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Introduction to the EMS System

Objectives

From the U.S. Department of Transportation (DOT) 1995 “First Responder: National Standard Curriculum.” Material that supplements the DOT curriculum is listed under “Enrichment.”

Cognitive

1-1.1 Define the components of the Emergency Medical Services (EMS) systems. (p. 7)
1-1.2 Differentiate the roles and responsibilities of the First Responder from other out-of-hospital care providers. (pp. 4–6, 8–9)
1-1.3 Define medical oversight and discuss the First Responder’s role in the process. (p. 9)
1-1.4 Discuss the types of medical oversight that may affect the medical care of a First Responder. (p. 9)
1-1.5 State the specific statutes and regulations in your state regarding the EMS system. (p. 9)

Affective

1-1.6 Accept and uphold the responsibilities of a First Responder in accordance with the standards of an EMS professional. (pp. 8–9)

1-1.7 Explain the rationale for maintaining a professional appearance when on duty or when responding to calls. (p. 9)
1-1.8 Describe why it is inappropriate to judge a patient based on a cultural, gender, age, or socioeconomic model, and to vary the standard of care rendered as a result of that judgment. (p. 9)

Psychomotor

No objectives are identified by the DOT.

Enrichment

Describe the various methods by which the public can access EMS. (p. 4)
Introduction
You are about to join a vitally important profession. As a First Responder, you can make a difference. Sometimes you will perform medical techniques that save a life. Other times, your presence and reassurance will comfort your patient until the ambulance arrives. This course will help you gain the knowledge, skills, and attitudes you need to be an effective First Responder.

To begin, your instructor will describe what you can expect in the course. He or she will inform you of required immunizations and physical exams and outline your state and local certification requirements. Your instructor also will explain local policies concerning the Americans with Disabilities Act (ADA) and the implications of harassment in the classroom environment.

Section 1 Emergency Medical Services (EMS)
Since the Vietnam War, emergency medical personnel have called the time immediately after an injury the “Golden Hour.” This is when lives that hang in the balance can be saved by proper emergency care. Too often those who arrive first at an emergency scene lack medical training. As a result, patients who might have been saved either suffer permanent disability or die.

The emergency medical services (EMS) system is a network of resources linked together for one purpose. That purpose is to provide emergency care and transport to victims of sudden illness or injury (Figure 1-1). For

THE CALL

Dispatch We were dispatched to a woman with chest pain. As a new First Responder, I felt very nervous, especially with the lights and siren on.

Scene Size-up Once we arrived on scene, my partner turned off the lights and siren. We grabbed protective gloves and, when we saw it was safe, left our rig. We kept alert for signs of danger as we got closer to the house.

Initial Assessment Inside the house, we saw our patient sitting on a chair, pale and sweaty. Immediately we began to assess her ABCs—airway, breathing, and circulation. She was in serious condition. I radioed the dispatcher to update the incoming unit and requested the paramedics. My partner gave oxygen to the patient while keeping her and her husband calm.

You will encounter a wide range of calls as a First Responder. Some may be medical calls such as this one. Others may involve trauma (injury). You will learn how these First Responders handled their patient’s emergency at the end of this chapter. In the meantime, think about this question: What roles and responsibilities do you think the First Responders will have in the continuing care of this patient?
SKILL SUMMARY  An EMS Call

NOT AVAILABLE FOR ELECTRONIC VIEWING
example, when an emergency occurs, a citizen at the scene recognizes it and calls for help. If the citizen has dialed 9–1–1 or another emergency number, he or she may receive patient care instructions from an EMS dispatcher. When First Responders arrive, they assess the situation and take over care. They also inform dispatch of any need for additional EMS resources. Usually, EMS personnel with higher levels of training are called to the scene. They continue care and transport the patient to the hospital. There, patient care transfers to emergency department personnel and, finally, to the in-hospital care system.

Access to EMS

There are two general systems by which the public can access EMS: 9–1–1 and non-9–1–1. Often called the “universal number,” 9–1–1 is used in most areas to call for police, fire, rescue, and ambulance services. Such calls are received at a public safety answering point. There a dispatcher decides which service to activate and alerts that service (Figure 1-2).

Non-9–1–1 systems use regular seven-digit phone numbers. Callers must phone the specific service they need (police, fire, and so on) or, in some areas, a dispatch center. Probably the most serious drawback of a non-9–1–1 system is the delay in reaching the appropriate services.

In contrast, calling 9–1–1, the universal number, offers two main benefits. First, the public safety answering point generally is staffed by trained dispatchers. They may offer medical advice over the phone while the patient waits for rescuers to arrive. This is referred to as “emergency medical dispatching.” Second, a universal number minimizes delay. Callers do not have to look up a number, and even the youngest callers can remember it.

