Chapter 1

EMS Systems

Unit Summary

After students complete this chapter and the related course work, they will understand the origins and present-day structure of emergency medical care delivery systems. The emergency medical technician’s (EMT’s) roles, responsibilities, and relationship to the emergency medical services (EMS) system as well as the EMT’s role in the quality improvement process are explained, and the other levels of EMS providers are described. The foundations necessary for being a competent, effective, caring, and ethical EMT are presented. The interrelationships of the National Highway Traffic Safety Administration’s 14 components of the EMS system, per the *EMS Agenda for the Future*, are outlined. Also described is the EMT’s impact on research, data collection, and evidence-based decision making, as well as the EMT’s responsibilities as a student and a practitioner.

National EMS Education Standard Competencies

Preparatory

Applies fundamental knowledge of the emergency medical services (EMS) system, safety/well-being of the emergency medical technician (EMT), medical/legal, and ethical issues to the provision of emergency care.

EMS Systems

• EMS systems (pp 15–26)

• History of EMS (pp 9–10)

• Roles/responsibilities/professionalism of EMS personnel (pp 26–27)

• Quality improvement (pp 20–21)

• Patient safety (pp 7, 26)

Research

• Impact of research on emergency medical responder (EMR) care (pp 24–26)

• Data collection (p 25)

• Evidence-based decision making (pp 25–26)

Public Health

Uses simple knowledge of the principles of illness and injury prevention to emergency care.

Knowledge Objectives

1. Define emergency medical services (EMS) systems. (p 5)

2. Name the four levels of EMT training and licensure. (pp 6–8)

3. Describe EMT licensure criteria; including how the Americans with Disabilities Act (ADA) applies to employment as an EMT. (p 8)

4. Discuss the historic background of the development of the EMS system. (pp 9–10)

5. Describe the levels of EMT training in terms of skill sets needed for each of the following: EMR, EMT, AEMT, and paramedic. (pp 10–14)

6. Recognize the possible presence of other first responders at a scene with EMR training, some knowledge of first aid, or merely good intentions, and their need for direction. (pp 13–14)

7. Name the 14 components of the EMS system. (pp 15–26)

8. Describe how medical direction of an EMS system works, and the EMT’s role in the process. (p 18)

9. Define mobile integrated healthcare and community paramedicine. (p 19)

10. Discuss the purpose of the EMS continuous quality improvement (CQI) process. (pp 20–21)

11. Characterize the EMS system’s role in disease and injury prevention and public education in the community. (pp 23–24)

12. Describe the roles and responsibilities of the EMT. (p 26)

13. Describe the attributes an EMT is expected to possess. (p 27)

14. Understand the impact of the Health Insurance Portability and Accountability Act (HIPAA) on patient privacy. (p 27)

Skills Objectives

There are no skills objectives for this chapter.

Readings and Preparation

Review all instructional materials including ***Emergency Care and Transportation of the Sick and Injured*, Eleventh Edition,** Chapter 1, and all related presentation support materials.

• Review local EMS system certification/license policies. Include an overview of the local EMS system when discussing components.

Support Materials

• Lecture PowerPoint presentation

• Case Study PowerPoint presentation

• Slides/overheads of local EMS delivery system organization

• Any written materials pertaining to the following:

* Course requirements, grading, institutional policies, and other administrative details
* Local or state EMS agency requirements or certification/registration
* Local EMT treatment guidelines or protocols
* Local skill evaluation tools

Enhancements

• Direct students to visit Navigate 2.

• Contact the local EMS agency for a guest speaker to present an overview of the local/regional system.

• Contact the public safety access point (PSAP) communication center to arrange a tour and presentation of the emergency services access system.

• Provide information about EMS publications (bring in samples) and membership in various local, state, and national EMS professional organizations.

• Content connections: There remain some variations from state to state on the scope of EMT practice as well as training and recertification requirements. Encourage students to regularly review the scope of practice in your state. This will enable them to determine their role on the scene without losing valuable time.

• Cultural considerations: Culture is not restricted to different nationalities. Also consider age, disability, gender, sexual orientation, marital status, work experience, and education as differentiating factors. In focusing on work experience and education, ask students to list examples of the skills each level of provider should be able to accomplish. See Table 1-2 for examples.

