Le Baudour • Bergeron

Eleventh Edition

EMERGENCY MEDICAL RESPONDER

FIRST ON THE SCENE

Medical Editor **Keith Wesley, MD**

AMERICAN SAFETY & HEALTH INSTITUTE

BRADY

11th Edition

EMERGENCY MEDICAL RESPONDER

FIRST ON SCENE

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Notice on Care Procedures

It is the intent of the authors and publisher that this textbook be used as part of a formal Emergency Medical Responder education program taught by qualified instructors and supervised by a licensed physician. The procedures described in this textbook are based on consultation with first responder and medical authorities. The authors and publisher have taken care to make certain that these procedures reflect currently accepted clinical practice; however, they cannot be considered absolute recommendations.

The material in this textbook contains the most current information available at the time of publication. However, federal, state, and local guidelines concerning clinical practices, including, without limitation, those governing infection control and universal precautions, change rapidly. The reader should note, therefore, that new regulations may require changes in some procedures.

It is the responsibility of the reader to familiarize himself or herself with the policies and procedures set by federal, state, and local agencies as well as the institution or agency where the reader is employed. The authors and the publisher of this textbook and the supplements written to accompany it disclaim any liability, loss, or risk resulting directly or indirectly from the suggested procedures and theories, from any undetected errors, or from the reader's responsibility to stay informed of any new changes or recommendations made by any federal, state, or local agency as well as by his or her employing institution or agency.

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DEDICATION

To the selfless and dedicated EMTs, Paramedics, and Nurses of Falck Northern California Ambulance service who worked day and night through the devastating wildfires in Sonoma, Mendocino, and Napa Counties in October of 2017. They participated in the evacuation of two large acute care hospitals and more than a dozen sub-acute facilities, keeping hundreds of bedbound patients out of harm's way. Their work was instrumental in allowing the dedicated 911 resources to remain available for more emergent responses. I am proud to call these professionals my colleagues.

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LETTER TO STUDENTS

As the lead author of this textbook, I want to personally congratulate you on your decision to become an Emergency Medical Responder. Your decision to serve others, especially in times of great need, is one of the most rewarding opportunities anyone can experience.

This textbook has been an important component of thousands of training programs over the past 30 years and has contributed to the success of hundreds of thousands of students just like you. The new 11th edition retains many of the features found to be successful in previous editions and includes some new topics and concepts that have recently become part of most Emergency Medical Responder programs. The foundation of this text is the National Emergency Medical Services Education Standards for Emergency Medical Responders and includes the 2017 Focused Updates from the American Heart Association Guidelines for Cardiopulmonary Resuscitation and First Aid. Unique among Emergency Medical Responder textbooks, this edition again includes references to some of the most current medical literature.

Your decision to become an Emergency Medical Responder is significant. I believe strongly that being able to assess and care for patients requires much more than just technical skills. It requires you to be a good leader, and good leaders demonstrate characteristics such as integrity, compassion, accountability, respect, and empathy. My team and I have enhanced components in the 11th edition that we believe will help you become the best Emergency Medical Responder you can be; one such component is the "First on Scene" scenarios woven throughout each chapter. In these scenarios, we throw you right in the middle of a real-life emergency and offer you a perspective that you will not get with any other training resource. You will see firsthand how individuals just like you make decisions when faced with an emergency situation. You will feel the fear and anxiety that is such a normal part of being a new Emergency Medical Responder. Not everyone you meet will make the best decisions, so we want you to consider each scenario carefully and discuss it with your classmates and instructor. At the end of each chapter is the "First on Scene Run Review." Here you will have a chance to answer specific critical-thinking questions relating to the First on Scene scenario and consider how you might have done things differently.

This edition places a stronger focus on the language of inclusiveness, recognizing that Emergency Medical Responders and our patients come from a variety of cultures, socioeconomic backgrounds, and experiences. To emphasize this, unless the gender of a person is relevant to the content, I use both "he and she" throughout the text.

Becoming an Emergency Medical Responder is just the first step in what is likely to be a lifetime of service. Just a warning to you: The feeling you get when you are able to help those in need is contagious. I encounter students all across the country who have discovered that their passion is helping others. I hope that we can be part of helping you discover your passion. I welcome you to EMS and a life of service!

Improving patient care, one student at a time.

Chris Le Baudour

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PREFACE

The publication of the 11th edition of *Emergency Medical Responder* marks the 36th anniversary of the publication of the first edition back in 1982. This new edition is driven by the National Emergency Medical Services Education Standards. These standards represent the work of leading EMS educators across the nation as well as internationally. The majority of the changes are the result of evidence-based research conducted by many individuals and organizations.

The contents of the 11th edition are summarized below, followed by notes on what's new to each chapter. Note that, within each chapter, the cognitive objectives are updated and reorganized to more effectively match the flow of chapter content, and the Quick Quizzes were revised to better assess the cognitive objectives. The chapters also include a number of new photos.

Chapters 1–5

The first few chapters set the foundation for all that follow by introducing the basic concepts, information, and framework for someone entering the profession. The EMS system and the role of the Emergency Medical Responder within the system are introduced. Legal and ethical principles of emergency care are covered, as well as basic anatomy, physiology, and medical terminology.

What's New?

- *Chapter 1, Introduction to EMS Systems*, includes updates to the EMS timeline.
- *Chapter 2, Legal and Ethical Principles of Emergency Care*, includes an expanded definition of durable power of attorney and clarification of documenting a patient's refusal of care.
- *Chapter 3, Wellness and Safety of the Emergency Medical Responder*, now includes Zika and Ebola as emerging pathogens, discusses the new Hepatitis B vaccine for adults, and provides recommendations to health care providers to receive the meningitis vaccination. The chapter also introduces the concept of hospice care for patients with terminal illnesses.
- *Chapter 4, Introduction to Medical Terminology, Human Anatomy, and Lifespan Development*, includes updates to positional terms, blood flow through the heart, the musculoskeletal and male reproductive systems, and human development. It also introduces the term zygote in the section on embryonic development.
- *Chapter 5, Introduction to Pathophysiology*, includes updated statistics related to diabetes; the chapter also contains expanded coverage of blood vessel structure, cardiac output, and tidal volume.

Chapters 6–8

These three chapters introduce many of the fundamental skills necessary to be an effective Emergency Medical Responder, covering the proper techniques for lifting, moving, and positioning ill and injured patients. They also address important principles related to proper verbal and written communication and documentation.

What's New?

- *Chapter 6, Principles of Lifting, Moving, and Positioning of Patients*, offers updated information on situations that require a standard move, clarification of performing a direct ground lift, and differentiates the shock and Trendelenburg positions. New information includes bariatric stretchers, the use of patient restraints, and the ergonomic stance for lifting. Scans that describe emergent moves, direct ground lifts, direct carry, and using stretchers and backboards now include many new photos to show updated concepts.
- *Chapter 7, Principles of Effective Communication*, provides updated information on communication barriers, expanded information on the topics of cultural differences, translation services, establishing patient rapport, and communication with patients with hearing loss, cognitive disabilities, or who require a service animal.
- *Chapter 8, Principles of Effective Documentation*, now includes information on patient health information privacy as it relates to HIPAA, correcting errors on both an electronic and paper PCR, an expanded description of subjective patient information, and the use of smart phone apps for patient documentation.

Chapters 9–11

Chapters 9 and 10 may be considered the most important. No patient will survive without an open and clear airway. Basic airway management techniques are covered in detail, as is proper ventilation and oxygen administration. Chapter 11 contains all of the most recent updates related to cardiopulmonary resuscitation (CPR) and the use of the automated external defibrillator (AED).

What's New?

- *Chapter 9, Principles of Airway Management and Ventilation*, includes updates on the following: care instructions for a witnessed cardiac arrest, respiratory system anatomy, ventilations for a patient with a

stoma, and management of an unconscious patient with a gag reflex. Also added is information on the causes for vomiting during rescue breathing, the possible consequences of a poorly fitting airway adjunct, and content related to respiratory failure.

- *Chapter 10, Principles of Oxygen Therapy*, explains the importance of hydrostatically testing oxygen cylinders, contains an improved explanation of the oxygen concentration of room air, clarifies situations in which a patient might require supplemental oxygen, and updates information on the use of a bag-mask device with two rescuers.
- *Chapter 11, Principles of Resuscitation*, retains the newest information on CPR as well as the use of the automated external defibrillator according to the American Heart Association's guidelines and recommendations. Updates to the chapter include information on the proper duration of rescue breaths, an explanation of the recommendations for performing CPR in unwitnessed pediatric cardiac arrest, and information on locating the proper CPR hand position on female patients.

Chapters 12–13

These two chapters are all about patient assessment, the foundation for the care Emergency Medical Responders will provide.

What's New?

- *Chapter 12, Obtaining a Medical History and Vital Signs*, includes new blood pressure guidelines from the American Hospital Association along with updated information on vital signs in fit athletes, obtaining blood pressure, observing and counting respirations, and obtaining skin temperature manually.
- *Chapter 13, Principles of Patient Assessment*, offers expanded information on multi-system trauma, significant versus non-significant mechanism of injury, and rapid trauma assessment. It also provides updated AVPU descriptions and introduces the term "kill zone" and its relationship to the trauma assessment.

Chapters 14–17

These chapters cover many of the most common medical emergencies encountered in the field and the most up-to-date recommendations for patient care.

What's New?

- *Chapter 14, Caring for Cardiac Emergencies*, expands the discussion of congestive heart failure, includes a new Scan on aspirin, and discusses the contraindications of some erectile dysfunction medications and the use of nitroglycerin.
- *Chapter 15, Caring for Respiratory Emergencies*, includes new content on trauma-related respiratory compromise, pulmonary edema, pneumonia, and agonal respirations. It also contains updates related to the use of positive pressure ventilations for inadequate breathing and the common signs and symptoms of emphysema.
- *Chapter 16, Caring for Common Medical Emergencies*, introduces the "last known normal" and the FAST assessment tool for patients experiencing stroke. It also includes examples of common street drugs, the risk of exposure to potent drugs for the rescuer, and additional strategies for calming a patient experiencing a behavioral emergency. It also introduces the use of Naloxone as a treatment for narcotic overdose.
- *Chapter 17, Caring for Environmental Emergencies*, now includes updated information on rewarming a local cold injury, heat cramps, and the amount of air to provide during rescue breaths. It also differentiates between submersion injury and injuries caused by diving into shallow water.

Chapters 18–22

These chapters address many of the more common emergencies related to trauma and bleeding.

What's New?

- *Chapter 18, Caring for Soft Tissue Injuries and Bleeding*, includes updated information on the following topics: tourniquet and roller bandage applications, hemostatic dressing use, signs and symptoms of internal bleeding, impaled object removal, open chest wound care, and burn treatment based on affected body surface area.
- *Chapter 19, Recognition and Care of Shock*, now includes additional examples of distributive shock, updated information on signs and symptoms of shock, and more detailed definitions of septic shock, hypoperfusion, and shock.
- *Chapter 20, Caring for Muscle and Bone Injuries*, offers updated information on immobilization of an elbow injury as well as determining treatment priorities.
- *Chapter 21, Caring for Head and Spinal Injuries*, now includes updated information on the assessment of distal extremities, cerebral contusion, and sizing a cervical collar. It also includes new information on abnormal vital signs for head injury and spinal motion restriction (SMR).
- *Chapter 22, Caring for Chest and Abdominal Emergencies*, now offers an expanded section on

management of open chest injuries along with updates on treatment of patients with a flail chest, the care of open chest wounds, spontaneous pneumothorax, and the management of evisceration.

Chapter 23

This chapter covers normal pregnancy and childbirth. It also discusses many of the common emergencies related to pregnancy and childbirth.

What's New?

- *Chapter 23, Care During Pregnancy and Childbirth*, retains all the most up-to-date information regarding Emergency Medical Responder care of the mother and child before, during, and after delivery. Updates include an explanation of bloody show, ways to suction a newborn, and how to perform chest compressions on an infant.

Chapters 24 and 25

Chapters 24 and 25 cover the unique differences in the special populations of pediatric and geriatric patients. They also introduce specific assessment strategies for each group.

What's New?

- *Chapter 24, Caring for Infants and Children*, offers updates in relation to definitions of newborn and infant decompensated shock, plus new content on Apparent Life Threatening Event (ALTE) and a reorganization of the content on shock and dehydration.
- *Chapter 25, Special Considerations for the Geriatric Patient*, provides updated statistics on the aging population along with discussions of suicide in older adults, the causes of pressure sores, definitions of mechanical falls, and an expanded discussion on multiple medications and side effects of some common medications.