In addition, with enhanced 9–1–1, or E-9–1–1, the EMS dispatcher can see the caller’s street address and phone number on a computer screen. This is valuable when a patient becomes unconscious before giving an address.

Levels of EMS Training

There are four nationally recognized levels of EMS training: First Responder, EMT-Basic, EMT-Intermediate, and EMT-Paramedic. (EMT stands for emergency medical technician.) Note that responsibilities for each level may vary from state to state. However, the U.S. Department of Transportation (DOT) publishes the minimum certification guidelines. They include:

First Responder (Figure 1-3). The First Responder is the first person on scene with emergency medical training. He or she may be a police officer or firefighter, a truck driver or schoolteacher, an industrial health officer, or a community volunteer. Training includes:

—Airway care and suctioning.
—Patient assessment.
—Cardiopulmonary resuscitation (CPR).
—Bleeding control.
—Stabilization of injuries to the spine and extremities.
—Care for medical and trauma emergencies.
—Use of a limited amount of equipment.
—Assisting other EMS providers.
—Other skills and procedures as permitted by local or state regulations.

EMT-Basic (Figure 1-4). The EMT-Basic (or EMT-B) can do all that the First Responder does. He or she also
can perform complex immobilization procedures, restrain patients, and staff and drive ambulances.

- **EMT-Intermediate** (Figure 1-5). The EMT-Intermediate (or EMT-I) can do all that the two previous levels do. He or she also can perform a limited number of advanced techniques and administer a few medications.

- **EMT-Paramedic** (Figure 1-6). The EMT-paramedic (or paramedic) has the most advanced EMS training. He or she can do all that the three previous levels do, plus administer more medications and

In some states, the EMT-I may be trained as a cardiac technician.
perform more advanced techniques such as cardiac monitoring.

The National Registry of Emergency Medical Technicians (NREMT) was formed in 1970. It offers examinations for certification of First Responders and EMTs (Figure 1-7). If your state does not recognize or require national registration, certification may still be helpful if you move to another state. It also is considered desirable by private employers. Ask your instructor about getting national certification or contact:

National Registry of Emergency Medical Technicians
6610 Busch Boulevard
Columbus, OH 43229
614–888–4484
www.nremt.org

Classic Components of EMS

Each state in the United States controls its own EMS system. However, standards are set by the National Highway Traffic Safety Administration through the U.S. Department of Transportation (DOT). Those standards include 10 classic components of any EMS system:

- **Regulation and policy.** Each state must have laws, regulations, policies, and procedures that govern its EMS system. It also is required to provide leadership to local jurisdictions.

- **Resources management.** Each state must have central control of EMS resources so all patients have equal access to acceptable emergency care.

- **Human resources and training.** All personnel who staff ambulances and transport patients must be trained to at least the EMT-Basic level.

- **Transportation.** Patients must be safely and reliably transported by ground or air ambulance.

- **Facilities.** Every seriously ill or injured patient must be delivered in a timely manner to an appropriate medical facility.

- **Communications.** A system for public access to the EMS system must be in place. Communication among dispatcher, ambulance crew, and hospital also must be possible.

- **Public information and education.** EMS personnel should participate in programs designed to educate the public. The programs must focus on injury prevention and how to properly access the EMS system.

- **Medical oversight.** Each EMS system must have a physician as a medical director.

- **Trauma systems.** Each state must develop a system of specialized care for trauma patients, including one or more trauma centers and rehabilitation programs. It must also develop systems for assigning and transporting patients to those facilities.

- **Evaluation.** Each state must have a quality improvement system in place for continuing evaluation and upgrading of its EMS system.

In-Hospital Care System

First Responders and EMTs provide prehospital care, or emergency medical treatment, before transport to a medical facility. In some areas, the term *out-of-hospital care* is preferred. It reflects a trend toward providing care on scene with or without transport to a hospital. (Your instructor will provide information on how these terms apply to your EMS system.)

Specialized medical facilities include the trauma center, burn center, pediatric center, perinatal center, and poison center. A *trauma center* focuses on injury treatment that may exceed what a general hospital can provide. A *burn center* specializes in the treatment of burns and often offers long-term care and rehabilitation services. A *pediatric center* is devoted to the treatment of infants and children. A *perinatal center* is for high-risk pregnant patients. Finally, the *poison center* focuses on providing information and advice on how to treat poisoning victims.