Teaching Tips

• This is your first contact with the students in this course. It is essential that you model the behavior expected of your students during the course, including professional demeanor, respectfulness, appropriate grooming, and punctuality.

• Carefully consider the impact of your presentation on your students, especially in the first few class sessions. The seriousness of their quest to become an EMT must be emphasized.

• This is the first information about EMS that many students will have received. It is likely that some may experience “overload” or may not fully understand how all the pieces of this overview fit together. Be sure to reinforce this information throughout the course.

• Consider an icebreaker activity for your first session, such as student introductions.

• Make sure you are familiar with local requirements for initial certification and recertification, including continuing education and refresher courses.

• Provide students with a copy of a local protocol to illustrate off-line medical control.

• Ask students to go to a local public venue such as a mall and identify the locations of the AEDs.

• Offer students the opportunity to become CPR and/or first aid instructors and hold a course in the community.

• This is your first opportunity to give students a clear picture of what EMS is and what it is not. Many students expect that their work will involve nonstop lifesaving.

• Discuss the realities of EMS with your students in a positive manner, and continue to reinforce this point throughout the course.

Unit Activities

**Writing assignments:** Assign each student a research paper on the history of the modern EMS.

**Student presentations:** Each student should give a brief presentation explaining his or her reason for taking the EMT course and expectations of the course.

**Group activities:** Form groups and ask each group to describe a component of the EMS system.

**Medical terminology review:** Ask each student to describe the four levels of EMT training.

Pre-Lecture

### You Are the Provider

“You Are the Provider” is a progressive case study that encourages critical thinking skills.

### Instructor Directions

**1.** Direct students to read the “You Are the Provider” scenario found throughout Chapter 1.

**2.** You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions and the Patient Care Report.

**3.** You may also use the “You Are the Provider” scenario as an individual activity and ask students to turn in their comments on a separate piece of paper.

Lecture

I. Introduction

A. The text is the primary resource for the EMT course.

B. It discusses what will be expected of you during the course and what other requirements you will have to meet to be licensed or certified as an EMT in most states.

C. You will learn the differences between first aid training, a Department of Transportation (DOT) EMR training course, and the training courses for an EMT, AEMT, and paramedic.

D. EMS is a *system.*

E. Chapter 1 discusses that system’s key components.

II. Course Description

A. EMS system:

1. Consists of a team of health care professionals

2. Provides emergency care and transport

3. Is governed by state laws

B. After you successfully complete this course, you should be eligible to take either the National Registry of EMTs exam or your state’s certification exam.

C. After you pass the certification exam, you are eligible to apply for state licensure. Licensure is the process by which states ensure applicant competency in an examination setting. This allows states to manage who can function as a health care provider.

D. In most states, there are four training and licensure levels:

1. EMR

2. EMT

3. AEMT

4. Paramedic

E. An EMR has very basic training.

1. Provides care before ambulance arrives

2. May assist in the ambulance

F. An EMT has training in basic life support (BLS), including:

1. Automated external defibrillation

2. Airway adjuncts

3. Assisting patients with certain medications

G. An AEMT has training in specific aspects of advanced life support (ALS), including:

1. Intravenous (IV) therapy

2. Administration of a limited number of emergency medications

H. A paramedic has extensive ALS training, including:

1. Endotracheal intubation

2. Emergency pharmacology

3. Cardiac monitoring

4. Other advanced assessment and treatment skills

I. The EMT course includes four types of learning activities:

1. Reading assignments from the text, lecture presentations, and classroom discussions provide you with the necessary knowledge base.

2. Step-by-step demonstrations teach you the hands-on skills that you will then practice repeatedly in supervised small-group workshops.

3. Summary skills sheets help you memorize the sequence of steps in complex skills that contain a large number of steps or variations so you can perform the skills with no errors or omissions.

4. Case presentations and scenarios used in class help you learn how to apply the knowledge and skills acquired to situations you will encounter in the field.

