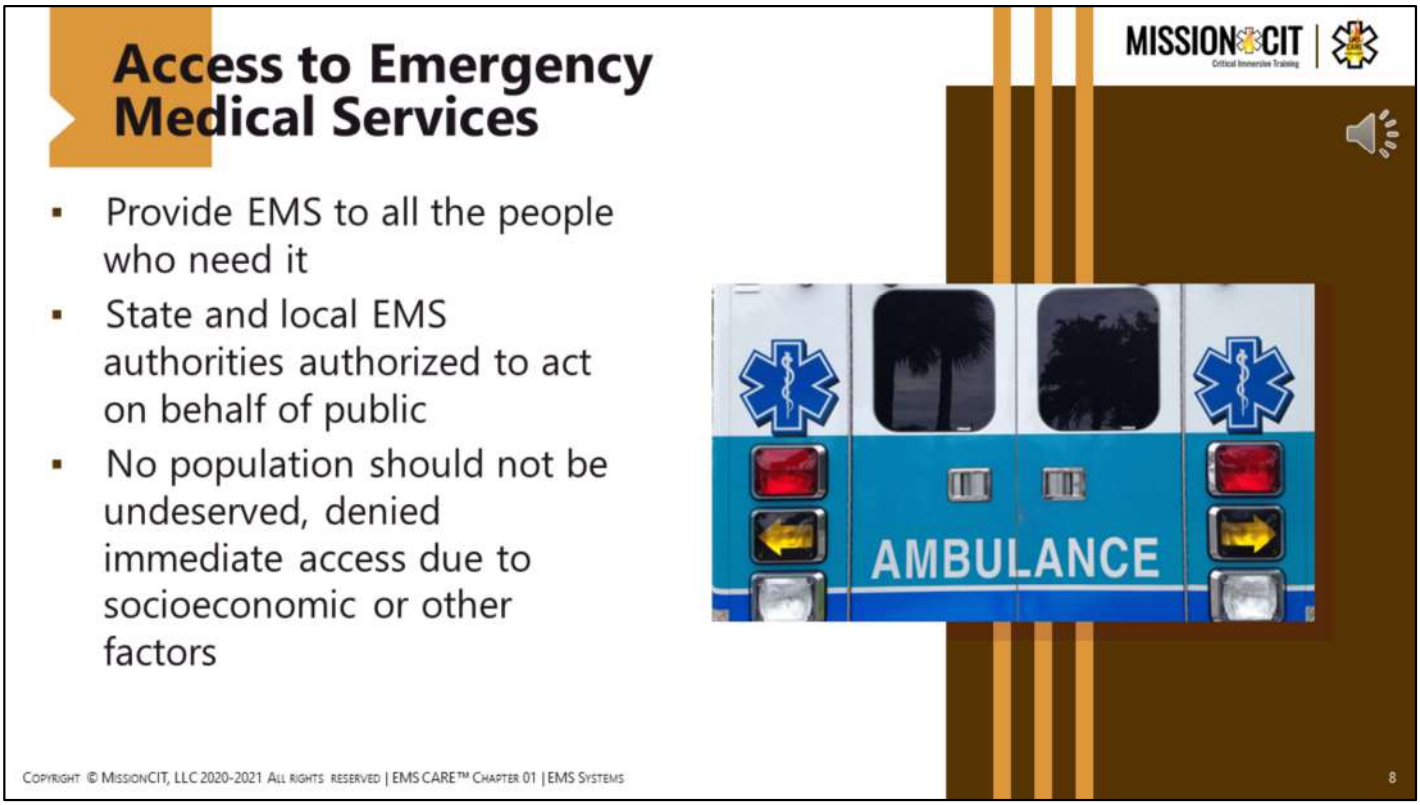
- Communications: An effective communications system is essential to EMS operations and provides how emergency resources can be accessed, mobilized, managed, and coordinated.
- Trauma systems: Each State should maintain a fully functional trauma system to provide a high quality, effective patient care system.
- Public information and education: EMS personnel may participate in efforts to educate the public about their role in the system, their ability to access the system, and prevention of injuries.
- Medical direction: Physician involvement in all aspects of the patient care system is critical for effective EMS operations. EMS is a medical care system in which physicians oversee non-physician providers who manage patient care outside the traditional confines of the office or hospital.
- Preparedness: EMS is a critical component in the systematic response to day-to-day emergencies as well as disasters. Building upon the day-to-day capabilities of the EMS system each State should ensure that EMS resources are effectively and appropriately dispatched and provide prehospital triage, treatment, transport, tracking of patients and documentation of care appropriate for the incident, while maintaining the capabilities of the EMS system for continued operations.
- Evaluation: Each State should implement a comprehensive evaluation program to

effectively assess and to improve a statewide EMS system, known as a quality improvement (QI) program, a quality assurance (QA) program, or total quality management (TQM).

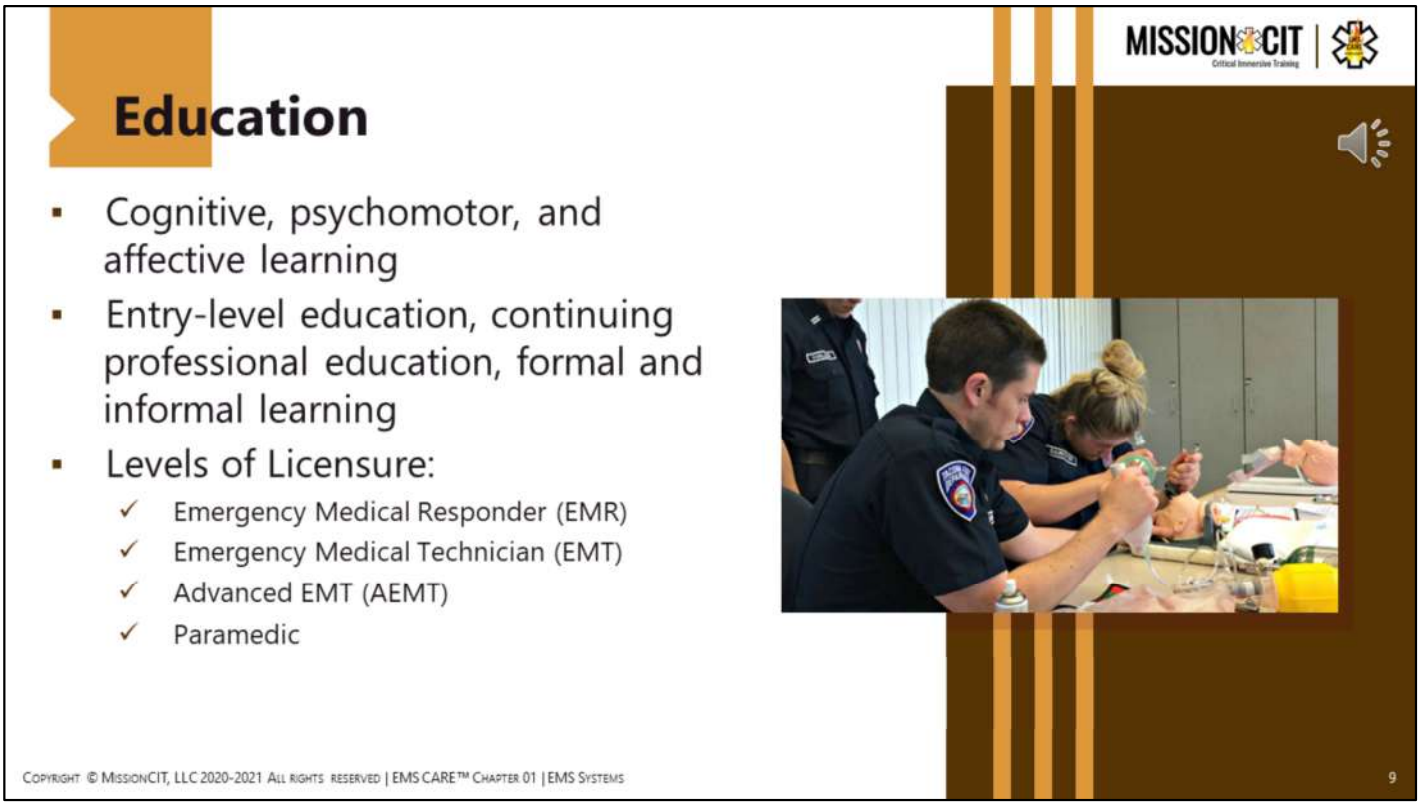


To understand the EMS system, you must look at it from the patient's viewpoint rather than from that of the EMT. The seven steps in the chain of human resources making up the EMS system are:

- Patient
- 911 caller
- 911 dispatcher
- First responders
- EMTs
- Hospital emergency staff, and
- Allied health staff

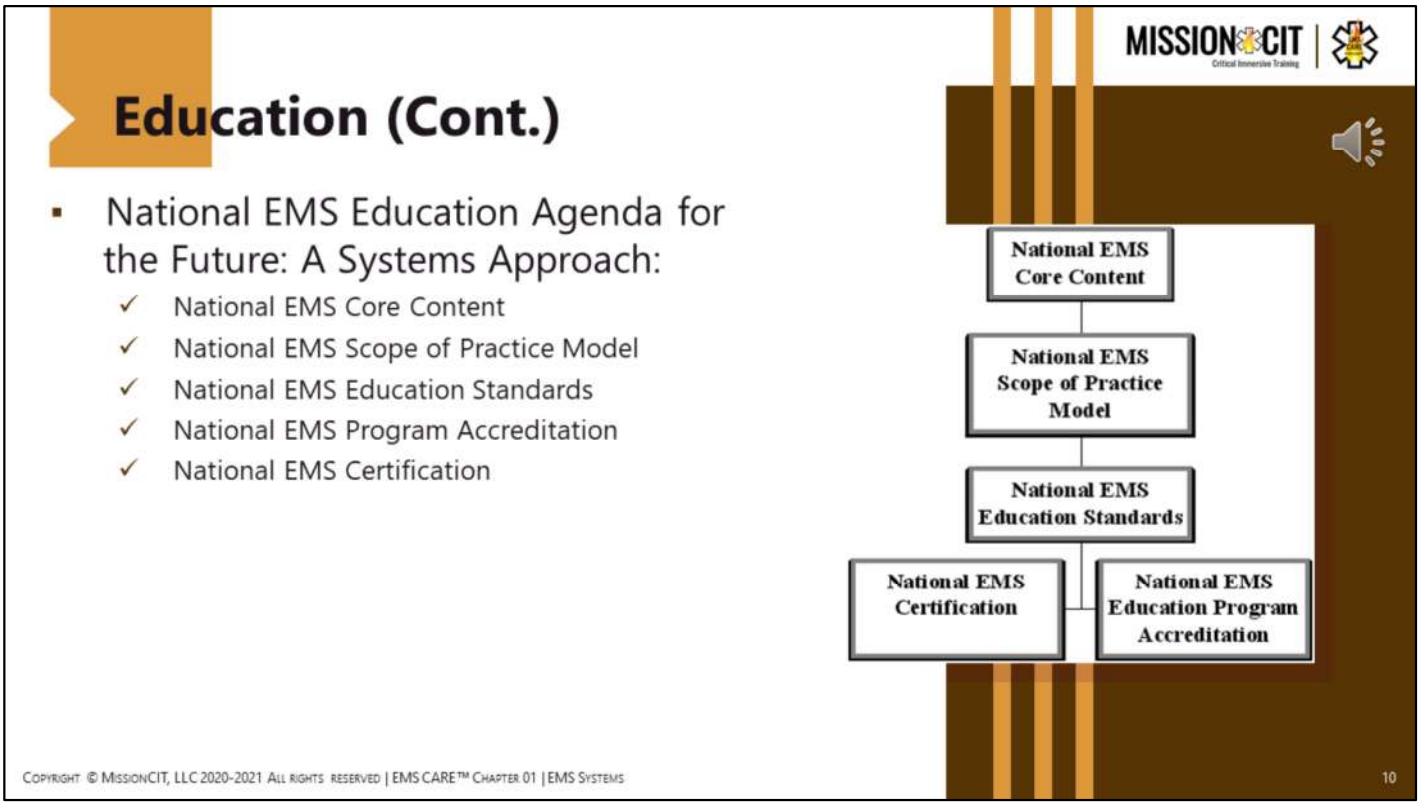


It is believed that an effective EMS system should be able to provide EMS to all the people who need it. State and local EMS authorities must be authorized to act on the public's behalf in cases of threats to the availability of quality EMS to the entire population. Actions should ensure that some segments of the population are not underserved, or denied immediate access to EMS due to socioeconomic or other factors.



Education includes all of the cognitive, psychomotor, and affective learning that individuals have undergone throughout their lives. This includes entry-level education, continuing professional education, formal and informal learning. Clearly, many individuals have extensive education that in some cases exceeds their EMS skills or roles.

In most states, there are four training and licensure levels: Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT), and Paramedic. Each level represents a unique role, set of skills, and knowledge base. These certifications prepare and authorize them to perform specific types of medical care, which are listed in the upcoming slides. Specialty certifications are sometimes used to accommodate smaller differences in some or all of the above.



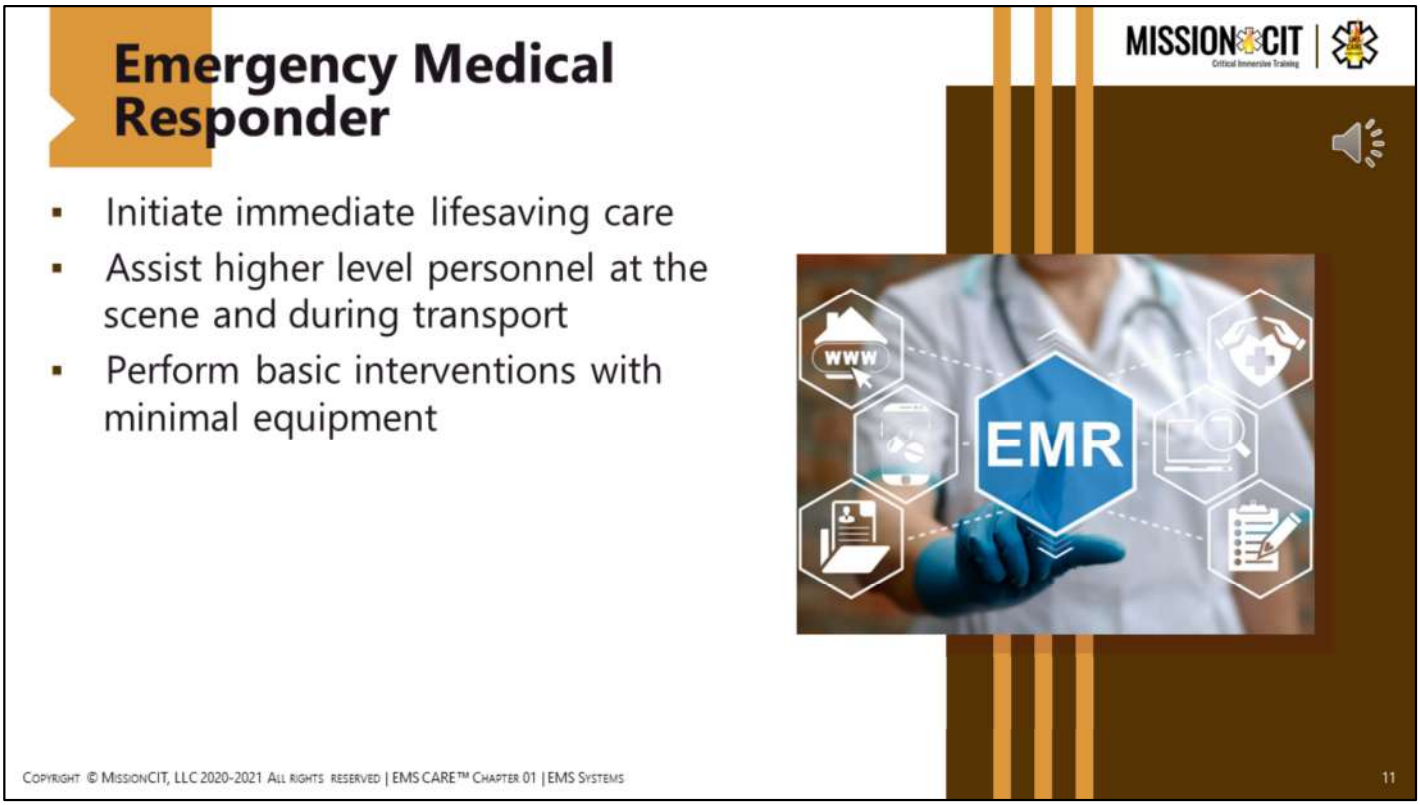
The EMS Education Agenda for the Future: A Systems Approach was developed by a Task Force representing the full range of professions involved in EMS education including EMS administrators, physicians, regulators, educators, and providers. It proposes an education system with five integrated primary components:

- The National EMS Core Content is a comprehensive list of skills and knowledge needed for out-of-hospital emergency care. Specification of the Core Content is primarily a medical concern and will be led by the medical community, with input from the system regulators, educators, and providers.
- The National EMS Scope of Practice Model divides the National EMS Core Content into levels of practice, defining minimum knowledge and skills for each level. Since this determination is fundamentally a system issue, the system regulators will have the lead in its development, with input from the other stakeholders.
- The National EMS Education Standards take the place of the current National Standard Curricula, specifying minimum terminal learning objectives for each level of practice. Being basically an educational task, the development of the National EMS Education Standards will be led by educators, with input from other stakeholders.
- National EMS Education Program Accreditation is applied to all nationally recognized provider levels and is universal. Accreditation is the major mechanism for verifying educational program quality for the protection of students and the public. Accreditation

enhances the consistency of the evaluation of instructional quality.

- National EMS Certification is available for all nationally recognized provider levels and is universal. Certification involves a standardized examination process and contributes to the protection of the public by ensuring the entry-level competence of EMS providers. In order to be eligible for National EMS Certification, a student must have graduated from an accredited program.

The proposed system maximizes efficiency, consistency of instruction quality, and student competence by prescribing a high degree of structure, coordination, and interdependence among the five components. Administratively, the system proposed in the EMS Education Agenda offers a number of benefits, including greater predictability for component development cycles, and a clear and definite method for introducing changes to the system. These provisions will clarify the process for accommodating medical advances, technology development, and other needs that affect the scope or content of EMS education while following the attributes of the 1996 EMS Agenda for the Future.



The primary focus of the Emergency Medical Responder is to initiate immediate lifesaving care to critical patients who access the emergency medical system. This individual possesses the basic knowledge and skills necessary to provide lifesaving interventions while awaiting additional EMS response and to assist higher level personnel at the scene and during transport. Emergency Medical Responders function as part of a comprehensive EMS response, under medical oversight. Emergency Medical Responders perform basic interventions with minimal equipment. Educational Requirements: One of the eligibility requirements for licensure at this level requires successful completion of an accredited Emergency Medical Responder training program.

The following are the minimum psychomotor skills of the EMR:

Airway and Breathing:

- Insertion of airway adjuncts intended to go into the oropharynx
- Use of positive pressure ventilation devices such as the bag-valve-mask
- Suction of the upper airway
- Supplemental oxygen therapy

Pharmacological interventions:

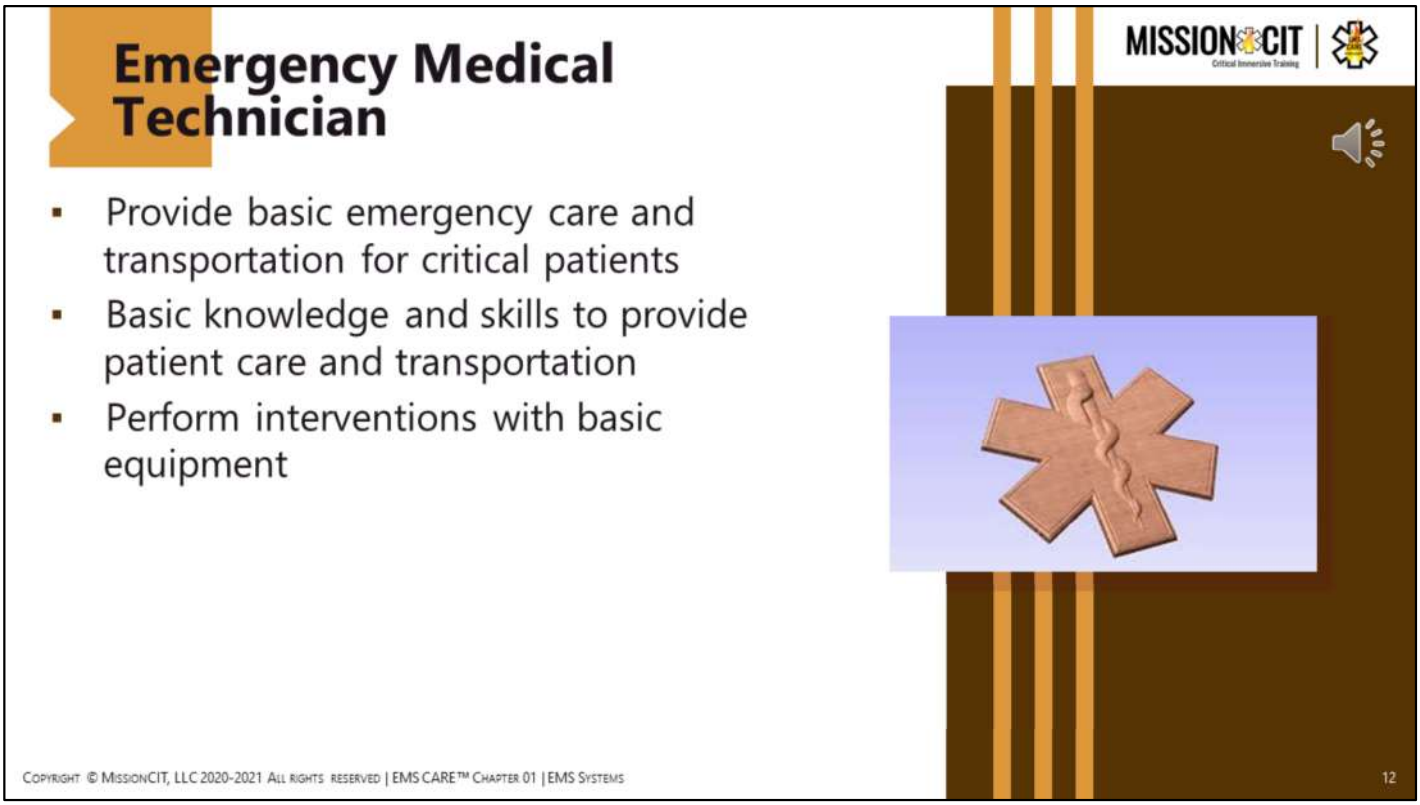
- Use of unit dose auto-injectors for the administration of life saving medications intended for self or peer rescue in hazardous materials situations (MARK I, etc.)