Chapters 26 and 27

These two chapters cover many of the topics related to EMS operations, such as the phases of an emergency response, responding to a hazardous materials incident, and responding to multiple-casualty incidents. The principles of the incident management system (IMS) and triage are also addressed. Both chapters retain information important to the roles of Emergency Medical Responders during hazardous materials and multiple-casualty responses.

What's New?

- *Chapter 26, Introduction to EMS Operations and Hazardous Response*, includes an update on managing patients who are contaminated along with new information on safety awareness related to working around electric and hybrid vehicles.
- *Chapter 27, Introduction to Multiple-Casualty Incidents, the Incident Command System, and Triage*, includes information about online FEMA training, the SALT triage system, and the use of colored ribbon to replace triage tags.

Appendices

There are four appendices in this new edition: "Patient Monitoring Devices;" "Principles of Pharmacology," including an all-new photo scan for administration of Naloxone; "Air Medical Transport Operations;" and an "Introduction to Terrorism Response and Weapons of Mass Destruction." Each includes an overview of its topic relevant to the role of the Emergency Medical Responder.

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ACKNOWLEDGMENTS

I constantly remind my students that responding effectively to the needs of others during an emergency requires a team effort. It takes the efforts of many to render care efficiently and appropriately when the stress is on. Assembling a project such as this is no exception. Without the coordinated efforts of many people spread throughout the United States, this project could not have been possible. I'd like to acknowledge the key players who helped create the end product that you see before you.

I'd like to begin with Audrey Le Baudour, my personal assistant, copy editor, travel coordinator, and, last but not least, my wife. She is the one who keeps me organized, focused, and most importantly on schedule.

I'd like to extend a special thank you to our photographer, Michal Heron, who has single-handedly raised the bar for the way EMS is depicted in textbooks across this country. Michal, you bring something no other artist brings when shooting for these books. Your work is clearly head and shoulders above the rest, and you really challenge authors to do it better.

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A special shout-out to Shawna Whooley for her work in helping make certain this edition of Emergency Medical Responder is as complete and accurate as possible. I greatly appreciate all the long hours you put in behind the scenes and the passion you are adding. Finally I want to recognize my dear friend and colleague Paramedic Larry Thompson. Larry gave this project many hours of his time to ensure the photos we shot for this edition were the most current and accurate as possible. Larry is one of the most passionate and caring EMS professinals I have had the pleasure to work with.

Medical Director

Keith Wesley, MD, FACEP

Our special thanks to Dr. Keith Wesley. His reviews were carefully prepared, and we appreciate the thoughtful advice and keen insight offered.

Dr. Keith Wesley is board certified in emergency medicine with subspecialty board certification in emergency medical services. Dr. Wesley is the EMS medical director for HealthEast Medical Transportation in St. Paul, Minnesota. He has served as the state EMS medical director for both Minnesota and Wisconsin and chair of the National Council of State EMS Medical Directors. Dr. Wesley is the author of many articles and EMS textbooks and a frequent speaker at EMS conferences across the nation.

Contributors to the previous editions

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Models

Thanks to the following people who portrayed patients and EMS providers in our photographs:

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ABOUT THE AUTHOR

Chris Le Baudour

Chris Le Baudour has been working in the EMS field since 1978. In 1984, Chris began his teaching career in the Department of Public Safety—EMS Division at Santa Rosa Junior College in Santa Rosa, California.

Chris holds a Bachelor's Degree in Communications and a Master's Degree in Education with an emphasis in online teaching and learning as well as numerous EMS and instructional certifications. Chris has spent the past 30 years mastering the art of experiential learning in EMS and is well known for his innovative classroom techniques and his passion for both teaching and learning in both traditional and online classrooms.

Chris is very involved in EMS education at the national level, served six years as a board member of the National Association of EMS Educators, and advises many organizations throughout the country. Chris is a frequent presenter at both state and national conferences and a prolific EMS writer. Along with numerous articles, he is the author of *Emergency Care for First Responders,* and coauthor of *EMT Complete: A Basic Worktext*, and the Active Learning Manual for the EMT-Basic. Chris and his wife, Audrey, have two children and reside in northern California.

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Emergency Medical Response Certification Program

American Safety & Health Institute (ASHI) is a member of the Health & Safety Institute (HSI) family of brands. HSI's mission is *Making the Workplace and Community Safer*.™. ASHI authorizes qualified individuals to offer Emergency Medical Response training and certification programs for corporate America, government agencies, and emergency responders. *Emergency Medical Responder: First on Scene,* is the required textbook of the ASHI Emergency Medical Response training program. To learn more about ASHI, visit https://emergencycare.hsi.com/

In the early 1970s, officials at the U.S. Department of Transportation National Highway Traffic Safety Administration (NHTSA) recognized a gap between basic first aid training and the training of Emergency Medical Technicians (EMTs). Their solution was to create "Crash Injury Management: Emergency Medical Services for Traffic Law Enforcement Officers," an emergency medical care course for "patrolling law enforcement officers." As it evolved, the course expanded to include other "First Responders"—public and private safety and service personnel who, in the course of performing other duties, are likely to respond to emergencies (firefighters, highway department personnel, etc.). The Crash Injury Management course provided the basic knowledge and skills necessary to perform lifesaving interventions while waiting for EMTs to arrive. The original program was never intended for training EMS personnel. Because the Crash Injury Management course was designed to fill the gap between basic first aid training and EMT, it was considered "advanced first aid training." In 1978, the Crash Injury Management course was renamed *Emergency Medical Services First Responder Training Course* and was specifically targeted at "public service law enforcement, fire, and EMS rescue agencies that did not necessarily have the ability to transport patients or carry sophisticated medical equipment." Then, in 1995, the course went through a major revision and its name was changed to *First Responder: National Standard Curriculum*. At that time, the First Responder was described as "an integral part of the Emergency Medical Services System." Later, in 2006, a FEMA EMS Working Group recommended a new job title for first responders working within the EMS system—the **Emergency Medical Responder** (**EMR**). This title is meant to specify a state-licensed and credentialed individual responding within an EMS-providing entity, organization, or agency. Specifically, the use of the word "medical" in the EMR title is intended to help distinguish those persons who have successfully completed a state-approved EMR program from other first responders such as law enforcement officers, public health workers, and search & rescue personnel (to name a few).

ASHI Emergency Medical Response for Non-EMS Personnel

The gap between basic first aid training and the training of EMS professionals that was recognized more than 30 years ago remains. There is still a need for an "advanced first aid course" for the original "first responder" target audience—non-EMS providers who, in the course of performing other duties, are likely (or expected) to respond to emergencies. These individuals, including law enforcement officers, fire fighters, and other public and private safety and service personnel, are indeed an integral part of the overall EMS System. That is to say, they are part of a network of resources—people, communications, and equipment— prepared to provide emergency care to victims of sudden illness or injury. On the other hand, these individuals are not, and in most cases do not wish to be, state-licensed and credentialed EMS professionals. The original first responder program was intended to provide these "pre-EMS" responders with the basic knowledge and skills necessary for lifesaving interventions while waiting for the EMS professionals to arrive. That original intent–filling the knowledge and skill gap between basic first aid training and EMS—is the intent of ASHI's Emergency Medical Response for Non-EMS Personnel program. Additionally, because this program uses the same textbooks and related instructional tools as those used to train EMRs, it serves to encourage a continuum in care for the ill or injured person as he or she is transitioned from care provided by the first responder to care provided by the EMS professional.

Certification In ASHI Emergency Medical Response

Evaluation of knowledge and skill competence is required for certification in ASHI Emergency Medical Response. The learner must successfully complete the ASHI Emergency Medical Response for Non-EMS Personnel

Exam and demonstrate the ability to work as a lead first responder in a scenario-based team setting, adequately directing the initial assessment and care of a responsive and unresponsive medical and trauma patient.

State Licensure and Credentialing

State EMS agencies have the legal authority and responsibility to license, regulate, and determine the scope of practice of EMS providers within the state EMS system. ASHI's Emergency Medical Response program is designed to allow properly qualified and authorized ASHI instructors to train and certify individuals as first responders consistent with the National EMS Education Standards and Instructional Guidelines. It is not the intent of ASHI's Emergency Medical Response program to cross the EMS scope of practice threshold. An individual that has been trained and certified in ASHI Emergency Medical Response is NOT licensed and credentialed to practice emergency medical care as an EMS provider within an organized state EMS system. EMS provider licensing and credentialing are legal activities performed by the state, not ASHI. Individuals who require or desire licensure and credentialing within the state EMS system must complete specific requirements established by the regulating authority.

International Use of ASHI Emergency Medical Response for Non-EMS Personnel

Given the current state of globalization and the increasing international reach of ASHI-authorized instructors, the ASHI Emergency Medical Response program has expanded outside of the United States. As appropriate actions by first responders alleviate suffering, prevent disability, and save lives, ASHI encourages this international expansion, particularly in areas with emerging but undeveloped EMS systems. However, as in the United States, the scope of practice for medically trained persons is often subject to federal, state, provincial, or regional laws and regulations. It is not the intent of ASHI's Emergency Medical Response program to cross the EMS (or medical) scope of practice threshold in any country.

Health & Safety Institute (HSI)

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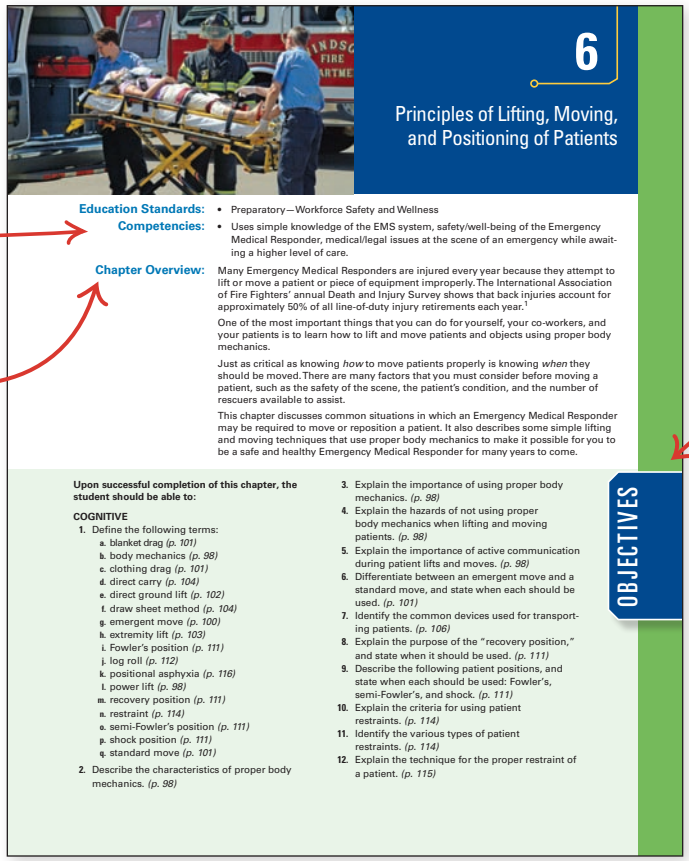
WALK THROUGH

Education Standards and Competencies

Provides standards and competencies that are addressed in each chapter.

Chapter Overview

A brief preview of the chapter's highlights.



6

Principles of Lifting, Moving, and Positioning of Patients

Education Standards:
- Preparatory—Workforce Safety and Wellness

Competencies:
- Uses simple knowledge of the EMS system, safety/well-being of the Emergency Medical Responder, medical/legal issues at the scene of an emergency while awaiting a higher level of care.

Chapter Overview:

Many Emergency Medical Responders are injured every year because they attempt to lift or move a patient or piece of equipment improperly. The International Association of Fire Fighters' annual Death and Injury Survey shows that back injuries account for approximately 50% of all line-of-duty injury retirements each year.[1]

One of the most important things that you can do for yourself, your co-workers, and your patients is to learn how to lift and move patients and objects using proper body mechanics.

Just as critical as knowing *how* to move patients properly is knowing *when* they should be moved. There are many factors that you must consider before moving a patient, such as the safety of the scene, the patient's condition, and the number of rescuers available to assist.