The most familiar destination of EMS patients is the local hospital emergency department. There, a staff of physicians, nurses, and allied health professionals stabilize the patient and prepare him or her for further care elsewhere in the hospital.
As a First Responder, you may be called to emergencies where you are the only trained rescuer on scene. At other times, specialized rescue teams and fire personnel, as well as law enforcement, may all be involved.

Your Role

Generally, your role includes the following:

- **Protect your own safety and the safety of your crew, the patient, and bystanders.** This is your first and most important priority. Remember that you cannot help the patient if you are injured. You also do not want to endanger other rescuers by forcing them to rescue you. Once scene safety is ensured, the patient’s needs become your primary concern.

- **Gain access to the patient.** In some emergencies, you may need to move one patient in order to gain access to a more critically injured one.

- **Assess the patient to identify life-threatening problems.** Always perform an initial assessment to help you identify life threats. Such problems may include a blocked airway, heart attack, or severe bleeding.

- **Alert additional EMS resources.** In cases where a patient needs medical care or transport to a medical facility, you must remain with him or her until other EMS personnel take over patient care.

- **Provide care based on assessment findings.** While you are waiting for EMS resources to arrive, you must provide patient care based on the needs you identified during patient assessment.

- **Assist other EMS personnel.** When requested, assist other EMS personnel with patient care as needed.

- **Participate in record keeping and data collection as required.** You may be required by state law or your local EMS system to document your calls, especially if a patient refuses care.

- **Act as liaison with other public safety personnel.** These may include local, state, or federal law enforcement, fire department personnel, and other EMS providers.

Your Responsibilities

The responsibilities of a First Responder vary from state to state. However, they always include ensuring scene safety and maintaining a professional attitude, appearance, and up-to-date skills. Specifically, you should:

- **Guard your personal health and safety.** Drive safely at all times. Use a seat belt whenever you drive or ride. Remove yourself from hazards such as gas leaks, fires, chemical spills, and so on, and follow the directions of specialized rescuers at those scenes. Never enter a crime scene or an angry crowd until the police have controlled the situation. Locate or create a safe area in which you can care for patients. Stay away from high-traffic areas. Redirect traffic as needed. Always wear the proper personal protective equipment (PPE).
including a helmet and leather gloves, when appropriate. (See Chapter 2 for more details.)

- **Maintain a caring attitude.** Often you will arrive at an emergency scene to find the patient, family, and bystanders in a state of panic or chaos. These are normal reactions. Reassure and comfort them. Identify yourself, assure them that you will begin to stabilize the patient, and let them know that more help is on the way.

- **Maintain your own composure.** Many calls are routine. However, some calls involve life-threatening or emotionally charged problems. In those cases, it is critical that you stay calm so you can get an accurate picture of the scene and properly establish your priorities.

- **Keep a neat, clean, professional appearance.** Excellent personal grooming and a crisp, clean appearance help instill confidence in patients. Being clean also helps to protect your patients from contamination from dirty hands or soiled clothing. Respond to every call in complete uniform or other appropriate dress. Portray the positive image you want to project. Remember that you are on a medical team. Your appearance can send the message that you are competent and trustworthy.

- **Maintain up-to-date knowledge and skills.** New research often shows us better ways of doing things. Take every opportunity to continue your education, including refresher courses offered through your local EMS system.

- **Maintain current knowledge of local, state, and national issues affecting the EMS system.** Attend conferences and read professional journals dedicated to EMS issues.

You always will be expected to accept and uphold the responsibilities of a First Responder in accordance with the standards of an EMS professional. As a First Responder, you will come in contact with people of different genders, ages, cultures, and socioeconomic backgrounds. It is your responsibility to meet the standard of care for all.

### Section 3 Medical Oversight

**Medical Director**

A formal relationship exists between a community’s EMS providers and the physician responsible for out-of-hospital emergency medical care. This physician is often referred to as the system medical director. He or she is legally responsible for the clinical and patient-care aspects of an EMS system.

Every EMS system must have a medical director. He or she must provide guidance to all EMS personnel. The medical director is also responsible for reviewing and improving the quality of care in an EMS system.

**Medical Control**

Two basic types of medical oversight are direct medical control and indirect medical control. Direct medical control occurs when the medical director or another physician gives instructions to an EMS rescuer at the scene of an emergency via telephone or radio or in person. This usually occurs when an EMS rescuer asks for help with a patient. Note that direct medical control is also called “on-line,” “base station,” or “immediate.”

Indirect medical control may be called “off-line” medical oversight. It includes such things as system design and quality management. The medical director who writes standing orders and protocols is using indirect medical control. These define the accepted practice for First Responders in your area. For example, they tell you whether or not you can give oxygen to a patient or how to respond to a family who refuses your help. They also tell you how to document each call, participate in reviews, gather feedback, and maintain your skills.