Medical/Cardiac Care:

- Use of an automated external defibrillator

Trauma Care:

- Manual stabilization of suspected cervical spine injuries
- Manual stabilization of extremity fractures
- Bleeding control, and
- Emergency moves



The primary focus of the Emergency Medical Technician is to provide basic emergency medical care and transportation for critical and emergent patients who access the emergency medical system. This individual possesses the basic knowledge and skills necessary to provide patient care and transportation. Emergency Medical Technicians function as part of a comprehensive EMS response, under medical oversight. Emergency Medical Technicians perform interventions with the basic equipment typically found on an ambulance. The Emergency Medical Technician is a link from the scene to the emergency health care system.

Educational Requirements: One of the eligibility requirements for licensure at this level requires successful completion of an accredited Emergency Medical Technician course.

The following are the minimum psychomotor skills of the EMT:

Airway and Breathing:

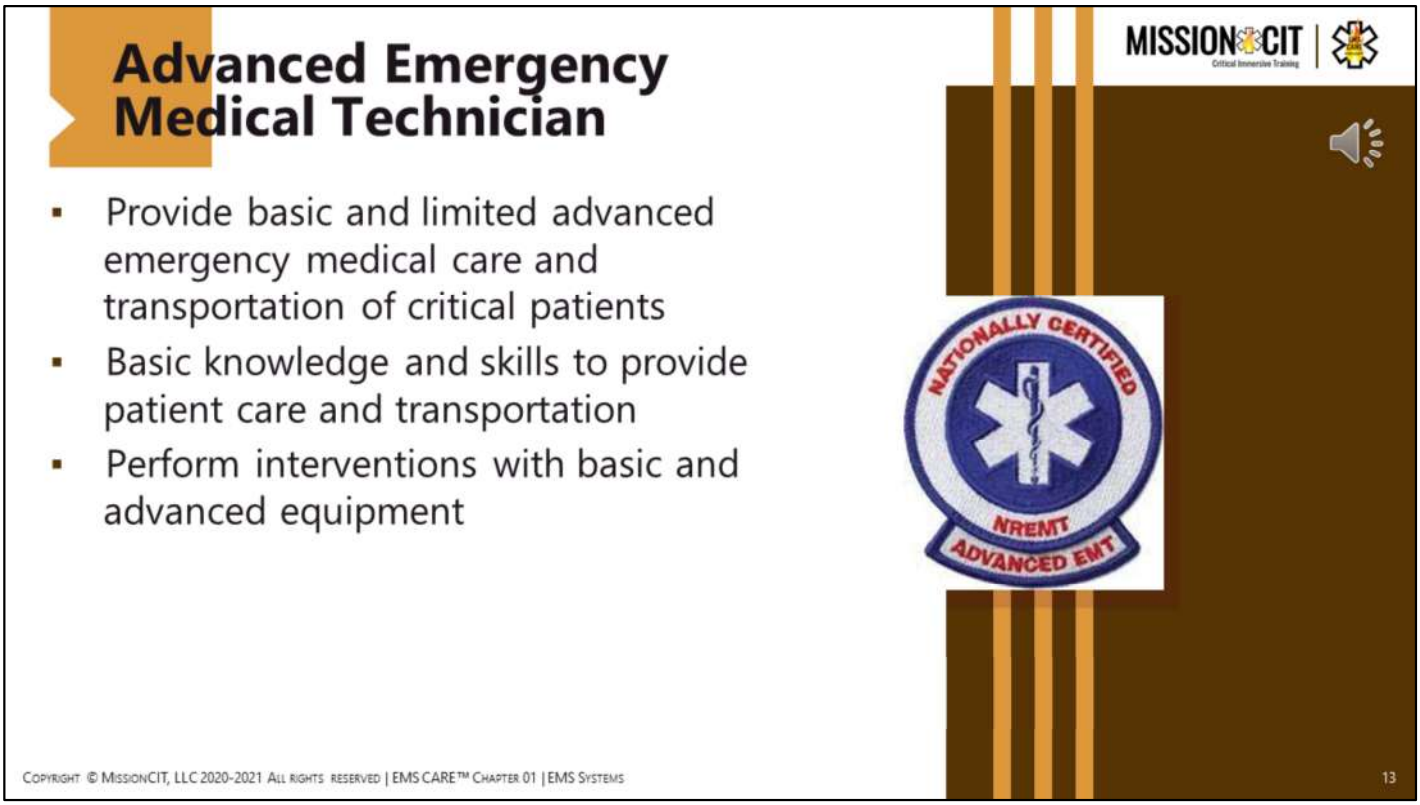
- Insertion of airway adjuncts intended to go into the oropharynx or nasopharynx
- Use of positive pressure ventilation devices such as manually triggered ventilators and automatic transport ventilators

Pharmacological Interventions:

- Assist patients in taking their own prescribed medications
- Administration of the following over-the-counter medications with appropriate medical oversight:
    - Oral glucose for suspected hypoglycemia
    - Aspirin for chest pain of suspected ischemic origin

Trauma Care:

- Application and inflation of the pneumatic anti-shock garment (PASG) for fracture stabilization



The primary focus of the Advanced Emergency Medical Technician is to provide basic and limited advanced emergency medical care and transportation for critical and emergent patients who access the emergency medical system. This individual possesses the basic knowledge and skills necessary to provide patient care and transportation. Advanced Emergency Medical Technicians function as part of a comprehensive EMS response, under medical oversight. Advanced Emergency Medical Technicians perform interventions with the basic and advanced equipment typically found on an ambulance. The Advanced Emergency Medical Technician is a link from the scene to the emergency health care system.

Educational Requirements: One of the eligibility requirements for licensure at this level requires successful completion of an accredited Advanced Emergency Medical Technician course.

The following are the minimum psychomotor skills of the AEMT:

Airway and Breathing:

- Insertion of airways that are NOT intended to be placed into the trachea
- Tracheobronchial suctioning of an already intubated patient

Assessment

Pharmacological Interventions:

- Establish and maintain peripheral intravenous access
- Establish and maintain intraosseous access in a pediatric patient
- Administer (nonmedicated) intravenous fluid therapy
- Administer sublingual nitroglycerine to a patient experiencing chest pain of suspected ischemic origin
- Administer subcutaneous or intramuscular epinephrine to a patient in anaphylaxis
- Administer glucagon to a hypoglycemic patient
- Administer intravenous D50 to a hypoglycemic patient
- Administer inhaled beta agonists to a patient experiencing difficulty breathing and wheezing
- Administer a narcotic antagonist to a patient suspected of narcotic overdose
- Administer nitrous oxide for pain relief



The Paramedic is an allied health professional whose primary focus is to provide advanced emergency medical care for critical and emergent patients who access the emergency medical system. This individual possesses the complex knowledge and skills necessary to provide patient care and transportation. Paramedics function as part of a comprehensive EMS response, under medical oversight. Paramedics perform interventions with the basic and advanced equipment typically found on an ambulance. The Paramedic is a link from the scene into the health care system. Educational Requirements: Because of the amount of complex decision making, one of the eligibility requirements for licensure requires successful completion of a nationally accredited Paramedic program at the certificate or associates degree level.