III. EMT Training: Focus and Requirements

A. EMTs are the backbone of the EMS system in the United States.

B. They provide emergency care to the sick and injured.

1. Some patients are in life-threatening situations.

2. Other patients require only supportive care.

C. Some of the subjects discussed in the text include:

1. Scene size-up

2. Patient assessment

3. Treatment

4. Packaging

5. EMS as a career

IV. Licensure Requirements

A. Requirements differ from state to state. Generally, the requirements to be licensed and employed as an EMT are:

1. High school diploma or equivalent

2. Proof of immunization against certain communicable diseases

3. Successful completion of a background check and drug screening

4. Valid driver’s license

5. Successful completion of a recognized health care provider BLS/cardiopulmonary resuscitation (CPR) course

6. Successful completion of a state-approved EMT course

7. Successful completion of a state-recognized written certification exam

8. Successful completion of a state-recognized practical certification exam

9. Demonstration of the mental and physical abilities necessary to safely and properly perform all the tasks and functions described in the defined role of an EMT

10. Compliance with other state, local, and employer provisions

B. The Americans With Disabilities Act (ADA) of 1990:

1. Protects people who have a disability from being denied access to programs and services that are provided by state or local governments

2. Prohibits employers from failing to provide full and equal employment to the disabled

3. Title I: protects EMTs with disabilities who are seeking gainful employment under many circumstances

a. Employers with a certain number of employees are required to adjust processes so that a candidate with a disability can be considered for a position and modify the work environment or how the job is normally performed.

C. Personal background in accordance with state criminal requirements (States have various requirements prohibiting individuals who have committed either misdemeanors or felonies from becoming EMS providers.)

V. Overview of the EMS System

A. History of EMS

1. There is a long tradition of people providing emergency medical care to their fellow human beings.

2. Origins of EMS include:

a. Volunteer ambulances in World War I

b. Field care in World War II

c. Field medic and rapid helicopter evacuation in Korean conflict

3. As recently as the 1960s and early 1970s, emergency ambulance service and care varied widely in the United States.

4. EMS as we know it today originated in 1966 with the publication of *Accidental Death and Disability: The Neglected Disease of Modern Society* (more commonly known as “The White Paper”).

5. The DOT published the first EMT training curriculum in the early 1970s.

6. The American Academy of Orthopaedic Surgeons prepared and published the first EMT textbook in 1971.

a. It is often called “The Orange Book.”

b. Your textbook is the 11th edition of that book.

7. Efforts are under way to standardize levels of EMS education nationally.

a. In the late 1970s, the DOT developed a recommended National Standard Curriculum.

b. During the 1980s, many areas enhanced the EMT National Standard Curriculum by adding EMTs with advanced levels of training who could provide key components of ALS care and advanced life-saving procedures.

c. In the 1990s, the National Highway Traffic Safety Administration (NHTSA) developed the *EMS Agenda for the Future*, a document with a plan to standardize the levels of EMS education and providers.

VI. Levels of Training

A. Federal level

1. The National EMS Scope of Practice Model provides guidelines for EMS skills. This document provides overarching guidelines for the minimum skills each level of EMS provider should be able to perform.

B. State level

1. Laws regulate EMS provider operations.

C. Local level

1. The medical director provides daily oversight and support to EMS personnel. Examples include the medications that will be carried on an ambulance or where patients are transported.

D. Public BLS and immediate aid

1. Millions of laypeople are trained in BLS/CPR.

a. Teachers, coaches, and child care providers

b. People who regularly accompany groups on trips to remote locations

c. Automated external defibrillators (AEDs) are used by laypeople.

E. Emergency medical responders (EMRs)

1. Law enforcement officers

2. Firefighters

3. Park rangers

4. Ski patrollers

5. EMR training provides these individuals with the skills necessary to initiate immediate care and assist EMTs upon their arrival. The course focuses on providing immediate BLS and urgent care with limited equipment.

6. Good Samaritans trained in first aid and CPR often show up at a scene.

a. They can provide valuable assistance.

b. They can also interfere with operations and endanger themselves and others.

F. Emergency medical technicians (EMTs)

1. The EMT course requires about 150 hours, and even more hours in some states.

2. The EMT possesses the knowledge and skills to provide basic emergency care.

3. On arrival at the scene, the EMT, together with any other EMTs who have responded, assumes responsibility for the assessment, care, packaging, and transport of the patient.