**The First Responder**

In general, First Responders are the designated agents of the medical director. If this is true in your area, the care you render by law may be considered an extension of the medical director’s authority. Your instructor will tell you what the law is in your area.

### Questions

**Q:** 1. As a First Responder, what is your first and most important priority?

   2. What should First Responder responsibilities always include, no matter what the circumstance?

**Q:** 1. Who is the EMS medical director?

   2. What is one example of direct medical control?

   3. What is one example of indirect medical control?
At the beginning of this chapter, you read that First Responders were caring for a patient with chest pain. They had just radioed for assistance and administered oxygen to the patient. To see what their roles and responsibilities were in the continued care of this patient, read the following. It describes how the call was completed.

**Patient History** The woman told us she was 67 and her name was Paula McMaster. She said she had a heavy feeling in her chest for about two hours. It radiated to her left shoulder. The pain came on while she was watching TV. The patient told us she has high blood pressure, she had two heart attacks in the past five years, and she takes blood pressure medication and a pill for diabetes. She denied any allergies. Her last meal was about two hours ago, when she had a sandwich and coffee.

**Physical Examination** The patient denied any injury such as an earlier fall or car crash. Because of this we did not perform a hands-on, head-to-toe exam. We did check her chest, shoulders, and arms for pain. We took her vital signs and found that her pulse was 96, weak, and irregular. Her respirations were 20 and labored. Blood pressure was 100/56. Listening to her chest, we heard adequate air entering on both sides.

We continued to administer oxygen and made sure the paramedics were on the way.

**Ongoing Assessment** We remained concerned because the patient was pale, sweaty, and had some difficulty breathing. So we verified that the patient was still alert and breathing adequately. Oxygen continued to flow through a nonrebreather mask. We checked that the patient was as comfortable as she could be and tried to reassure her and her husband. We finished another set of vitals just as the ambulance pulled up.

**Patient Hand-off** Since my partner had responsibility for patient care during this call, he gave the paramedics the hand-off report (see below). After we made sure the paramedics didn’t need us any longer, we radioed dispatch to say we were available for our next call. Then we headed back to headquarters.

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**Hand-off Report**

“This is Mrs. McMaster. She is a 67-year-old female patient. She began having heaviness in the chest and left shoulder about two hours ago while watching TV. She is pale and sweaty with some labored breathing. Her vital signs are 100/56, pulse is 96, weak and irregular, respirations are 20 and labored. She has a history of heart attack, high blood pressure, and diabetes. We tried to make her comfortable and gave her oxygen by nonrebreather mask.”

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**The Last Word** From the initial call received by the 9–1–1 dispatcher to EMS rescuers responding to that call, straight through to final disposition at the hospital emergency department—it takes all the resources of an EMS system working together to help a patient survive a sudden illness or injury. As the first emergency medical responder on scene, you are a valuable, vital member of that EMS system team.
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Chapter Review

Focus on the EMS Team

As a First Responder, you will play a vital role in the emergency medical care of patients experiencing a sudden illness or injury. Perhaps the most important reason your role is so crucial is that you will be responsible for the first few minutes with the patient. Other EMS personnel depend on your actions during this time to set the foundation for the remainder of the call.

During your time with the patient, correcting a breathing problem or stopping serious bleeding may actually save a life. You also will help patients who are not in critical condition when you prevent further injury, perform the proper assessments, gather a medical history, and prepare for the arrival of other rescue personnel.

Summing Up

- The EMS system is a network of resources linked together to provide emergency care and transport to victims of sudden illness or injury.
- The public can access EMS by using a 9–1–1 or a non-9–1–1 phone number. With enhanced 9–1–1, an EMS dispatcher can see the caller’s street address and phone number.
- Levels of EMS training include First Responder, EMT-Basic, EMT-Intermediate, and EMT-Paramedic. The National Registry of Emergency Medical Technicians (NREMT) offers examinations for certification of First Responders and EMTs.
- The 10 classic components of EMS are regulation and policy, resources management, human resources and training, transportation, facilities, communications, public information and education, medical oversight, trauma systems, and evaluation.
- After prehospital care (out-of-hospital care), a patient may be taken to a local hospital emergency department or to a specialized medical facility. Specialized medical facilities include trauma centers, burn centers, pediatric centers, perinatal centers, and poison centers.
- First Responder roles include the following: Protect your own safety and the safety of your crew, the patient, and bystanders. Safely gain access to the patient, identify life-threatening problems, alert additional EMS resources as needed, and provide care based on assessment findings. First Responders should assist other EMS personnel when asked to do so, participate in record keeping and data collection as required, and act as liaison with other public safety personnel.
- First Responder responsibilities include the following: Guard your own health and safety. Maintain a caring attitude and your own composure. Keep a neat, clean, professional appearance. Maintain and regularly update your knowledge and skills, including your knowledge of local, state, and national issues affecting the EMS system.
- The physician responsible for out-of-hospital emergency medical care is the medical director. Every EMS system must have a medical director. Direct medical control occurs when the medical director or another physician gives instructions to an EMS rescuer at the scene of an emergency via telephone, radio, or in person. Indirect medical control occurs through standing orders and protocols, which define accepted practice. First Responders are the designated agents of the medical director.