The following are the minimum psychomotor skills of the Paramedic:

Airway and Breathing:

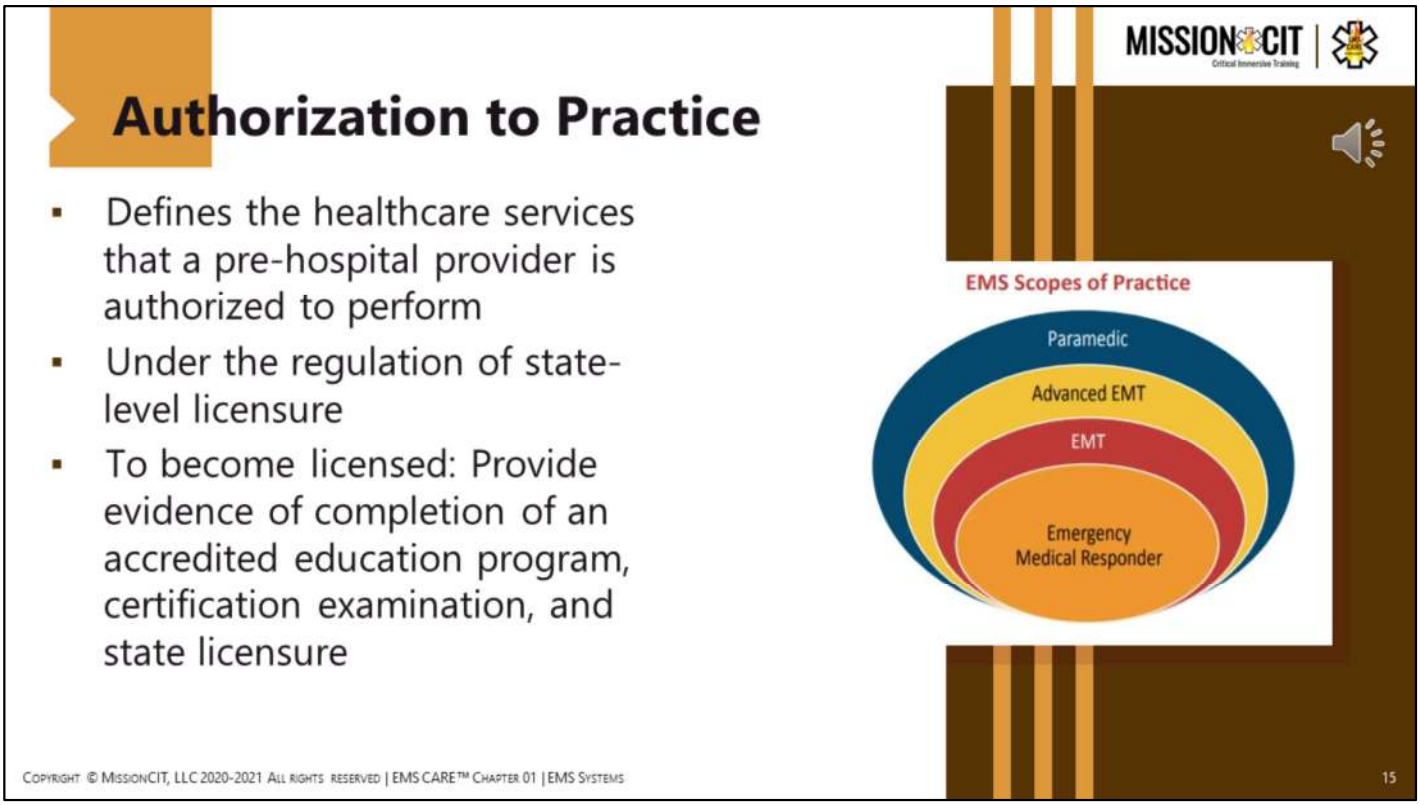
- Perform endotracheal intubation
- Perform percutaneous cricothyrotomy
- Decompress the pleural space
- Perform gastric decompression

Pharmacological Interventions:

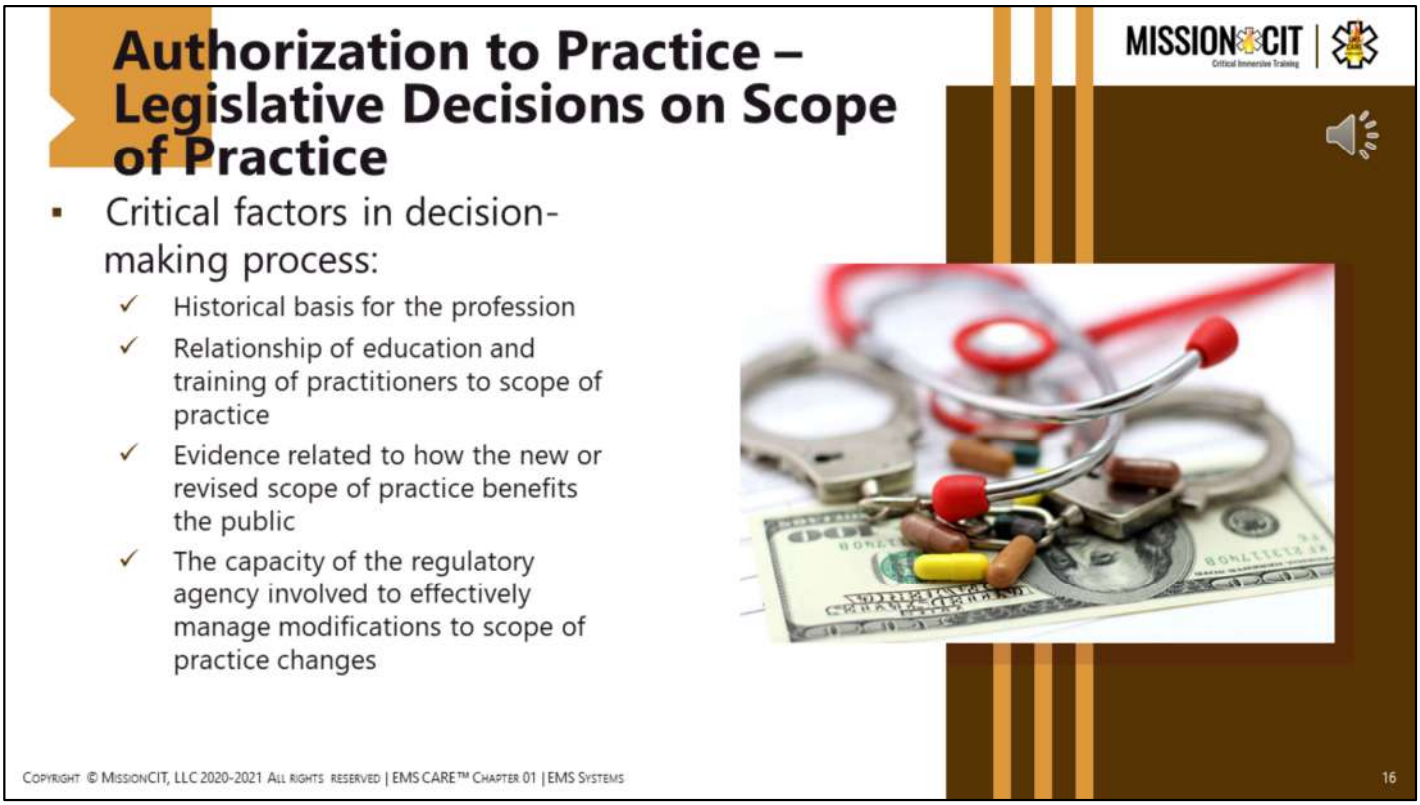
- Insert an intraosseous cannula
- Enteral and parenteral administration of approved prescription medications
- Access indwelling catheters and implanted central IV ports for fluid and medication administration
- Administer medications by IV infusion
- Maintain an infusion of blood or blood products

Medical/Cardiac Care:

- Perform cardioversion, manual defibrillation, and transcutaneous pacing



Broadly defined, the scope of practice defines the healthcare services that a pre-hospital provider is authorized to perform by virtue of professional licensure. The scope of practice in Emergency Medical Services is under the regulation of state-level licensure. To become licensed, an EMS provider must provide evidence of satisfactory completion of an accredited education program, a certification examination, and state licensure. For clarity, certification verifies a knowledge or experience base. Licensure bestows permission to perform specific duties/skills.