G. Advanced emergency medical technicians (AEMTs)

1. The AEMT course adds knowledge and skills in specific aspects of ALS for those trained and with experience as EMTs.

a. IV therapy

b. Advanced airway adjuncts

c. Administration of a limited number of medications

H. Paramedics

1. Extensive course of training:

a. Course hours range from 1,000 to more than 1,300 hours, divided between classroom and internship training.

b. Course may be offered within the context of an associate’s or bachelor’s degree college program.

2. Training covers a wide range of ALS skills.

VII. Components of the EMS System

A. The *EMS Agenda for the Future* outlines 14 components of an EMS system:

1. Public access

2. Clinical care

3. Medical direction

4. Integration of health services

5. Information systems

6. Prevention

7. EMS research

8. Communication systems

9. Human resources

10. Legislation and regulation

11. Evaluation

12. System finance

13. Public education

14. Education systems

B. Public access

1. Easy access to help in an emergency is essential.

2. The 911 system is the public safety access point.

3. At the communication center, trained dispatchers obtain information and dispatch the ambulance crew and other equipment and responders.

4. An emergency medical dispatch (EMD) system has been developed to assist dispatchers in providing callers with vital medical instructions until EMS arrival.

C. Communication systems

1. From caller information, the dispatcher selects the appropriate parts of the emergency system to activate.

2. EMS may be:

a. A fire agency

b. Other non-fire governmental agency

c. Private services

d. Hospital-based programs and Native American tribal services (less common)

3. New technology can help responders locate their patients.

a. Example: cellular telephones linked to global positioning system (GPS) units

D. Clinical care

1. Describes the pieces of equipment

2. Describes the scope of practice for using that equipment

3. Familiarizes EMTs with their primary service area (PSA)—that is, the main area in which an agency operates

4. Familiarizes EMTs with ambulance controls

E. Human resources

1. Focuses on the people who deliver the care

a. Compensation

b. Interaction with other members of medical community

2. Efforts are under way to allow EMS providers to move from state to state more seamlessly.

3. The *EMS Agenda for the Future* encourages the creation of systems to help protect the well-being of EMS providers, including the development of career ladders.

F. Medical direction

1. A physician medical director authorizes EMTs to provide medical care in the field.

2. Appropriate care is described in standing orders and protocols.

1. Protocols are described in a comprehensive guide delineating the EMT’s scope of practice.
2. Standing orders are part of protocols and designate what the EMT is required to do for a specific complaint or condition.

3. Providers are not required to consult medical direction before implementing standing orders.

4. The medical director is the ongoing working liaison between the medical community, hospitals, and the EMTs in the service.

5. Medical control can be off-line or online.

a. Off-line (indirect)

i. Standing orders, training, supervision

b. Online (direct)

i. Physician directions given over the phone or radio

G. Legislation and regulation

1. Although each EMS system, medical direction, and training program has some latitude, its training, protocols, and practices must follow state legislation, rules, regulations, and guidelines.

2. A senior EMS official is usually in charge of necessary administrative tasks such as scheduling, personnel, budgets, purchasing, and vehicle maintenance, and the daily operations of ambulances and crews.

a. Similar to a police chief or fire chief

b. Not in charge of medical matters

H. Integration of health services

1. Prehospital care by the EMT is coordinated with care administered by the receiving hospital.

2. Care should be continued in the emergency department (ED).

3. Integration ensures that the patient receives comprehensive continuity of care.

4. Some EMS systems collaborate with local hospitals to improve patient outcomes associated with time-sensitive treatment, such as in heart attacks, trauma, and stroke.

a. Example: When paramedics determine a patient is having a heart attack, they alert the ED, which in turn notifies the cardiac catheterization team or the paramedics may be directed to transport the patient to a cardiac specialty center.

**I. Mobile integrated health care**

1. Mobile integrated health care (MIH) is a new method of delivering health care that utilizes the prehospital spectrum.

2. MIH has evolved as a result of the Patient Protection and Affordable Care Act, with the goal of facilitating improved access to health care at an affordable price.

3. In the MIH model, health care is provided within the community, rather than at a physician’s office or hospital, by an integrated team of health care professionals.