This chapter discusses common situations in which an Emergency Medical Responder may be required to move or reposition a patient. It also describes some simple lifting and moving techniques that use proper body mechanics to make it possible for you to be a safe and healthy Emergency Medical Responder for many years to come.

OBJECTIVES

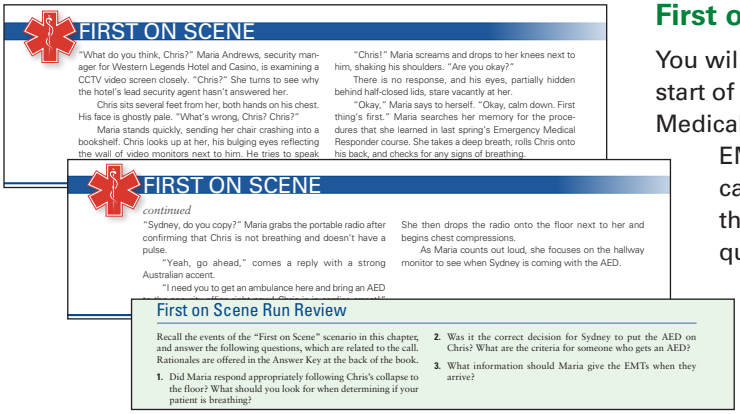
Upon successful completion of this chapter, the student should be able to:

COGNITIVE

1. Define the following terms:
   a. blanket drag *(p. 101)*
   b. body mechanics *(p. 98)*
   c. clothing drag *(p. 101)*
   d. direct carry *(p. 104)*
   e. direct ground lift *(p. 102)*
   f. draw sheet method *(p. 104)*
   g. emergent move *(p. 100)*
   h. extremity lift *(p. 103)*
   i. Fowler's position *(p. 111)*
   j. log roll *(p. 112)*
   k. positional asphyxia *(p. 116)*
   l. power lift *(p. 98)*
   m. recovery position *(p. 111)*
   n. restraint *(p. 114)*
   o. semi-Fowler's position *(p. 111)*
   p. shock position *(p. 111)*
   q. standard move *(p. 101)*
2. Describe the characteristics of proper body mechanics. *(p. 98)*
3. Explain the importance of using proper body mechanics. *(p. 98)*
4. Explain the hazards of not using proper body mechanics when lifting and moving patients. *(p. 98)*
5. Explain the importance of active communication during patient lifts and moves. *(p. 98)*
6. Differentiate between an emergent move and a standard move, and state when each should be used. *(p. 101)*
7. Identify the common devices used for transporting patients. *(p. 106)*
8. Explain the purpose of the "recovery position," and state when it should be used. *(p. 111)*
9. Describe the following patient positions, and state when each should be used: Fowler's, semi-Fowler's, and shock. *(p. 111)*
10. Explain the criteria for using patient restraints. *(p. 114)*
11. Identify the various types of patient restraints. *(p. 114)*
12. Explain the technique for the proper restraint of a patient. *(p. 115)*

Chapter Objectives

A list of the Cognitive, Psychomotor, and Affective goals for you to master following completion of a chapter. Each Cognitive objective includes the page number where it is covered in the chapter as a quick reference.



FIRST ON SCENE

"What do you think, Chris?" Maria Andrews, security manager for Western Legends Hotel and Casino, is examining a CCTV video screen closely. "Chris?" She turns to see why the hotel's lead security agent hasn't answered her.

Chris sits several feet from her, both hands on his chest. His face is ghostly pale. "What's wrong, Chris? Chris?"

Maria stands quickly, sending her chair crashing into a bookshelf. Chris looks up at her, his bulging eyes reflecting the wall of video monitors next to him. He tries to speak

"Chris!" Maria screams and drops to her knees next to him, shaking his shoulders. "Are you okay?"

There is no response, and his eyes, partially hidden behind half-closed lids, stare vacantly at her.

"Okay," Maria says to herself. "Okay, calm down. First thing's first." Maria searches her memory for the procedures that she learned in last spring's Emergency Medical Responder course. She takes a deep breath, rolls Chris onto his back, and checks for any signs of breathing.

FIRST ON SCENE

continued

"Sydney, do you copy?" Maria grabs the portable radio after confirming that Chris is not breathing and doesn't have a pulse.

"Yeah, go ahead," comes a reply with a strong Australian accent.

"I need you to get an ambulance here and bring an AED

She then drops the radio onto the floor next to her and begins chest compressions.

As Maria counts out loud, she focuses on the hallway monitor to see when Sydney is coming with the AED.

First on Scene Run Review

Recall the events of the "First on Scene" scenario in this chapter, and answer the following questions, which are related to the call. Rationales are offered in the Answer Key at the back of the book.

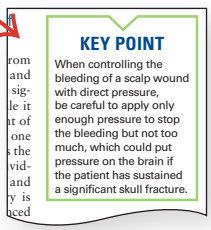
1. Did Maria respond appropriately following Chris's collapse to the floor? What should you look for when determining if your patient is breathing?
2. Was it the correct decision for Sydney to put the AED on Chris? What are the criteria for someone who gets an AED?
3. What information should Maria give the EMTs when they arrive?

First on Scene and First on Scene Run Review

You will experience a new medical emergency at the start of each chapter as you follow the actions of an Emergency Medical Responder who is first on the scene, then follow the EMR and his or her patients throughout the chapter as the case develops. Finally, you'll have a chance to debrief at the end of the chapter as you respond to Run Review questions, thinking about the steps the EMR took and what might have gone differently.

Key Point

Appearing throughout the chapters, these boxes highlight important or critical concepts that are important take-aways from your reading.

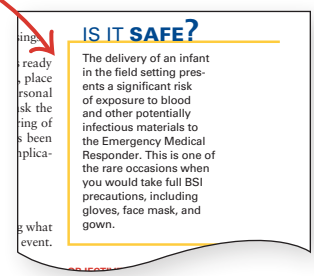


KEY POINT

When controlling the bleeding of a scalp wound with direct pressure, be careful to apply only enough pressure to stop the bleeding but not too much, which could put pressure on the brain if the patient has sustained a significant skull fracture.

Is it Safe?

These stop-and-think boxes reinforce the idea that the safety—of the patient, the Emergency Medical Responder, by-standers, or others—is of paramount importance when responding to the scene.

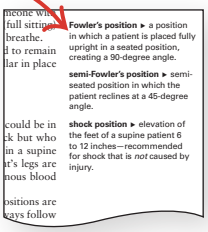


IS IT SAFE?

The delivery of an infant in the field setting presents a significant risk of exposure to blood and other potentially infectious materials to the Emergency Medical Responder. This is one of the rare occasions when you would take full BSI precautions, including gloves, face mask, and gown.

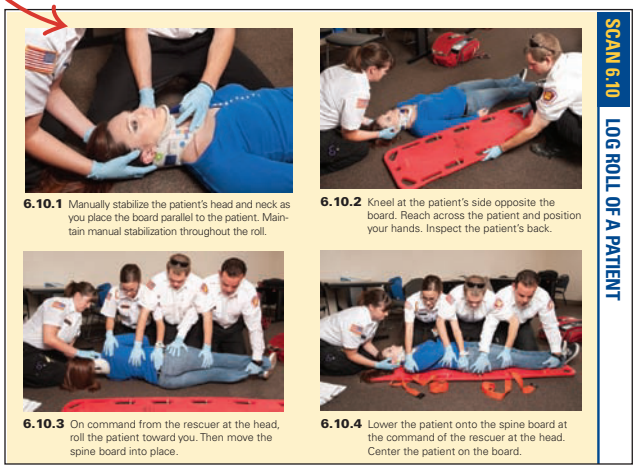
Key Terms in the Margins

Definitions of new, unfamiliar, or important vocabulary terms appear in the margins of the pages where they appear in bold.



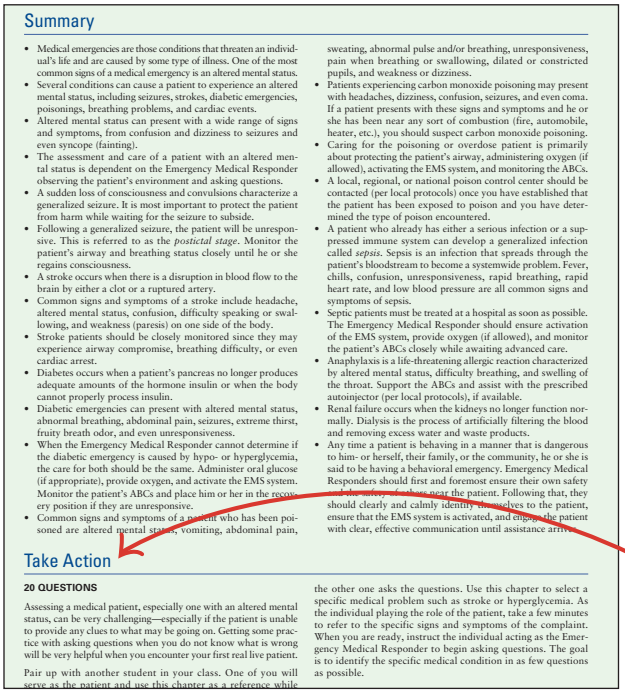
Scans

These are the key skills the Emergency Medical Responder performs when assisting a patient at the scene of an emergency.



Summary

A bullet list of the key points from the chapter.



Summary

- Medical emergencies are those conditions that threaten an individual's life and are caused by some type of illness. One of the most common signs of a medical emergency is an altered mental status.
- Several conditions can cause a patient to experience an altered mental status, including seizures, strokes, diabetic emergencies, poisonings, breathing problems, and cardiac events.
- Altered mental status can present with a wide range of signs and symptoms, from confusion and dizziness to seizures and even syncope (fainting).
- The assessment and care of a patient with an altered mental status is dependent on the Emergency Medical Responder observing the patient's environment and asking questions.
- A sudden loss of consciousness and convulsions characterize a generalized seizure. It is most important to protect the patient from harm while waiting for the seizure to subside.
- Following a generalized seizure, the patient will be unresponsive. This is referred to as the *postictal stage*. Monitor the patient's airway and breathing status closely until he or she regains consciousness.
- A stroke occurs when there is a disruption in blood flow to the brain by either a clot or a ruptured artery.
- Common signs and symptoms of a stroke include headache, altered mental status, confusion, difficulty speaking or swallowing, and weakness (paresis) on one side of the body.
- Stroke patients should be closely monitored since they may experience airway compromise, breathing difficulty, or even cardiac arrest.
- Diabetes occurs when a patient's pancreas no longer produces adequate amounts of the hormone insulin or when the body cannot properly process insulin.
- Diabetic emergencies can present with altered mental status, abnormal breathing, abdominal pain, seizures, extreme thirst, fruity breath odor, and even unresponsiveness.
- When the Emergency Medical Responder cannot determine if the diabetic emergency is caused by hypo- or hyperglycemia, the care for both should be the same. Administer oral glucose (if appropriate), provide oxygen, and activate the EMS system. Monitor the patient's ABCs and place him or her in the recovery position if they are unresponsive.
- Common signs and symptoms of a patient who has been poisoned are altered mental status, vomiting, abdominal pain, sweating, abnormal pulse and/or breathing, unresponsiveness, pain when breathing or swallowing, dilated or constricted pupils, and weakness or dizziness.
- Patients experiencing carbon monoxide poisoning may present with headaches, dizziness, confusion, seizures, and even coma. If a patient presents with these signs and symptoms and he or she has been near any sort of combustion (fire, automobile, heater, etc.), you should suspect carbon monoxide poisoning.
- Caring for the poisoning or overdose patient is primarily about protecting the patient's airway, administering oxygen (if allowed), activating the EMS system, and monitoring the ABCs.
- A local, regional, or national poison control center should be contacted (per local protocols) once you have established that the patient has been exposed to poison and you have determined the type of poison encountered.
- A patient who already has either a serious infection or a suppressed immune system can develop a generalized infection called *sepsis*. Sepsis is an infection that spreads through the patient's bloodstream to become a systemwide problem. Fever, chills, confusion, unresponsiveness, rapid breathing, rapid heart rate, and low blood pressure are all common signs and symptoms of sepsis.
- Septic patients must be treated at a hospital as soon as possible. The Emergency Medical Responder should ensure activation of the EMS system, provide oxygen (if allowed), and monitor the patient's ABCs closely while awaiting advanced care.
- Anaphylaxis is a life-threatening allergic reaction characterized by altered mental status, difficulty breathing, and swelling of the throat. Support the ABCs and assist with the prescribed autoinjector (per local protocols), if available.
- Renal failure occurs when the kidneys no longer function normally. Dialysis is the process of artificially filtering the blood and removing excess water and waste products.
- Any time a patient is behaving in a manner that is dangerous to him- or herself, their family, or the community, he or she is said to be having a behavioral emergency. Emergency Medical Responders should first and foremost ensure their own safety [illegible] others near the patient. Following that, they should clearly and calmly identify themselves to the patient, ensure that the EMS system is activated, and engage the patient with clear, effective communication until assistance arrives.