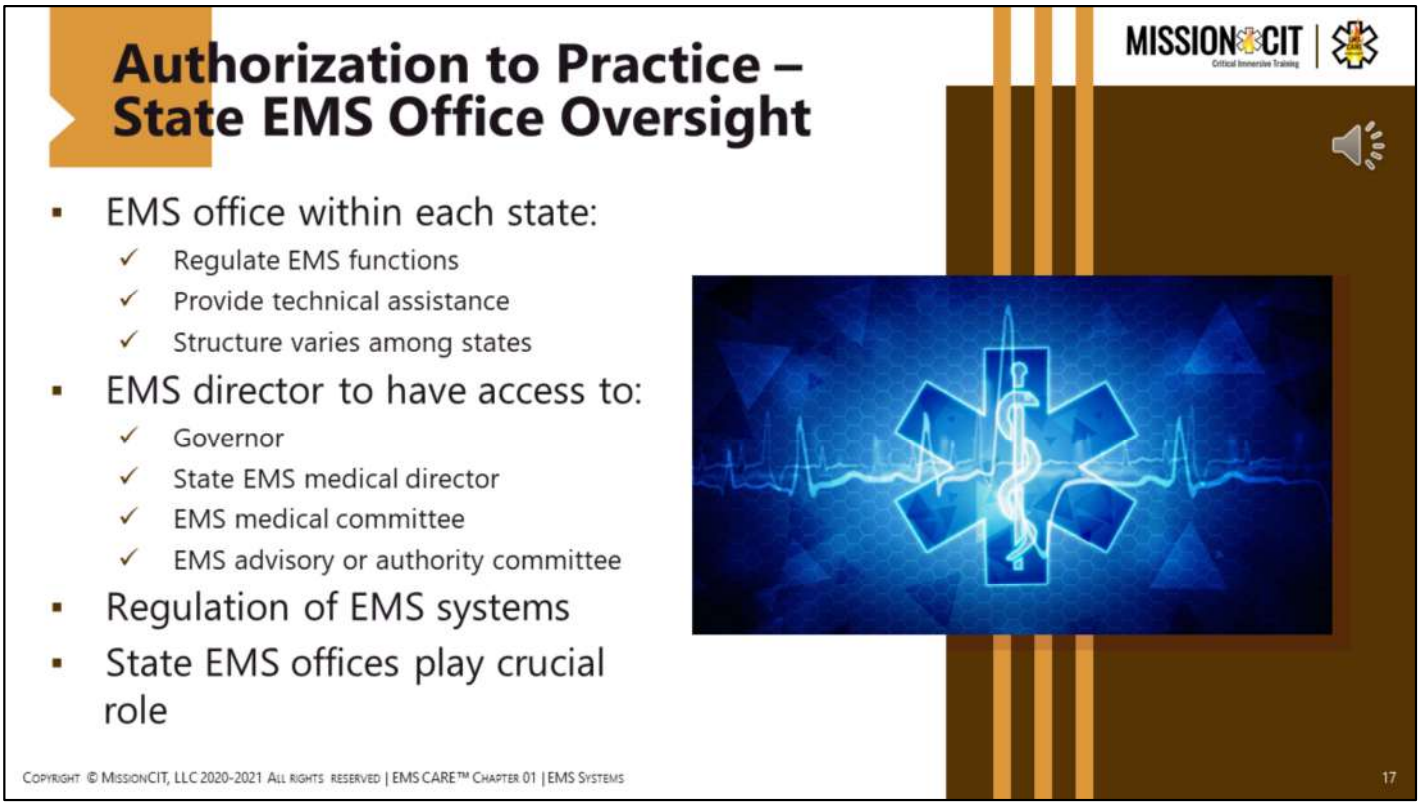
The history of professional licensure must be taken into account if one is to understand the current regulatory system governing scope of practice. Physicians were the first health professionals to obtain legislative recognition and protection of their practice authority. The practice of medicine was defined in broad and undifferentiated terms to include all aspects of individuals' care. Therefore, when other healthcare professions sought legislative recognition, they were seen as claiming the ability to do tasks which were already included in the universal and implicitly exclusive authority of medicine.

When defining a profession's scope of practice, the goal of public protection can be realized when legislative and/or regulatory bodies include the following critical factors in their decision-making process:

- Historical basis for the profession, especially the evolution of the profession advocating a scope of practice change
- Relationship of education and training of practitioners to scope of practice
- Evidence related to how the new or revised scope of practice benefits the public, and
- The capacity of the regulatory agency involved to effectively manage modifications to scope of practice changes

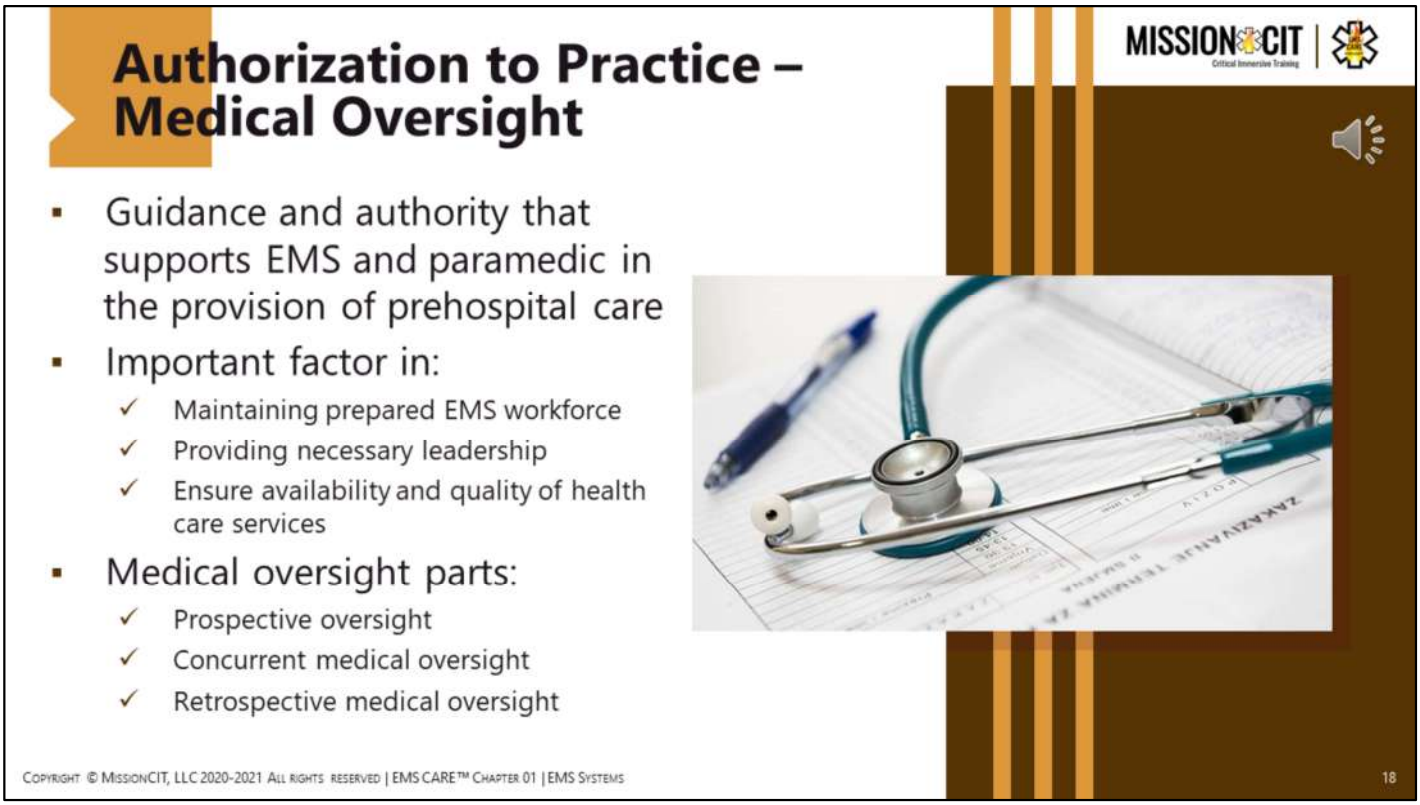
Overlapping scopes of practice are a reality in a rapidly changing healthcare environment.