4. This new branch of health care is causing the evolution of additional training levels for EMS providers.

a. One new aspect is community paramedicine, in which experienced paramedics receive advanced training to equip them to provide services within a community.

b. In addition to the patient care services a paramedic would typically provide, services provided by community paramedics may include:

i. Performing health evaluations

ii. Monitoring chronic illnesses or conditions

iii. Obtaining laboratory samples

iv. Administering immunizations

v. Serving as patient advocates

J. Evaluation

1. The medical director is responsible for maintaining quality control within the EMS system.

2. The continuous quality improvement (CQI) program reviews and performs audits of the EMS system to identify areas of improvement and/or assign remedial training.

3. Information and skills in emergency medical care change constantly. Refresher training and continuing education are important.

4. Minimizing errors is the goal.

a. Errors are not inevitable.

b. Errors can result from rules-based failure, knowledge-based failure, skills-based failure, or any combination of these problems.

c. Limiting errors requires work from both the EMS agency and EMS personnel.

d. The environment can be part of the reason for errors (for example, distractions, poor lighting).

e. EMTs themselves can help to reduce errors.

f. When you are about to perform a skill, ask yourself, “Why am I doing this?”

g. Using “cheat sheets,” or a copy of your protocol book, can help limit errors.

K. Information systems

1. Information systems are used to efficiently document the care that has been delivered.

2. Once stored electronically, the information can be used to improve care.

3. For example, stored information can help determine:

a. How often a department has seen specific types of symptoms

i. Average on-scene time for trauma patients

ii. Need for educational sessions

iii. National trends

L. System finance

1. Finance systems vary depending on which organization is involved.

2. Personnel may be paid, volunteer, or a mix of paid and volunteer.

3. EMTs may be asked to:

 a. Gather insurance information from patients

b. Secure signatures on certain documents such as HIPAA notifications

c. Obtain written permission from patients to bill their health insurance company

M. Education systems

1. EMS instructors are licensed in most states.
2. Most EMS training programs must adhere to national standards established by two accrediting organizations: Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP) and Commission on Accreditation of Allied Health Education Programs (CAAHEP).

3. Frequent continuing education, refresher courses, and computer-based or manikin-based self-education exercises are measures intended to maintain and update an EMT’s skills and knowledge.

4. ALS-level instructors and directors must hold a four-year degree.

5. ALS training is usually provided in college, adult career center, or hospital settings.

N. Prevention and public education

1. Prevention and public education are aspects of EMS where the focus is on public health.

2. Public health examines the health needs of entire populations with the goal of preventing health problems.

3. EMS works with public health agencies in two ways:

a. Primary prevention focuses on strategies that will prevent the event from ever happening—for example, educating the community on pool safety and car seat installation.

b. Secondary prevention occurs after the event has already happened. The question then is, How can we decrease the effects of the event? Helmets and seat belts are examples of secondary prevention.

O. EMS research

1. Research helps to determine the shape and impact of EMS on the community.

a. For example, in the early days of EMS, patients with major trauma were stabilized on the scene before they were transported. After compiling prehospital EMS research, it was determined that patients with major trauma should be transported immediately; these patients need an operating room more than they need an IV. EMS now provides rapid transport for patients with major trauma.

2. The application of evidence-based practice is becoming an integral part of functioning as an EMS provider. Patient care should be focused on procedures that have proved useful in improving patient outcomes. All aspects of the EMT role are currently being researched.

3. EMTs may be involved in research through gathering data.

a. Examples: How much oxygen should be given to patients with shortness of breath? How much time does it take to get patients with serious trauma to the emergency department? Record all of the information so it can be analyzed by others.