Take Action

20 QUESTIONS

Assessing a medical patient, especially one with an altered mental status, can be very challenging—especially if the patient is unable to provide any clues to what may be going on. Getting some practice with asking questions when you do not know what is wrong will be very helpful when you encounter your first real live patient.

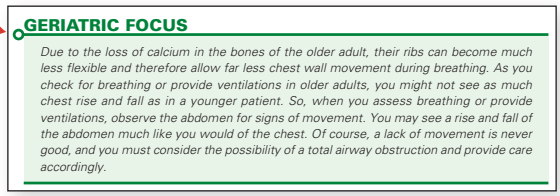
Pair up with another student in your class. One of you will serve as the patient and use this chapter as a reference while the other one asks the questions. Use this chapter to select a specific medical problem such as stroke or hyperglycemia. As the individual playing the role of the patient, take a few minutes to refer to the specific signs and symptoms of the complaint. When you are ready, instruct the individual acting as the Emergency Medical Responder to begin asking questions. The goal is to identify the specific medical condition in as few questions as possible.

Take Action

Hands-on activities that give you an opportunity to practice some of the skills and concepts you learned in a chapter.

Geriatric Focus

Appearing throughout the chapters, these boxes relate care concepts to the specific needs of older adult patients.

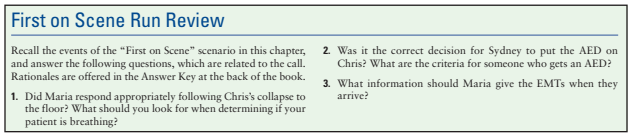


GERIATRIC FOCUS

Due to the loss of calcium in the bones of the older adult, their ribs can become much less flexible and therefore allow far less chest wall movement during breathing. As you check for breathing or provide ventilations in older adults, you might not see as much chest rise and fall as in a younger patient. So, when you assess breathing or provide ventilations, observe the abdomen for signs of movement. You may see a rise and fall of the abdomen much like you would of the chest. Of course, a lack of movement is never good, and you must consider the possibility of a total airway obstruction and provide care accordingly.

First on Scene Run Review

As described previously, these questions give you a chance to think through the events and actions that occurred in the chapter case study and evaluate what happened, what went well, what needed work, and how you might have responded differently if you were the Emergency Medical Responder in that situation.



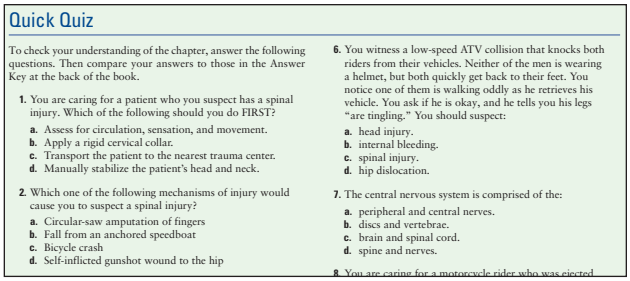
First on Scene Run Review

Recall the events of the "First on Scene" scenario in this chapter, and answer the following questions, which are related to the call. Rationales are offered in the Answer Key at the back of the book.

1. Did Maria respond appropriately following Chris's collapse to the floor? What should you look for when determining if your patient is breathing?
2. Was it the correct decision for Sydney to put the AED on Chris? What are the criteria for someone who gets an AED?
3. What information should Maria give the EMTs when they arrive?

Quick Quiz

These multiple choice questions check your understanding of the chapter's content.



Quick Quiz

To check your understanding of the chapter, answer the following questions. Then compare your answers to those in the Answer Key at the back of the book.

1. You are caring for a patient who you suspect has a spinal injury. Which of the following should you do FIRST?
   a. Assess for circulation, sensation, and movement.
   b. Apply a rigid cervical collar.
   c. Transport the patient to the nearest trauma center.
   d. Manually stabilize the patient's head and neck.
2. Which one of the following mechanisms of injury would cause you to suspect a spinal injury?
   a. Circular-saw amputation of fingers
   b. Fall from an anchored speedboat
   c. Bicycle crash
   d. Self-inflicted gunshot wound to the hip
6. You witness a low-speed ATV collision that knocks both riders from their vehicles. Neither of the men is wearing a helmet, but both quickly get back to their feet. You notice one of them is walking oddly as he retrieves his vehicle. You ask if he is okay, and he tells you his legs "are tingling." You should suspect:
   a. head injury.
   b. internal bleeding.
   c. spinal injury.
   d. hip dislocation.
7. The central nervous system is comprised of the:
   a. peripheral and central nerves.
   b. discs and vertebrae.
   c. brain and spinal cord.
   d. spine and nerves.
8. You are caring for a motorcycle rider who was ejected

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- Audio Intros and Insights
- Video Lecture Captures
- Animations
- Skills Videos
- End-of-chapter self-study review questions
- Application review questions included as part of the "First on Scene" scenarios

How Do Instructors Benefit?

Instructors can push notes and highlights directly to students so they can provide embellishment or focus on key concepts within the text.

1

Introduction to EMS Systems

Education Standards:

- Preparatory—EMS Systems, Research, Public Health

Competencies:

- Uses simple knowledge of the EMS system, safety/well-being of the Emergency Medical Responder, and medical/legal issues at the scene of an emergency while awaiting a higher level of care.
- Demonstrates an awareness of local public health resources and the role EMS personnel play in public health emergencies.

Chapter Overview:

You have made a great choice in deciding to become a member of the EMS team and become trained as an Emergency Medical Responder. An estimated 240 million calls are made to 911 in the United States each year,[1] and many of those calls are responded to by individuals such as yourself who are trained to the Emergency Medical Responder level.

Thousands of people become ill or are injured every day, and many of them are far from a hospital at the time of their emergency. Emergency medical services (EMS) systems have been developed for this very reason. Their purpose is to get trained medical personnel to the patient as quickly as possible and to provide emergency care at the scene of the emergency. Emergency Medical Responders are an essential part of a community and the EMS team.

Realizing that people will depend on you to provide assistance during an emergency can be overwhelming. To gain confidence in your knowledge and skills, it is very important that you learn and understand what is expected of you in this new role. When you do, you can act more quickly to provide efficient and effective emergency care.

This chapter will introduce you to the EMS system, its components, and how they work together to deliver care to the ill and injured. We will also discuss the roles and responsibilities you will be expected to embrace as an Emergency Medical Responder.

OBJECTIVES

Upon successful completion of this chapter, the student should be able to:

COGNITIVE

1. Define the following terms:
   - a. Advanced Emergency Medical Technician (AEMT) *(p. 7)*
   - b. continuous quality improvement (CQI) *(p. 14)*
   - c. Disaster Medical Assistance Team (DMAT) *(p. 14)*
   - d. emergency care *(p. 2)*
   - e. Emergency Medical Dispatcher (EMD) *(p. 7)*
   - f. Emergency Medical Responder (EMR) *(p. 6)*
   - g. emergency medical services (EMS) system *(p. 4)*
   - h. Emergency Medical Technician (EMT) *(p. 7)*
   - i. evidence-based practice *(p. 4)*
   - j. medical director *(p. 4)*
   - k. medical oversight *(p. 4)*
   - l. National EMS Education Standards *(p. 6)*
   - m. off-line medical direction *(p. 8)*
   - n. on-line medical direction *(p. 8)*
   - o. Paramedic *(p. 7)*
   - p. protocols *(p. 8)*
   - q. public health system *(p. 14)*
   - r. public safety answering point (PSAP) *(p. 7)*
   - s. research *(p. 15)*
   - t. scope of practice *(p. 7)*
   - u. Scope of Practice Model *(p. 6)*
   - v. specialty hospital *(p. 8)*
   - w. standing order *(p. 8)*
2. Explain the role of the National Highway Traffic Safety Administration (NHTSA) and its relationship to EMS. *(p. 4)*

3. Differentiate the various attributes of an EMS system and describe the function of each. *(p. 4)*
4. Explain the roles that the National EMS Education Standards and the National Scope of Practice Model play in shaping the EMS system around the United States. *(p. 6)*
5. Differentiate the four nationally recognized levels of EMS provider. *(p. 6)*
6. Differentiate the roles and responsibilities of the Emergency Medical Responder from those of other EMS providers. *(p. 6)*
7. Differentiate the various EMS models in practice around the United States. *(p. 6)*
8. Explain the roles that state and local EMS offices, medical oversight, and local credentialing play in an EMS system. *(p. 6)*
9. Explain the various methods used to access the EMS system. *(p. 7)*
10. Explain how state and local statutes and regulations affect how an Emergency Medical Responder might function. *(p. 7)*
11. Explain the various types of medical direction and how the Emergency Medical Responder might interact with each. *(p. 8)*
12. Describe the characteristics of professionalism as they relate to the Emergency Medical Responder. *(p. 13)*
13. Explain the role of the Emergency Medical Responder with regard to continuous quality improvement (CQI). *(p. 14)*
14. Explain the role of public health systems and their relationship to EMS, disease surveillance, and injury prevention. *(p. 14)*
15. Explain the role that Disaster Medical Assistance Teams (DMAT) play and how they integrate with EMS systems. *(p. 14)*
16. Explain the role that research plays in the EMS system and the ways that an Emergency Medical Responder might seek out and support research. *(p. 15)*

PSYCHOMOTOR

17. Participate in simple research activities facilitated by the instructor.

AFFECTIVE

18. Value the importance of accepting and upholding the responsibilities of an Emergency Medical Responder.
19. Support the rationale for always maintaining a high degree of professionalism when performing the duties of an Emergency Medical Responder.
20. Value the importance of providing the best possible care for all patients regardless of culture, gender, age, or socioeconomic status.
21. Model a desire for continuous quality improvement (CQI) both personally and professionally.
22. Value the importance of quality research and its connection to good patient care.

FIRST ON SCENE

It's a bright, sunny spring day and you have just left what you feel was one of your best interviews yet. All that time invested in becoming an Eagle Scout is starting to pay off. If all goes well, you will soon be working as a senior camp counselor for the largest summer camp in the state.

Things are looking up, and there is a noticeable bounce in your step as you descend the stairs to the visitor parking lot. Just as you reach the sidewalk, you hear a yell for help from across the lot. You hesitate for a moment and look around to see if anyone else hears what you hear. Again, you hear a female voice yelling for help, but you cannot see anyone. You decide to investigate and go toward the direction of the call.

Two rows over, you see a middle-aged woman leaning over a young boy on the ground. He appears to be shaking and a white, foamy substance is coming from his mouth. The woman sees you and yells in a panicked voice for you to go call an ambulance.

"Yes, okay," you respond as you reach for your cell phone but realize you left it in the car before going into the interview. "I'll go back to the lobby and call for help. I'll be right back!" You make it back to the lobby in record time and, in short bursts of words, advise the receptionist that someone is down in the parking lot and to call 911. She makes the call and alerts the building's Medical Emergency Response Team as well. With some hesitation, you return to the scene in the parking lot.

The EMS System

emergency care ▸ the prehospital assessment and basic care for the ill or injured patient.