The criteria related to who is qualified to perform functions safely without risk of harm to the public are the only justifiable conditions for defining scopes of practice.



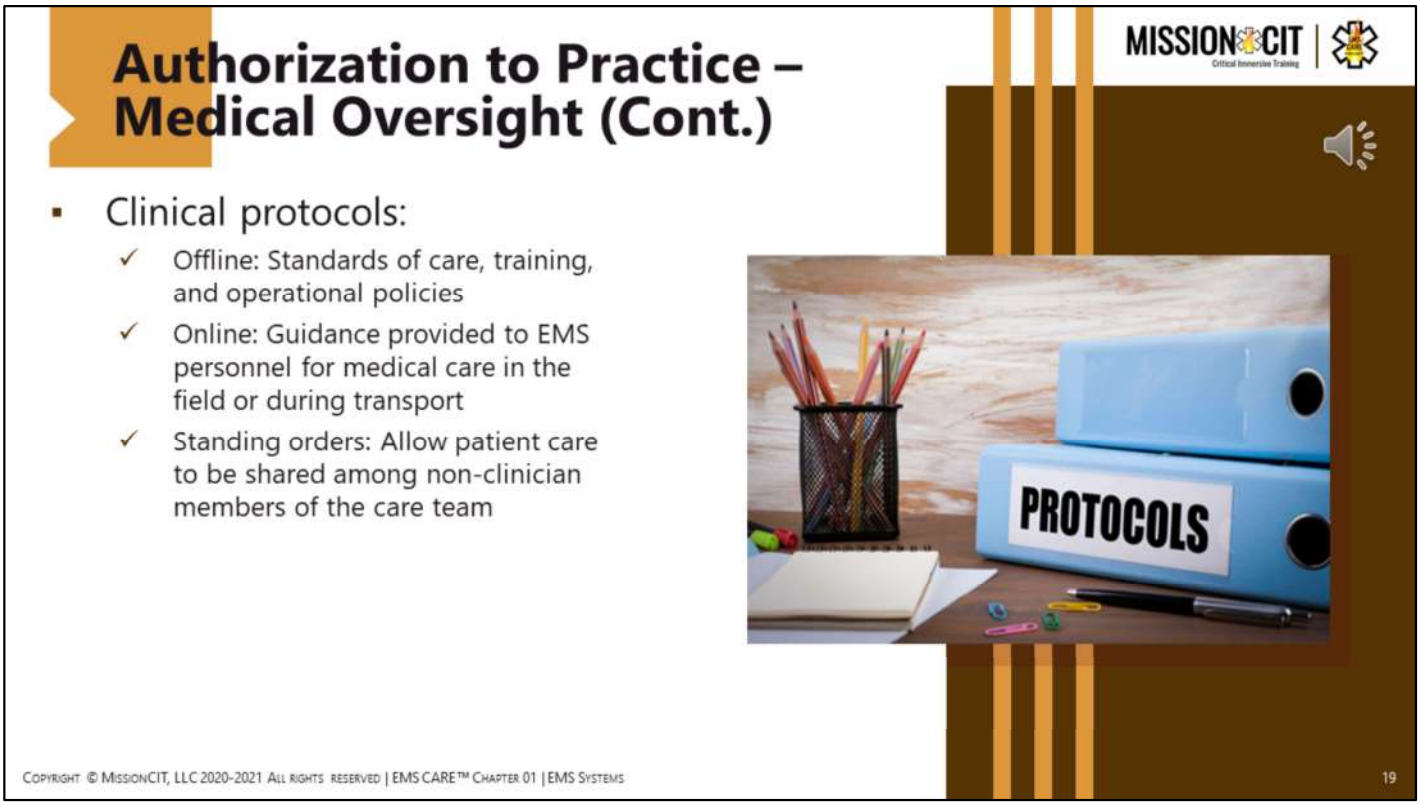
It is critical that an EMS office exist within each state to both regulate EMS functions and provide technical assistance to the EMS system. The lead agency for EMS within a state's government structure varies among states, but ideally the director of the lead agency should have cabinet-level access to the governor. Each state EMS director should have access to a state EMS medical director, EMS medical committee, and EMS advisory or authority committee.

The regulation of EMS systems by states includes defining levels of licensed EMS practitioners, setting a scope of practice for each level of practitioner, licensing agencies and practitioners, and establishing standards for education, certification, and reciprocity for EMS practitioners. State EMS offices can play a crucial role in collaboratives that regionalize care for time-sensitive illnesses and recognizing specialty receiving centers. State EMS offices may also be responsible for establishing equipment requirements, medication formularies, and protocols or guidelines for patient care. State EMS offices serve as resources for EMS agencies and practitioners within the state by assisting with planning, gap analyses, funding, and other support for the provision of day-to-day EMS care and health care at large-scale events and disasters.



EMS medical oversight or medical direction refers to the guidance and authority that supports the EMT and paramedic in the provision of prehospital care. Medical oversight is an important factor in maintaining a prepared EMS workforce and in providing the leadership necessary to ensure the availability and quality of these important health care services.

While EMS medical oversight is thought of to be on a continuum, it can be broken up into 3 parts. Prospective oversight deals with education, training, and protocol development. This is thought of as the planning and preparation stage of medical oversight. Concurrent medical oversight deals with online and offline medical control and also on-scene response. It is the in the field, in the action, the here and now of medical oversight. Considering the advancements in technology, concurrent medical control can be directed via cellular, radio, direct patient care on-scene, and even telemedicine. Lastly, retrospective medical oversight involves system-related research and run reviews.



The use of clinical protocols allows health care providers to offer appropriate diagnostic treatment and care services to patients. Such protocols provide a locally agreed standard to which clinicians and the organization can work and against which they can be audited.

- Offline medical direction is the administrative activity which serves to define and enforce standards of care, training, and operational policies for an EMS agency.
- Online medical direction is the guidance provided to EMS personnel for medical care in the field or during transport of a patient.
- Standing orders and protocols allow patient care to be shared among non-clinician members of the care team, like medical assistants and nurses.

Authorization to Practice – Medical Oversight (Cont.)

- Quality improvement:
  - ✓ Retrospective analysis
  - ✓ Concurrent analysis
  - ✓ Prospective analysis
- QI umbrella couples:
  - ✓ Identified, measurable performance indicators
  - ✓ Information systems to monitor, analyze, and trend data