4. The results could then be shared with the rest of the EMS community.

5. Evidence-based decision making is based on research.

6. It is important for EMS providers to stay current on the latest advances in health care.

7. Be skeptical, ask questions, and conduct your own research.

VIII. Roles and Responsibilities of the EMT

A. EMTs are health care professionals, whether paid or volunteer.

B. The roles and responsibilities of an EMT:

1. Keep vehicles and equipment ready for an emergency.

2. Ensure the safety of yourself, your partner, the patient, and bystanders.

3. Be familiar with emergency vehicle operation.

4. Be an on-scene leader.

5. Perform an evaluation of the scene.

6. Call for additional resources as needed.

7. Gain patient access.

8. Perform a patient assessment.

9. Give emergency medical care to the patient while awaiting the arrival of additional medical resources.

10. Give emotional support to the patient, the patient’s family, and other responders.

11. Maintain continuity of care by working with other medical professionals.

12. Resolve emergency incidents.

13. Uphold medical and legal standards.

14. Ensure and protect patient privacy.

15. Give administrative support.

16. Constantly continue your professional development.

17. Cultivate and sustain community relations.

18. Give back to the profession.

C. Professional attributes

1. Integrity: acting consistently; maintaining a firm adherence to a code of honest behavior

2. Empathy: being aware of and thoughtful toward the needs of others

3. Self-motivation: discovering problems and solving them without someone directing you

4. Appearance and hygiene: using your persona to project a sense of trust, professionalism, knowledge, and compassion

5. Self-confidence: knowing what you know *and* knowing what you do not know; being able to ask for help

6. Time management: performing or delegating multiple tasks while ensuring efficiency and safety

7. Communications: understanding others and making yourself understood to others

8. Teamwork and diplomacy: being able to work with others; knowing your place within a team; communicating while giving respect to the listener

9. Respect: holding others in high regard or importance; understanding that others are more important than you

10. Patient advocacy: constantly keeping the needs of the patient at the center of care

11. Careful delivery of care: paying attention to details; making sure that what is being done for the patient is done as safely as possible

D. Most patients will treat you with respect, but some will not. Yet every patient is entitled to compassion, respect, and the best care you can provide.

E. As a new EMT, you will receive lots of advice and training from more experienced EMTs. Some may voice a callous disregard for some types of patients. You should not be influenced by the unprofessional attitude of these individuals, regardless of how experienced or skilled they appear.

F. As health care professionals, EMTs are bound by patient confidentiality.

1. Patient privacy must be protected.

2. Findings or disclosures made by the patient should be discussed only in the following circumstances:

a. With those treating the patient

b. In limited situations, as required by law, with the police or other social agencies

G. Protection of patient privacy has drawn national attention with the passage of the Health Insurance Portability and Accountability Act (HIPAA).

1. You should be familiar with the requirements of this legislation, especially as it applies to your particular practice.

Post-Lecture

This section contains various student-centered end-of-chapter activities designed as enhancements to the instructor’s presentation. As time permits, these activities may be presented in class. They are also designed to be used as homework activities.

## Assessment in Action

This activity is designed to assist the student in gaining a further understanding of issues surrounding the provision of prehospital care. The activity incorporates both critical thinking and application of basic EMT knowledge.

### Instructor Directions

**1.** Direct students to read the “Assessment in Action” scenario located in the Prep Kit at the end of Chapter 1.

**2.** Direct students to read and individually answer the quiz questions at the end of the scenario. Allow approximately 10 minutes for this part of the activity. Facilitate a class review and discussion of the answers, allowing students to correct responses as may be needed. Use the quiz question answers noted below to assist in building this review. Allow approximately 10 minutes for this part of the activity.

**3.** You may wish to ask students to complete the activity on their own and turn in their answers on a separate piece of paper.

### Answers to Assessment in Action Questions

1. **Answer:** B National Highway Traffic Safety Administration

2. **Answer:** C Ensure personal safety

3. **Answer:** D Americans with Disabilities Act

4. **Answer:** B Certification reciprocity

5. **Answer:** A Providing cervical spine immobilization

6. **Answer:** C Providing legal advice to patients

7. **Answer:** B Being able to communicate while giving respect to the listener

8. **Answer:** D Limits the availability of a patient’s health care information

9. **Answer:** Continuous quality improvement is a circular system of continuous internal and external reviews and audits of all aspects of an EMS system. By looking at all the components of an EMS system, the CQI process seeks to identify areas that need improvement and enables the problems to be resolved through remediation and training rather than through punitive measures.

10. **Answer:** Research provides data that identify treatments that are beneficial and/or lifesaving for trauma patients and those that are not. Participation in EMS research empowers the EMT to help shape the future of trauma care.

## Assignments

A. Review all materials from this lesson and be prepared for a lesson quiz to be administered (date to be determined by the instructor).

B. Read Chapter 2, “Workforce Safety and Wellness,” for the next class session.