Key Terms

- **direct medical control** refers to an EMS medical director or other physician giving orders to an EMS rescuer on scene via telephone, radio, or in person.
- **emergency medical services (EMS) system** a network of resources linked together to provide emergency care and transport to victims of sudden illness or injury.
- **EMT-Basic** an emergency medical technician trained to the next level above the EMS First Responder. Also called EMT-B.
- **EMT-Intermediate** an emergency medical technician trained to a higher level than the First Responder and EMT-Basic. Also called EMT-I.
EMT-Paramedic the most highly trained emergency medical technician in EMS. Also called EMT-P or paramedic.

d. enhanced 9–1–1 a type of 9–1–1 service in which the EMS dispatcher can see the caller’s address and phone number on a computer screen. Also called E–9–1–1.

First Responder the first person on scene with EMS training.

indirect medical control refers to EMS system design, standing orders and protocols, education for EMS personnel, and quality management.

medical director the physician legally responsible for the clinical and patient-care aspects of an EMS system.

9–1–1 a phone number by which the public can access EMS and, in some areas, other emergency services. Also called universal number.

non-9–1–1 system a system that uses a regular seven-digit phone number (or numbers) for emergency services.

protocols developed by the medical director, these are lists of steps to be taken in certain situations.

standing orders a policy issued by a medical director that authorizes EMS personnel to perform particular skills in certain situations.

Knowledge Check

1. Which one of the following is NOT one of the four levels of EMS training?
   a. EMT-Basic
   b. EMT-Paramedic
   c. EMT-Instructor
   d. First Responder

2. Which one of the following is NOT the First Responder’s responsibility?
   a. providing a medical diagnosis to the patient
   b. ensuring the safety of the crew and patients
   c. maintaining up-to-date knowledge and skills
   d. keeping a neat, clean, professional appearance

3. The ___ 9–1–1 phone system allows the EMS dispatcher to see the address and phone number of the caller.
   a. non-
   b. enhanced
   c. emergency
   d. off-line

4. The physician legally responsible for the clinical and patient-care aspects of an EMS system is the:
   a. captain or chief of a squad or department.
   b. nearest emergency department physician.
   c. most experienced EMT-paramedic.
   d. medical director.

5. A standing order or protocol that spells out how a First Responder should use an automated external defibrillator is an example of ___ medical control.
   a. on-line
   b. off-line
   c. immediate
   d. base station
6. According to the standards set by the U.S. DOT for the EMS system, each state must manage EMS resources so that:
   a. it can decide if rural or urban areas get the best equipment.
   b. all patients have equal access to acceptable emergency medical care.
   c. the public can focus on the prevention of injuries.
   d. all EMS systems have access to air ambulances.

7. One of the benefits of using a “universal number” to access police, fire, and rescue is:
   a. there is no need for a dispatcher to answer a call.
   b. the caller does not need to give a name or address.
   c. it can notify the patient’s personal physician.
   d. even the youngest caller can remember and dial it.

8. As a First Responder, safety is:
   a. NOT your responsibility.
   b. your first and most important responsibility.
   c. a priority only if no police are on scene.
   d. addressed only after the medical care of a patient.

9. The First Responder level of certification prepares students to be in charge of an ambulance crew.
   a. True
   b. False

10. As a First Responder, you will assess patients to determine what emergency medical care is appropriate.
    a. True
    b. False

11. Why should a First Responder seek training after completing the initial certification course? Write at least one reason.

12. Explain the difference between on-line and off-line medical direction.

13. Write a list of at least three actions considered part of your role as a First Responder.

14. Write a list of three types of specialty hospitals or specialty medical facilities.
An elderly member of your family was walking to the store when she tripped and fell on the sidewalk. She is sitting there, feeling a bit embarrassed, and just about ready to get back up onto her feet when a First Responder approaches. What would you want him to say to your family member? Write three short examples.

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