It is likely that people have been providing **emergency care** for one another since humans first walked the Earth. Many of those early treatments would seem primitive by today's standards, but the awareness that some kind of care is often needed at the scene of the emergency has not changed. A formal system for responding to emergencies has existed for only a relatively short time (Table 1.1). During the American Civil War, the Union Army began

TABLE 1.1 | EMS Time Line

1790s	Napoleon's chief physician, Dominique Jean Larrey, develops a system designed to triage and transport injured soldiers from the battlefield to established aid stations.
1805–1815	Dominique Jean Larrey formed the Ambulance Volante (flying ambulance). It consisted of a covered horse-drawn cart designed to bring medical care closer to the injured on the battlefields of Europe.
1861–1865	Clara Barton coordinates the care of sick and injured soldiers during the American Civil War.
1869	New York City Health Department Ambulance Service begins operation out of what was then known as the Free Hospital of New York, now Bellevue Hospital.
1915	First recorded air medical transport occurs during the retreat of the Serbian army from Albania.
1928	The concept of "on-scene care" is first initiated, when Julian Stanley Wise started the Roanoke Life Saving and First Aid Crew in Roanoke, Virginia.
1950–1973	The first use of helicopters to evacuate injured soldiers and deliver them to waiting field hospitals occurs in the Korean and Vietnam wars.
1966	The report entitled "Accidental Death and Disability: The Neglected Disease of Modern Society," commonly referred to as the "White Paper," is published. The study concludes that many of the deaths occurring every day were unnecessary and could be prevented through better prehospital treatments. The report resulted in Congress's passing the National Highway Safety Act.
1968	On February 16, 1968, Senator Rankin Fite completed the first 9-1-1 call made in the United States in Haleyville, Alabama. The serving telephone company was then Alabama Telephone Company. This Haleyville 9-1-1 system is still in operation today. On February 22, 1968, Nome, Alaska implemented 9-1-1 service.
1973	Congress passes the Emergency Medical Services Act, which provides funding for a series of projects related to trauma care.
1988	The National Highway Traffic and Safety Administration (NHTSA) defines elements necessary for all EMS systems.
1990	The Trauma Care Systems Planning and Development Act of 1990 encourages development of improved trauma systems.
1995	An update to the EMT Basic and First Responder National Standard curricula is released.
1996	The EMS Agenda for the Future outlines the most important directions for the future of EMS development.
1998	An update to the EMT Paramedic National Standard Curriculum is released.
1999	An update to the EMT Intermediate National Standard Curriculum is released.
2000	NHTSA publishes "EMS Education Agenda for the Future: A Systems Approach."
2005	NHTSA publishes the National EMS Core Content.
2007	NHTSA publishes the National EMS Scope of Practice Model, redefining the four levels of EMS certification and licensure.
2009	NHTSA publishes the new EMS Education Standards.

training soldiers to provide first aid to the wounded on the battlefield. These *corpsmen*, as they were known, were trained to provide care for the most immediate of life threats, such as bleeding. After their initial care, the injured were transported by horse-drawn carriage to awaiting physicians (Figure 1.1). Thus, the first formal ambulance system in the United States had begun.

The first civilian ambulance services began in the late 1800s with the sole purpose of transporting injured and ill patients to the hospital for care. It was not until 1928 that the concept of civilian on-scene care was first implemented, with the organization of the Roanoke Life Saving and First Aid Crew in Roanoke, Virginia.

Figure 1.1 Examples of early ambulances used to transport ill and injured patients. (© Associated Press)

In 1966, the National Academy of Sciences released a report called "Accidental Death and Disability: The Neglected Disease of Modern Society." That report revealed for the first time the inadequacies of prehospital care. It also provided suggestions for the development of formal EMS systems.

Fortunately, it has become possible to extend lifesaving care through a chain of resources known as the **emergency medical services (EMS) system** (Scan 1.1). Once the EMS system is activated, care begins at the emergency scene and continues during transport to a medical facility. At the hospital, a formal transfer of care to the emergency department staff ensures a smooth continuation of care. (Note that the emergency department may still be referred to as the emergency room or ER in some areas.)

The National Highway Traffic Safety Administration (NHTSA) has identified 14 key attributes of an integrated EMS system and assists states in developing and assessing those components.[2] They are:

OBJECTIVES

2. Explain the role of the National Highway Traffic Safety Administration (NHTSA) and its relationship to EMS.
3. Differentiate the various attributes of an EMS system and describe the function of each.

emergency medical services (EMS) system ▸ the chain of human resources and services linked together to provide continuous emergency care at the scene and during transport to a medical facility.

evidence-based practice ▸ integrating clinical expertise with the best available clinical evidence from systematic research.

medical director ▸ a physician who assumes the ultimate responsibility for medical oversight of the patient care aspects of the EMS system.

medical oversight ▸ the supervision related to patient care provided for an EMS system or one of its components by a licensed physician.

- *Integration of health services.* Historically, EMS has always focused on only the care provided in the prehospital setting. By integrating with other health system components, EMS can improve health care for the entire community. The future of EMS includes EMTs and Paramedics working closely with public health departments and health care networks to identify non-emergent health needs in the community and to assist in providing for those needs.
- *EMS research.* EMS has evolved relatively fast over the past 50 years despite the slow progress of EMS-related research. Only in recent years has the importance of EMS-related research gained the attention of the federal government. The National Institutes of Health are more committed than ever to funding EMS research. EMS systems are placing a greater emphasis on **evidence-based practice** when developing policies and protocols.
- *Legislation and regulation.* To provide a quality, effective system of emergency medical care, each state must have legislation and regulations that identify and support a lead EMS agency. This agency has the authority to plan and implement an effective EMS system. It can also create appropriate rules and regulations for each recognized component of the EMS system.
- *System finance.* Emergency medical services systems must be financially stable to provide services for the community and continue to improve those services. EMS systems must develop new and creative relationships with health care insurance companies and other health care providers to become more financially efficient and sustainable.
- *Human resources.* The ability to provide high-quality EMS care depends heavily on the availability of qualified, competent, and compassionate personnel. To attract and retain these personnel, EMS must strive to develop a strong career ladder like other health care professions.
- *Medical direction.* Each state must ensure that physicians are involved in all aspects of the EMS system. The role of the state EMS **medical director** must be clearly defined. It should have legislative authority and responsibility for EMS system standards, protocols, and evaluation of patient care. **Medical oversight** for all EMS providers must be used to evaluate medical care as it relates to patient outcomes, training programs, and medical direction.
- *Education systems.* Quality training and education of the EMS workforce is the foundation of excellent patient care. The future of EMS education must maximize the use of technology. Technology will allow those in rural areas more convenient access to quality EMS education resources.
- *Public education.* EMS can play an important role in the education of the community on topics, such as system function, access, bystander care, and prevention.

An effective EMS system depends on both trained and untrained resources.

1.1.1 An individual becomes injured in a vehicle collision.

1.1.2 A witness to the incident calls 911.

1.1.3 The Emergency Medical Dispatcher sends the appropriate resources.

1.1.4 Emergency Medical Responders arrive to assist the patient.

1.1.5 EMTs and Paramedics continue care and transport the patient to the hospital.

1.1.6 Once at the hospital, care is transferred to the emergency department personnel.

OBJECTIVES

4. Explain the role that the National EMS Education Standards and the National Scope of Practice Model play in shaping EMS around the country.
5. Differentiate the four nationally recognized levels of EMS provider.
6. Differentiate the roles and responsibilities of the Emergency Medical Responder from other EMS providers.
7. Differentiate the various EMS models in practice around the United States.
8. Explain the roles that state and local EMS offices, medical oversight, and local credentialing play in an EMS system.

- ***Prevention.*** In addition to education about injury prevention, EMS systems can collect data to identify trends related to illness and injury rates in a community. Education programs and other systems can then be developed to target those prevention needs.
- ***Public access.*** The 911 number has been in service since 1968 and today serves approximately 96 percent of the population of the United States.[3] Barriers to accessing prompt EMS care still exist in many areas in the United States. EMS systems must continue to expand the reach of the 911 system in the communities they serve.
- ***Communication systems.*** As you are well aware, effective and efficient communication is an essential component of any high-performing system or process. As more and more agencies and institutions become integrated in an overall health care delivery model, the need for efficient communications becomes more important. All components of the health care system must be able to communicate and share information to ensure the best patient care possible.
- ***Clinical care.*** The care provided by EMS professionals has evolved significantly over the past 40 years and must continue to do so. The care the EMS professionals provide must continue to be driven by evidence and maximize the use of technology and advances in science.
- ***Information systems.*** The federal government has mandated that EMS systems collect data on many aspects of their performance within the communities they serve. The ability to collect, link, and analyze this data will allow EMS systems to respond more appropriately to the needs of the community.
- ***Evaluation.*** Each state EMS system is responsible for evaluating the effectiveness of its services. A uniform, statewide data-collection system must exist to capture the minimum data necessary to measure compliance with standards. It also must ensure that all EMS providers consistently and routinely provide data to the lead agency. The lead agency performs routine analysis of that data. Your participation in the evaluation process will help drive the improvement of the EMS system and the care that patients receive.

The events that occurred on September 11, 2001, as well as the many subsequent terrorist attacks and natural disasters that have occurred in recent years, have increased public awareness of our EMS systems. These events have also brought to the public's attention rescue personnel who are called *first responders*. The public did not always understand the difference between a rescuer who appears first on scene and an EMS first responder, a trained medical care provider. The National Highway Traffic Safety Administration (NHTSA) is the lead-coordinating agency for EMS on a national level and defines all levels of EMS providers. These definitions are included in two documents called the **Scope of Practice Model** and the **National EMS Education Standards**. In support of the definitions established in these two documents, this text addresses the level of training known as **Emergency Medical Responder (EMR)**.

Scope of Practice Model ▸ a national model that defines the scope of care for the four nationally recognized levels of EMS provider.

National EMS Education Standards ▸ the education and training standards developed by the National Highway Traffic Safety Administration (NHTSA) for the four nationally recognized levels of EMS training.

Emergency Medical Responder (EMR) ▸ a member of the EMS system who has been trained to render first-aid care for a patient and to assist higher-level providers at the emergency scene.

Refer to Table 1.2 to see the levels of training and compare their roles and responsibilities. All are based on NHTSA's National Scope of Practice Model but may vary slightly from state to state and region to region. Your instructor will explain variations in your area. The framework for this text and all EMS education and training is guided by the National EMS Education Standards. These standards are the culmination of many years of work and will serve as the basis for EMS education at all levels for many years to come.

EMS Models

Emergency medical services are delivered in a variety of "models" throughout the United States. One model is called the *fire-based EMS model*. In a fire-based system, much of the EMS service and infrastructure are operated by a local fire department or group of organized fire departments within a city or region. A second model is referred to as the "third-service" or "public utility" model, which is typically operated by non-fire-based government entities within cities or counties. In this model, the EMS agency reports directly to governmental authorities. A third common system around the country is the hospital-based EMS system. Typically, it is operated by a large hospital or group of hospitals serving a particular region. A fourth model is the private EMS model and consists of the delivery of EMS services by a

TABLE 1.2 | Levels of EMS Education

Emergency Medical Responder (EMR). This level of EMS education and training is designed specifically for the individual who is often first to arrive at the scene. Many police officers, firefighters, industrial workers, and other public service providers are trained as Emergency Medical Responders. This training emphasizes scene safety and how to provide immediate care for life-threatening injuries and illnesses as well as how to assist ambulance personnel when they arrive.

Emergency Medical Technician (EMT). In most areas of the United States, an EMT is considered the minimum level of education and certification for ambulance personnel. The training emphasizes assessment, care, and transportation of the ill or injured patient. The EMT may also assist with the administration of certain common medications. (This was previously called the *EMT-Basic* level of training.)

Advanced Emergency Medical Technician (AEMT). An Advanced EMT is a basic-level EMT who has received additional education and training in specific areas, allowing a minimal level of advanced life support. Some of the additional skills an Advanced EMT may be able to perform are starting IV (intravenous) lines, inserting certain advanced airways, and administering certain medications. (This was previously called the *EMT-Intermediate* level of training.)

Paramedic. Paramedics are trained to perform what is commonly referred to as advanced life support care, such as inserting advanced airways and starting IV lines. They also administer a large list of medications, interpret electrocardiograms, monitor cardiac rhythms, and perform cardiac defibrillation. (This was previously called the *EMT-Paramedic* level of training.)

privately owned company. The private entity often contracts with a municipality to provide services for a specific area.

Many of these models overlap and can operate together within a given EMS system. Regardless of the model, all EMS systems are designed to deliver the best care possible in the most efficient manner possible.

Scope of Practice

The term **scope of practice** identifies the duties and skills an EMS provider is legally allowed to perform. Quite often, the scope of practice is defined by state and/or regional statutes and regulations. Those statutes and regulations will also define any related licensing, credentialing, and certification that may be required. While a scope of practice typically is defined at the state level, local counties and/or EMS agencies may further define the scope of practice based on local needs. Most EMS providers are licensed or certified by a state or local EMS agency to practice in the EMS system.