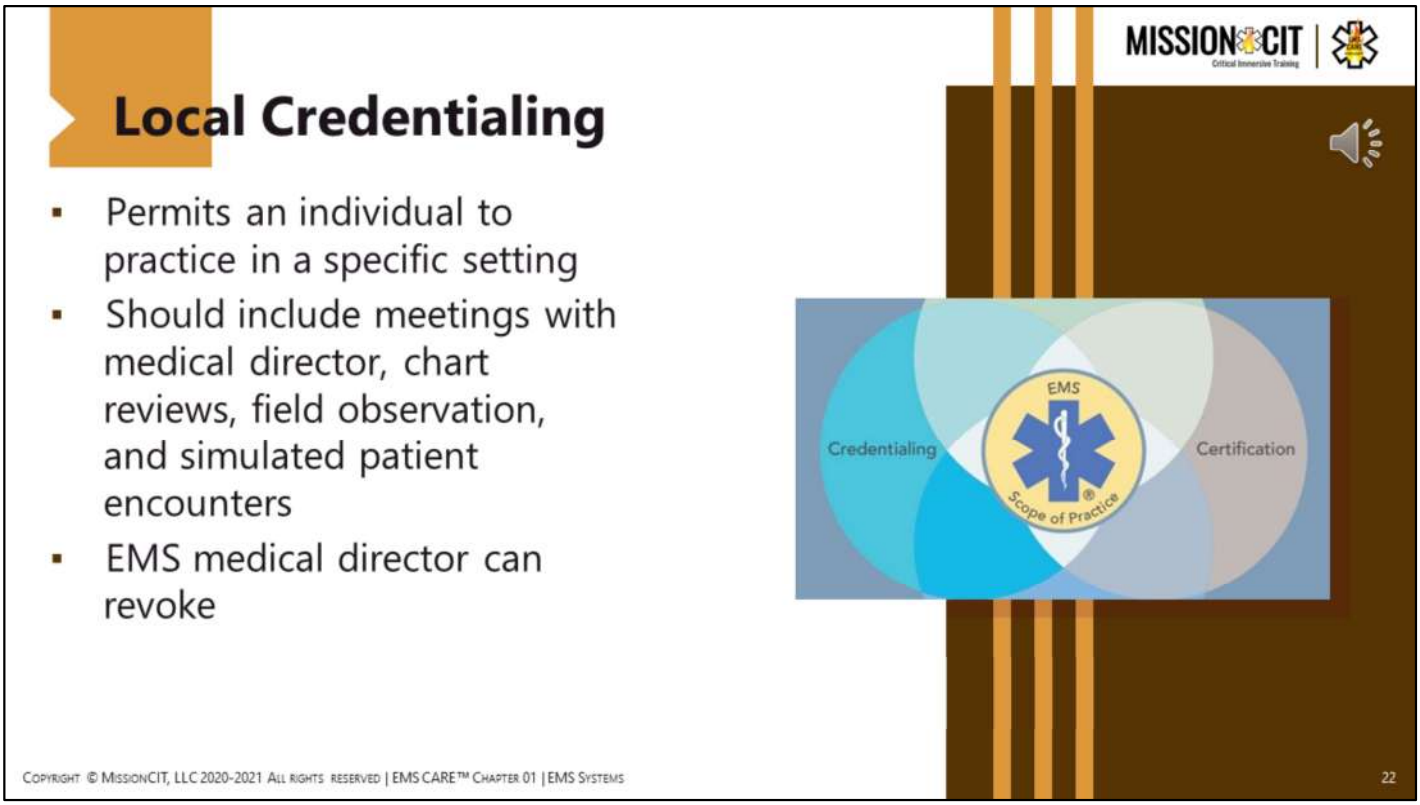


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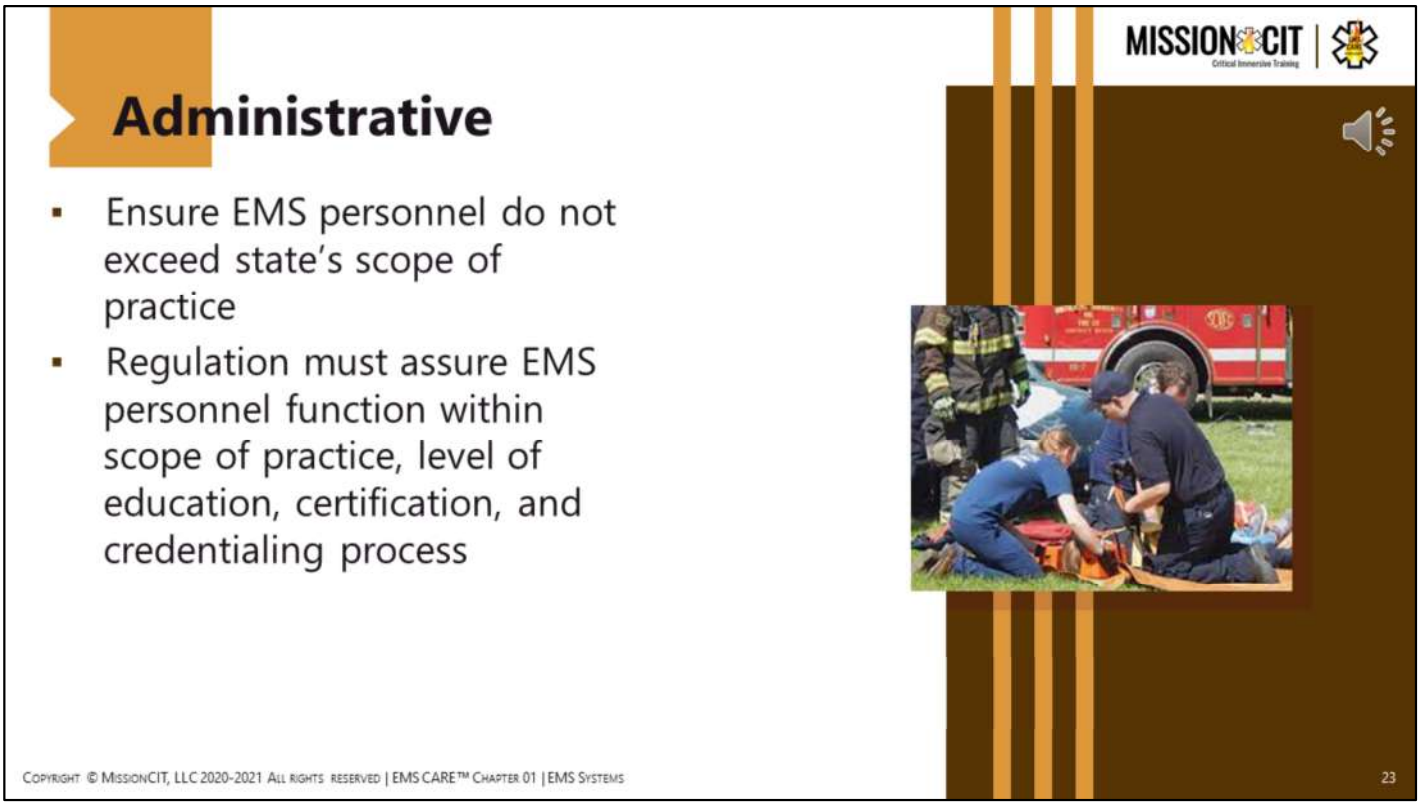
Quality improvement (QI) is a continuous, essential evaluation process used to assess EMS quality that includes retrospective, concurrent, and prospective analysis. Assessment of a system's effectiveness, related costs, and patient outcomes is a critical part of a comprehensive EMS system evaluation. The quality improvement umbrella couples carefully identified, measurable performance indicators with information systems to monitor, analyze, and trend data.



”Indirect Medical Oversight” means administrative medical directives to EMS field personnel, provided by a physician responsible for medical oversight. Administrative medical directives include, but are not limited to, written policies and protocols, education, and quality measurements.



Credentialing is a local process by which an individual is permitted by a specific entity (medical director) to practice in a specific setting (EMS agency). Credentialing processes vary in sophistication and formality. A local credentialing process should include meetings with the medical director, chart reviews, field observation, and simulated patient encounters. The EMS medical director can revoke this authorization if these standards are not met.



A significant risk to patient safety occurs when EMS personnel are placed into situations and roles for which they are not experientially or educationally prepared. It is the shared responsibility of medical oversight by a physician, clinical and administrative supervision, regulation, and quality assurance to ensure that EMS personnel are not placed in situations where they exceed the State's scope of practice. For the protection of the public, regulation must assure that EMS personnel are functioning within their scope of practice, level of education, certification, and credentialing process.



The medical director must have the authority to develop medical policies and procedures as well as the power to limit the actions of personnel who deviate from established standards. The medical director must also ensure that agency's protocols, procedures, and policies are consistent with their State's minimum requirements, including those for certification and/or licensure.

This brings us to the end of this lesson and in the next one, Missah will continue with the roles and responsibilities of EMS personnel.