Activating the EMS System

Once someone at the scene recognizes an emergency, it is necessary to activate the EMS system. Most citizens activate it by way of a 911 phone call to an emergency dispatcher, who then sends available responders—Emergency Medical Responders (EMRs), **Emergency Medical Technicians (EMTs)**, **Advanced Emergency Medical Technicians (AEMTs)**, and **Paramedics**—to the scene. Some areas of the country may not have a 911 system. In those areas, the caller may need to dial a seven-digit number for ambulance, fire, police, or rescue personnel.

Most 911 calls are automatically directed to a designated **public safety answering point (PSAP)**. Most primary PSAPs are operated by city or county agencies with specially trained dispatchers. Many 911 dispatch centers are staffed with **Emergency Medical Dispatchers (EMDs)**, who receive special training. In addition to taking the call and dispatching appropriate resources, EMDs provide prearrival instructions to callers, thereby helping to initiate lifesaving care before EMS personnel arrive.

Once the EMS system is activated, resources such as personnel and vehicles are dispatched. EMS personnel will provide care at the scene and during transport. They also deliver the patient to the most appropriate medical facility.

IS IT SAFE?

Many people are injured and even killed each year when they rush into an unsafe scene to help an injured victim. Take the time to stop and observe the scene before rushing in. Do your best to identify any obvious hazards that could endanger you or others arriving at the scene.

OBJECTIVES

9. Explain the various methods used to access the EMS system.
10. Explain how state and local statutes and regulations affect how an Emergency Medical Responder might function.

scope of practice ▸ the care that an Emergency Medical Responder, an Emergency Medical Technician, or Paramedic is allowed and supposed to provide according to local, state, or regional regulations or statutes. Also called *scope of care*.

Emergency Medical Technician (EMT) ▸ a member of the EMS system whose training emphasizes assessment, care, and transportation of the ill or injured patient. Depending on the level of training, emergency care may include starting IV (intravenous) lines, inserting certain advanced airways, and administering some medications.

Advanced Emergency Medical Technician (AEMT) ▸ a member of the EMS system whose training includes basic-level EMT training plus responsibility for a minimal level of advanced life support. Additional skills include starting IV (intravenous) lines, inserting certain advanced airways, and administering certain medications.

Paramedic ▸ a member of the EMS system whose training includes advanced life support care, such as inserting advanced airways and starting IV lines. Paramedics also administer medications, interpret electrocardiograms, monitor cardiac rhythms, and perform cardiac defibrillation.

public safety answering point (PSAP) ▸ a designated 911 emergency dispatch center.

Emergency Medical Dispatcher (EMD) ▸ a member of the EMS system who provides prearrival instructions to callers, thereby helping to initiate lifesaving care before EMS personnel arrive.

specialty hospital ▸ a hospital that is capable of providing specialized services, such as trauma care, pediatric care, cardiac care, stroke care, or burn care.

OBJECTIVE

11. Explain the various types of medical direction and how the Emergency Medical Responder might interact with each.

The most desirable 911 activation service is referred to as an *enhanced* 911 (E911) system. An enhanced 911 system enables the call to be selectively routed to the most appropriate dispatch center (PSAP) for the caller's location. In addition, the E911 system enables the communications center to automatically receive caller information, such as phone number and address, making it easier to confirm location and reconnect should the call be dropped.

As of June 2017, it is estimated that nearly 51 percent of all U.S. households currently rely on cellular service as their primary telephone service.[4] The widespread use of cellular phones has had a huge impact on how people access the 911 system. Recent developments in technology and wireless communications have required that 911 systems be enhanced to accommodate cellular access. The Federal Communications Commission (FCC) has developed a two-phase plan for how E911 systems must accommodate cellular phone users: Phase I requires that wireless carriers deliver the phone number of the cellular caller and the location of the cell site/sector receiving the 911 call to the appropriate PSAP. In addition to the requirements for phase I, phase II requires that wireless providers deliver the latitude and longitude of the caller.

In-Hospital Care System

Most patients who are seen by EMS are taken to a hospital emergency department. Hospital personnel stabilize all immediate life threats and provide the appropriate care before the patient is discharged. If necessary, the patient may be transferred to the most appropriate in-hospital resources, such as the medical/surgical or intensive care units, or the patient is transferred to a more specialized hospital for more advanced care.

Some hospitals handle all routine and emergency cases and have a medical specialty that sets them apart from other hospitals. One type of **specialty hospital** is a trauma center. A trauma center is where specific trauma services and surgery teams are available 24 hours a day. Some hospitals specialize in the care of certain conditions, such as burns (Burn Center), cardiac problems (Cardiac [STEMI] Receiving Hospital), or strokes (Stroke Receiving Hospital). Other hospitals may specialize in a particular type of patient, such as pediatric and neonatal patients.

FIRST ON SCENE

By the time you return to the scene, you can tell that the young boy has stopped shaking. Within seconds, two women arrive and introduce themselves as Christine and Jessica, members of the company's Medical Emergency Response Team. They have equipment with them and seem to know what they are doing. Christine kneels beside the patient and appears to be listening for something. Jessica takes the woman aside and asks questions about the boy.

protocols ▸ written guidelines that direct the care EMS personnel provide for patients.

standing orders ▸ a component of a protocol that allows the EMS personnel to provide specific interventions to a patient.

off-line medical direction ▸ an EMS system's written standing orders and protocols, which authorize personnel to perform particular skills in certain situations without actually speaking to the medical director or their designated agent. Also called *indirect medical direction*.

Medical Direction

Each EMS system has a medical director. He or she is a licensed physician who assumes the ultimate responsibility for direction and oversight of all patient care delivered by personnel in an EMS system. The medical director also oversees training and assists in the development of treatment **protocols**. Protocols are clearly defined, written guidance that describe how to manage the most common types of conditions, such as chest pain, cardiac arrest, difficulty breathing, and severe allergic reactions. Some protocols contain **standing orders**. Standing orders give the EMS provider permission to administer specific interventions, such as oxygen and medications. Protocols and standing orders are a type of medical direction known as **off-line medical direction** (or *indirect medical direction*).

While quite rare for the EMR, procedures not covered by protocols or standing orders require EMS personnel to contact medical direction by radio or telephone prior to performing a particular skill or intervention. Orders from medical direction given in this manner—by radio or phone—are called **on-line medical direction** (or *direct medical direction*). The primary role of medical direction is to ensure that the quality of care is standardized and consistent throughout the local EMS system.

As an Emergency Medical Responder at the scene of an emergency, you may have limited access to the medical director. It will be necessary for you to adhere to the training you receive or to follow the orders of on-scene EMS providers who have a higher level of training or certification.

Like all EMS personnel, you must only provide the care that is within your scope of practice. The scope of practice is defined as the care an Emergency Medical Responder is allowed and expected to provide according to local, state, or regional regulations or statutes. The scope of practice is outlined in protocols and guidelines approved by your medical director.

The scope of practice may vary from state to state and region to region. Your instructor will inform you of any local protocols and policies that may define your scope of practice. Always follow your local protocols.

on-line medical direction ▶ orders to perform a skill or administer care from the on-duty physician given to the rescuer in person by radio or by phone. Also called *direct medical direction*.

The Emergency Medical Responder

The lack of people with enough training to provide care before more highly skilled EMS providers arrive at a scene is the weakest link in the chain of any EMS system. Training Emergency Medical Responders will help overcome this challenge.

Emergency Medical Responders are trained to reach patients, find out what is wrong, and provide emergency care while at the scene. They are also trained to move patients when necessary and without causing further injury (Scan 1.2, p. 10). They are usually the first medically trained personnel to reach the patient. In all cases, an Emergency Medical Responder has successfully completed an Emergency Medical Responder course. Many police officers and firefighters are trained to this level. Many companies have trained employees as Emergency Medical Responders as well. The more individuals who become trained as Emergency Medical Responders, the stronger the EMS system becomes.

FIRST ON SCENE

Within minutes, the sirens of responding emergency vehicles can be heard. By now there are five members of the Medical Emergency Response Team caring for the young boy. The team of responders places the boy on his side, clears out his mouth with a suction device, and gives him oxygen. That must be what he needed because after they clear his mouth, he begins to cough and wakes up.

Roles and Responsibilities

Personal Safety Your primary concern as an Emergency Medical Responder at an emergency scene is your own *personal safety*. The desire to help those in need of care may tempt you to ignore the hazards at the scene. You must make certain that you can safely reach the patient and that you will remain safe while providing care.

Part of an Emergency Medical Responder's concern for personal safety must include the proper protection from infectious diseases. All Emergency Medical Responders who assess or provide care for patients *must* take steps to avoid direct contact with blood and other bodily fluids. Personal protective equipment (PPE) that minimizes contact with infectious material includes the following:

- Disposable gloves
- Barrier devices, such as face masks with one-way valves
- Protective eyewear, such as goggles or face shields
- Specialized face masks (HEPA, N95, N100) with filters that minimize contact with airborne microorganisms
- Gowns or aprons that minimize contact of splashed blood and other bodily fluids

Typically, you will need only protective gloves and eye protection for most patient care situations. However, all the items listed above should be on hand so you can protect yourself and provide care safely when needed. We will talk more about infectious diseases and personal protection in Chapter 3.

1.2.1 Emergency Medical Responders working as part of a search-and-rescue team.

1.2.2 Emergency Medical Responders serving as lifeguards at a recreational area.

1.2.3 Many law enforcement personnel receive Emergency Medical Responder training.

1.2.4 Emergency Medical Responders also serve on industrial Medical Emergency Response Teams.

1.2.5 Emergency Medical Responders are often used to support large events, such as NASCAR.

1.2.6 Emergency Medical Responders also serve on specialized response teams, such as hazmat and rescue teams.

Keep in mind that Emergency Medical Responders who are in law enforcement, the fire service, or industry, may be required to carry out their specific job tasks before they provide patient care (such as controlling traffic, stabilizing vehicles, or shutting down machinery). If this applies to you, always follow department or company standard operating procedures.

Patient-Related Duties Prior to receiving care, the ill or injured individual may be referred to as a *victim*. Once you start to carry out your duties as an Emergency Medical Responder, the victim becomes your *patient*. Your presence at the scene means that the EMS system has begun its first phase of care (Scan 1.3, p. 12). True, the patient may need the skills of a physician at the hospital to survive, but the patient's chances of reaching the hospital alive are greatly improved because of your training as an Emergency Medical Responder. As an Emergency Medical Responder, you have six main patient-related duties to carry out at the emergency scene:

- ***Size up the scene.*** Scene safety is your first concern, even before patient care. Before rendering care, evaluate how to protect yourself, those helping you, bystanders, and the patient. You must also try to determine what caused the patient's illness or injury, the number of patients, and what kind of assistance you will need. You must remain alert for changing conditions at the scene to protect yourself and the patients and to minimize additional injuries.
- ***Determine the patient's chief complaint.*** Gather information from the patient, from the scene, and from bystanders. Using the supplies you have, provide emergency care to the level of your training. Remember, emergency care deals with both illness and injury. It can be as simple as providing emotional support to someone who is frightened because of a crash or mishap. Or it can be more complex, requiring you to deal with life-threatening emergencies, such as providing basic life-support measures for an individual experiencing a heart attack. In later chapters, you will learn how to provide a combination of emotional support and physical care skills to help the patient until more highly trained personnel arrive.
- ***Lift, move, or reposition the patient when it is necessary.*** You need to judge when safety or care requires you to move or reposition patients. When you must move a patient, use techniques that minimize the chance of injuring yourself or the patient.
- ***Transfer the patient and patient information.*** Provide for an orderly transfer of the patient and all patient-related information to more highly trained personnel. You may also be asked to assist such personnel and work under their direction.
- ***Protect the patient's privacy and maintain confidentiality.*** You have a responsibility both morally and legally to protect the privacy of your patient. You may not share any information relating to the patient or the situation unless it is with other EMS professionals who are taking over care of the patient.
- ***Be the patient's advocate.*** You must be willing to be an advocate for the patient and do what is best for him or her as long as it is safe to do so.

Traits

To be an Emergency Medical Responder, you must be willing to take on certain duties and responsibilities. It takes hard work and study to be an Emergency Medical Responder. Since you must keep your emergency care skills sharp and current (Figure 1.2, p. 12), you may also be required to obtain continuing education and to recertify or relicense periodically. It is becoming quite common today for a state or local EMS authority to require criminal background checks for anyone seeking certification or licensing to practice. Those processes are designed to protect the patient and ensure the quality of patient care delivered within an EMS system.

You must also be willing to deal with difficult situations and people. Individuals who are ill or injured are not at their best. You must be able to overlook rude behavior and unreasonable demands, realizing that patients may act this way because of fear, uncertainty, or pain. Dealing with patient reactions is often the hardest part of the job. You have a responsibility to remain professional and compassionate even when it is difficult to do so.

KEY POINT

Besides proper handwashing and the use of personal protective equipment to prevent being exposed to infectious agents, an additional and often overlooked precaution is to be vaccinated against some of the more common agents you may encounter. Blood has the potential of exposing you to hepatitis B and C, while an individual with a fever may expose you to pneumonia, meningitis, and influenza (the flu). There are vaccines for meningitis, pneumonia, and influenza. The influenza vaccine is released yearly based on assumptions of what type of flu will be most prevalent. Being vaccinated against those agents provides you with one more layer of protection. In addition, being vaccinated may help you stay healthy during flu season when exposure may occur outside of your Emergency Medical Responder duties. Many EMS systems are requiring field personnel to become vaccinated with the seasonal flu vaccine.

1.3.1 One of the duties of an Emergency Medical Responder is to safely gain access to the patient.

1.3.2 The Emergency Medical Responders must act quickly to find out what is wrong with the patient.

1.3.3 Emergency Medical Responders must learn to safely lift and move patients when necessary.

1.3.4 The Emergency Medical Responder will often assist EMTs and other transport personnel at the scene of an emergency.

All patients have the same right to the very best of care. Your respect for others and acceptance of their rights are essential parts of the total patient care that you provide as an Emergency Medical Responder. You must not modify the care you provide or discriminate based on your view of another individual's religious beliefs, cultural expression, age, gender, sexual orientation, social behavior, socioeconomic background, or geographic origin. Every patient is unique and deserves to have his or her needs met by a consistent standard of care.

Figure 1.2 Frequent training promotes a high standard of care for your patients.

To be an Emergency Medical Responder, you must be honest and realistic. When helping patients, you cannot tell them they are okay if they are truly sick or hurt. You cannot tell them that everything is all right when they know that something is wrong. Telling someone not to worry is not realistic. When an emergency occurs, there is truly something to worry about. Your conversations with patients can help them relax, if you are honest. By telling patients that you are trained in emergency care and that you will help them, you ease their fears and gain their confidence. Letting patients know that additional aid is on the way also will help them relax.

As an Emergency Medical Responder, you may have limits on what you can say to a patient or a patient's loved ones. Telling a patient that a loved one is dead may not be appropriate if you are still providing care for the patient. In such circumstances, it is necessary for you to be tactful. You also don't want to provide false

hope by telling a family member that a loved one is fine when they are really not. Remember, people under the stress of illness or injury often do not tolerate additional stress well.

Being an Emergency Medical Responder requires that you control your feelings at the emergency scene. You must learn how to care for patients while controlling your emotional reactions to their illnesses or injuries. Patients do not need sympathy and tears. They need your professional care, compassion, and empathy.

As an Emergency Medical Responder, you are required to be a highly disciplined professional at the emergency scene. You must not make inappropriate comments about patients or the horror of the incident. You must maintain your focus on the patient and avoid unnecessary distractions.

Providing appropriate care requires you to admit that the stress of responding to emergency scenes will affect you. You may have to speak with a respected peer, counselor, other EMS professionals, or a specialist within the EMS system to resolve the stress and emotional challenges caused by responding to emergencies.

No one can demand that you change your lifestyle to be an Emergency Medical Responder. However, first impressions are very important and your appearance alone can earn a patient's confidence. So, keep your uniform neat and clean at all times. Also, how you approach the patient and the respect you show are very important. Refer to the patient in a manner that is appropriate for his or her age. All adults should be referred to as Mr., Mrs., or Ms. In contrast, children respond well to their first names. The significance of how you refer to a patient can greatly affect the willingness of the patient to share information and feel comfortable in your care.

OBJECTIVE

12. Describe the characteristics of professionalism as they relate to the Emergency Medical Responder.

Skills

In addition to learning the knowledge that is the foundation of emergency care, you will be required to perform certain skills as part of your Emergency Medical Responder training. Those skills vary from course to course. The list below is an example of the skills learned by the typical Emergency Medical Responder. Read it and check off each skill as you learn it in your course.

As an Emergency Medical Responder, you should be able to:

- Assess for and manage potential hazards at the scene
- Gain access to patients in vehicles, buildings, and outdoor settings
- Evaluate the possible cause of an illness or injury
- Properly use all items of personal safety
- Evaluate and manage a patient's airway and breathing status
- Conduct an appropriate patient assessment
- Obtain and record accurate vital signs
- Properly document assessment findings
- Relate signs and symptoms to illnesses and injuries
- Perform cardiopulmonary resuscitation (CPR) for adults, children, and infants
- Operate an automated external defibrillator (AED)
- Control all types of bleeding
- Assess and manage the patient who is showing signs of shock
- Perform basic dressing and bandaging techniques
- Assess and care for injuries to bones and joints
- Assess and care for possible head and face injuries
- Assess and care for possible injuries to the neck and spine
- Assess and care for possible heart attacks, strokes, seizures, and diabetic emergencies
- Identify and care for poisonings
- Assess and care for burns
- Assess and care for heat- and cold-related emergencies
- Assist a woman in delivering her baby
- Provide initial care for the newborn
- Identify and care for patients who are experiencing drug- or alcohol-related emergencies
- Perform standard and emergent patient moves when required
- Perform triage at a multiple-patient emergency scene

- Work under the direction of an Incident Commander in an incident command system (ICS) or incident management system (IMS) operation
- Work under the direction of more highly trained personnel to help them provide patient care, doing what you have been trained to do at your level of care as an Emergency Medical Responder

In some systems, Emergency Medical Responders may be required to perform some or all of the following:

- Administer oxygen
- Apply specialized splints
- Apply cervical collars
- Assist with the application of specialized extrication devices
- Assist in securing a patient to a long spine board (backboard) or other device used to immobilize a patient's spine

Equipment, Tools, and Supplies

Most Emergency Medical Responders carry very few pieces of equipment, tools, and supplies. Some may carry specialized kits for trauma emergencies, medical emergencies, and childbirth. If you are assigned to a special event, such as a concert, sporting event, or carnival, you may want to include items that will meet the needs of that event in addition to the standard dressings and bandages. For instance, if you were providing medical support for a football game, it would be appropriate to have cervical collars and a backboard handy, given the likelihood of a significant mechanism of injury.

Continuous Quality Improvement

OBJECTIVES

13. Explain the role of the Emergency Medical Responder with regard to continuous quality improvement (CQI).
14. Explain the role of public health systems and their relationship to EMS, disease surveillance, and injury prevention.

continuous quality improvement (CQI) ▸ a continuous improvement in the quality of the product or service being delivered.

One of the goals of the evaluation component of an EMS system is a concept known as **continuous quality improvement (CQI)**. CQI is exactly what the name implies—a continuous improvement in the quality of the product or service being delivered. In the case of EMS, that product is patient care. As a trained Emergency Medical Responder working within an EMS system, you will be accountable for and expected to participate in the CQI process.

If designed properly, a CQI program is based on the philosophy that every component within a system can be improved. It is a process that expects and allows everyone in the system to participate and contribute to its improvement. It should focus more on the systems and processes and less on the people within the system.

As an Emergency Medical Responder, you will be an important component of the CQI system and will be expected to submit accurate and complete patient care reports that will be audited by trained individuals. Those audits are meant to reveal many characteristics of the care being provided including, but not limited to, types of illnesses and injuries, ages of patients, geographic location of calls, and many other factors.

You may be asked to participate in training or serve on a quality committee as part of the CQI process. Whatever your role or level of participation, everyone in the system plays an important part in the CQI process.

The Role of the Public Health System

public health system ▸ local resources dedicated to promoting optimal health and quality of life for the people and communities they serve.

OBJECTIVE

15. Explain the role that Disaster Medical Assistance Teams (DMAT) play and how they integrate with EMS systems.

Each county, region, and state has people and resources that serve as part of the **public health system**. Those resources are dedicated to promoting optimal health and quality of life for the communities they serve. Public health systems help ensure the quality of life by monitoring the health of the population, providing health care, and educating the community about disease and injury prevention. They also serve to advance population-based health programs and policies.

Disaster Assistance

Disaster Medical Assistance Team (DMAT) ▸ specialized teams designed to provide medical care following a disaster.

Each state has identified specific individuals already working in its EMS systems to participate in specialized teams designed to provide medical care following a disaster. This type of team is called a **Disaster Medical Assistance Team (DMAT)**. The individuals who make

up DMATs are highly experienced, trained EMS personnel. They can be deployed on a moment's notice should a disaster strike anywhere in the United States. For example, DMATs from across the nation descended on Northern California during the wildfires that devastated several counties in 2017. DMATs arrive in an area during and after a disaster and are quickly integrated into the local EMS resources.

OBJECTIVE

16. Explain the role that research plays in EMS and the ways that an Emergency Medical Responder might seek out and support research.

research ▸ the systematic investigation to establish facts.

The Role of Research in EMS

Research is the systematic investigation to establish facts (Figure 1.3). Each year, more and more new research is being conducted and old research is being challenged. Several organizations around the globe have spent years gathering and verifying research that is defining how EMS providers practice emergency care. Approximately every five years, the American Heart Association and the International Liaison Committee on Resuscitation (ILCOR) release new guidelines that define how EMS providers should perform resuscitation and emergency care.[5] The military is constantly conducting research that is influencing how EMS providers care for those who are ill or injured in the civilian world.

This book includes many of the changes in emergency care that are being recommended as a result of this new research. Be sure to play an active role in searching for, reading, and evaluating research that affects your job as an Emergency Medical Responder.

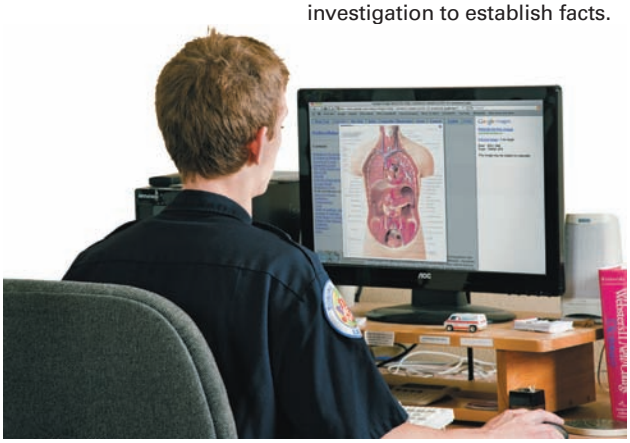

Figure 1.3 Staying current with the latest research is an important aspect of being a good Emergency Medical Responder.

Advances in Technology

In recent years, several advances in technology have made the job of the EMS team more effective and efficient. One of the most important of those advances is the introduction of the global positioning system (GPS) to the civilian marketplace (Figure 1.4). GPS is a standard tool in all types of public safety vehicles, such as police cars, fire engines, and ambulances. The use of GPS technology allows emergency personnel to more easily navigate to the location of the emergency, thus reducing response time. It also gives dispatch personnel the ability to track the location of emergency vehicles and to use resources more efficiently.

Figure 1.4 A typical device with GPS capability installed in an emergency vehicle.

FIRST ON SCENE

Wrap-up

It looks like the cavalry is arriving; there are so many vehicles with lights and sirens. First, there are two fire trucks. Then, an ambulance shows up and behind that is another SUV-type vehicle, painted just like the ambulance. Before you know it, nearly a dozen people are hovering over the young boy.

You stick around to observe the excitement and even forget for a minute why you are actually there. You hear Christine give a report to the ambulance team about the boy and that she thinks he might have had a seizure.

Wow, what an exciting day! You can't stop thinking about the poor boy and how he must have felt when he awoke to see so many people hovering over him. The woman with the boy turns out to be his mother and she takes the time to thank you for making sure the call to 911 was made quickly.

1 REVIEW

Summary

The emergency medical services (EMS) system is a chain of resources established to provide care to the patient at the scene of an emergency and during transport to the hospital emergency department. Review these key concepts related to working within an EMS system:

- There are four levels of nationally recognized EMS education and training: Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced Emergency Medical Technician (AEMT), and Paramedic.
- EMS personnel are dispatched to the scene of an emergency when a dispatcher receives an emergency call. Dispatchers may be specially trained as Emergency Medical Dispatchers (EMDs) who offer prearrival care instructions to bystanders at the scene.
- Every EMS system is required to designate a medical director—a physician who assumes the ultimate responsibility for medical oversight of the patient care aspects of the EMS system.
- The Emergency Medical Responder's primary responsibility is personal safety. No one should enter or approach an emergency scene until it is safe to do so.
- An Emergency Medical Responder's main duties are scene safety, gaining access to the patient, assessing the patient and providing emergency care, moving patients (when necessary), and transferring care to more highly trained personnel.
- You must be mindful of your patient's privacy and any cultural differences that may affect the care you provide.
- Patient confidentiality is an important concept and you may not discuss details of the call or the patient with those not directly involved in the care of the patient.
- Being a patient advocate means putting the patient's needs before your own.
- Emergency Medical Responders have a duty to maintain skills, keep up to date with the latest trends and research, and maintain a professional demeanor at all times.
- As an Emergency Medical Responder, you play an important part in the quality of the system you will be working in and may participate in specific duties related to the CQI process.
- More than ever before, research is defining the way that EMS personnel deliver care to patients. As an Emergency Medical Responder, you have a duty to stay informed about the latest research findings.

Take Action

KNOW YOUR SYSTEM

No two EMS systems are exactly the same. To provide the best care possible, you must know what resources are available within your system. Find someone who is currently working with EMS and ask him or her the following questions:

- Where are 911 calls answered?
- Does the system use an *enhanced* 911 system?
- Which of the four levels of EMS providers are recognized by your local EMS system?
- What are the levels of providers that are utilized in your EMS system?
- What types of EMS models exist in your area or region: fire-based, third-service, or hospital-based?
- Are there any specialty hospitals in your system?
- Are there helicopter resources operating in your local system?

If possible, try to arrange a tour of a 911 dispatch center. A good place to begin is by asking your instructor. Most dispatch centers allow people to sit in and observe during certain times. This experience will give you a good appreciation for how the dispatch side of things works.

First on Scene Run Review

Recall the events of the "First on Scene" scenario in this chapter and answer the following questions which are related to the call. Rationales are offered in the Answer Key at the back of the book.

1. Prior to calling 911, what important information should you have obtained from the woman who was with the boy? And why?
2. What equipment should the company's Medical Emergency Response Team have with them when responding to a call?
3. When caring for this patient, how would each of the six patient-related duties apply?
4. How would protocols and standing orders apply to this call?

Quick Quiz

To check your understanding of the chapter, answer the following questions. Then compare your answers to those in the Answer Key at the back of the book.

1. Which one of the following is NOT an attribute of an integrated EMS system?
   - **a.** EMS Research
   - **b.** Medical Direction
   - **c.** Health insurance companies
   - **d.** Education systems

2. The licensed physician who assumes the ultimate responsibility for the oversight of all patient care is called the:
   - **a.** medical director.
   - **b.** fire chief.
   - **c.** ambulance supervisor.
   - **d.** nursing supervisor.

3. Which one of the following BEST describes the role of the Emergency Medical Responder in an EMS system?
   - **a.** Decontaminates hazardous materials
   - **b.** Cares for immediate life threats and assists EMTs
   - **c.** Serves as an Incident Commander and directs other personnel
   - **d.** Assists Paramedics with advanced skills

4. Emergency Medical Dispatchers receive training that allows them to:
   - **a.** control the scene via the radio.
   - **b.** triage patients via the radio.
   - **c.** declare a mass-casualty incident.
   - **d.** provide prearrival care instructions.

5. Which one of the following receives the highest level of training in an EMS system?
   - **a.** Emergency Medical Responder
   - **b.** Emergency Medical Technician
   - **c.** Advanced Emergency Medical Technician
   - **d.** Paramedic

6. Clearly defined, written guidance that describe how to manage the most common types of conditions are called:
   - **a.** dispatches.
   - **b.** protocols.
   - **c.** on-line direction.
   - **d.** prescriptions.

7. Specialized teams of experienced EMS personnel who respond on short notice during disasters are called:
   - **a.** Rapid Response Work Groups.
   - **b.** Disaster Medical Assistance Teams.
   - **c.** Disaster Care Response Teams.
   - **d.** Rapid Response Task Force.

8. Protocols and standing orders are forms of:
   - **a.** off-line medical direction.
   - **b.** on-line medical direction.
   - **c.** prearrival instructions.
   - **d.** stand-by guidelines.

9. The care that an Emergency Medical Responder is allowed and supposed to provide according to local, state, or regional regulations or statutes is known as:
   - **a.** scope of practice.
   - **b.** standard of care.
   - **c.** national standard curricula.
   - **d.** Emergency Medical Responder care.

10. Protocols and patient care decisions should be based on:
    - **a.** current EMS research.
    - **b.** which options are cheapest.
    - **c.** the opinion of EMRs.
    - **d.** traditions and historical practice.

Endnotes

1. "9-1-1 Statistics," National Emergency Number Association website, n.d. Accessed December 10, 2017, at https://www.nena.org/?page=911Statistics
2. "Emergency Medical Services: Agenda for the Future," National Highway Traffic Safety Administration website, August 1996. Accessed July 2, 2014, at http://www.ems.gov/pdf/2010/EMSAgendaWeb_7-06-10.pdf
3. "9-1-1 Statistics," National Emergency Number Association Web site, n.d. Accessed December 10, 2017, at https://www.nena.org/?page=911Statistics
4. https://www.npr.org/sections/alltechconsidered/2015/12/03/458225197/the-daredevils-without-landlines-and-why-health-experts-are-tracking-them
5. American Heart Association, "2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations," *Circulation*, 2015;132:S1, originally published October 14, 2015. This citation refers to nearly the whole issue of the journal, which includes all 12 parts of the recommendations.

2

Legal and Ethical Principles of Emergency Care

Education Standards:
- Preparatory—Medical/Legal and Ethics

Competencies:
- Uses simple knowledge of the EMS system, safety and well-being of the Emergency Medical Responder, and medical/legal issues at the scene of an emergency.

Chapter Overview:

One of the most common reasons someone would be hesitant to stop and render aid at the scene of an emergency is the fear of being held liable for doing something wrong. The reality is that lawsuits are relatively rare in EMS and the likelihood of doing something wrong can be greatly reduced with good training.

As an Emergency Medical Responder, you must make many decisions when responding to an emergency and while caring for patients. For example, should you, as an off-duty Emergency Medical Responder, stop to aid victims of an automobile crash? Should you release information about your patient to an attorney over the telephone? May a child with a suspected broken arm be treated, even if a parent is not present? What should you do if a patient who needs emergency medical care refuses it? Understanding the legal and ethical issues related to some of your decisions and actions will help you make the best choices possible for the patient.

This chapter will provide you with an overview of the legal and ethical aspects of being an Emergency Medical Responder.

OBJECTIVES

Upon successful completion of this chapter, the student should be able to:

COGNITIVE

1. Define the following terms:
   - a. abandonment *(p. 27)*
   - b. advance directive *(p. 25)*
   - c. battery *(p. 24)*
   - d. capacity *(p. 21)*
   - e. competence *(p. 21)*
   - f. confidentiality *(p. 28)*
   - g. consent *(p. 21)*
   - h. criminal law *(p. 24)*
   - i. duty *(p. 19)*
   - j. duty to act *(p. 26)*
   - k. emancipated minor *(p. 23)*
   - l. ethics *(p. 20)*
   - m. expressed consent *(p. 22)*
   - n. Good Samaritan law *(p. 27)*
   - o. Health Insurance Portability and Accountability Act (HIPAA) *(p. 28)*
   - p. implied consent *(p. 23)*
   - q. informed consent *(p. 22)*
   - r. mandated reporter *(p. 29)*
   - s. negligence *(p. 25)*
   - t. standard of care *(p. 19)*
   - u. unresponsive *(p. 23)*
   - v. values *(p. 21)*
2. Differentiate the terms *scope of practice* and *standard of care*. *(p. 19)*
3. Explain the term *ethics* and how it relates to the Emergency Medical Responder. *(p. 20)*
4. Differentiate the various types of consent used by the Emergency Medical Responder. *(p. 21)*
5. Explain the role of the Emergency Medical Responder for patients who refuse care. *(p. 24)*
6. Differentiate civil (tort) versus criminal litigation. *(p. 24)*
7. Explain the common elements of an advance directive. *(p. 25)*
8. Explain the role of the Emergency Medical Responder when confronted with an advance directive. *(p. 25)*
9. Explain the concepts of *duty* and *breach of duty* as they relate to the Emergency Medical Responder. *(p. 25)*
10. Explain the term *Good Samaritan law* and how these laws relate to the Emergency Medical Responder. *(p. 27)*

11. Explain the role of the Emergency Medical Responder with regard to patient confidentiality. *(p. 28)*
12. Explain the term *mandated reporter* and how it relates to the Emergency Medical Responder. *(p. 29)*
13. Explain the role of the Emergency Medical Responder with respect to evidence preservation when working in or around an actual or potential crime scene. *(p. 30)*

PSYCHOMOTOR

There are no psychomotor objectives identified for this chapter.

AFFECTIVE

14. Consistently model ethical behavior in all aspects of Emergency Medical Responder training and job performance.
15. Demonstrate compassion and empathy toward all classmates, coworkers, and simulated patients.
16. Participate willingly as a team member in all class/training activities.
17. Value the importance of maintaining patient confidentiality.
18. Demonstrate a desire to always do what is right for the patient.

FIRST ON SCENE

They're moving fast on the open road when Anthony yells, "Hold on!" and she feels his body tense under the smooth leather jacket. The motorcycle leans far to the right and then quickly back to the left, causing the tires to squeal and wobble as the bike comes to a clumsy stop. Sara looks over Anthony's shoulder and feels her stomach grow cold. Two deep gouges scar the asphalt all the way to the far side of the road where a small sports car is overturned and partially wrapped around a tree. Behind her, amazingly close to the black skid marks left by the motorcycle, a man is lying in a heap on the road.

In a matter of seconds, the entire Emergency Medical Responder class that Sara took two months ago flashes through her head.

"Stop," she says, quickly pulling her wind-whipped hair back into a ponytail. "That guy in the road needs help right now!"

Legal Duties

OBJECTIVE

2. Differentiate the terms *scope of practice* and *standard of care*.

Most of us have heard stories about people being sued because of something they did or did not do when they stopped to help someone at the scene of an emergency. Successful suits of this type are not very common. Most states have established *Good Samaritan laws* that minimize exposure to liability and encourage passersby to provide emergency care to those in need.[1] Most of these laws require the individual who is providing care to be doing so without compensation and to remain within a specified *standard of care*.

Depending on the specific role you play as an Emergency Medical Responder, you may have a legal and/or ethical duty to assist those in need. **Duty** is a legal term that simply means that *one is morally or legally obligated to provide care*. An Emergency Medical Responder who works normal shifts or is on call as a volunteer and is expected to respond to dispatches has a legal duty to respond and provide care to those who are ill or injured. In addition to the duty to respond, you also have a duty, or obligation, to provide care as you have been trained and to the expected standard in your area, region, or state.

duty ▸ the legal obligation to provide care.

Standard of Care

The term **standard of care** is somewhat subjective and deals with questions such as, "Did you do the right thing, at the right time, and for the right reasons?" It is defined by several factors, such as your level of training, common practice, current research, and sometimes juries. Standard of care can and does vary from county to county, state to state, and region to region (Figure 2.1). Another way of describing standard of care is to ask, "What would a similarly trained individual do, given the same or similar circumstances?"

standard of care ▸ the care that should be provided for any level of training based on local laws, administrative orders, and guidelines and protocols established by the local EMS system.

A standard of care allows you to be judged based on what is expected of someone with your training and experience working under similar conditions. Your Emergency Medical Responder course follows guidelines developed by the U.S. Department of Transportation as well as other authorities that have studied what is needed to provide the most appropriate standard of care required at your level in your region. You will be trained so you can provide this standard of care. As we discussed in the previous chapter, each agency that provides care

Figure 2.1 Different emergency personnel may be assisting during an emergency, including police, firefighters, and EMTs. Each must practice the standard of care expected of his or her own level of training.

within an EMS system receives direction and guidance from a physician medical director. The standard of care that your agency provides is largely defined by your medical director.

While it is relatively uncommon for the EMR to interact directly with medical direction from the field, you will be expected to follow approved standing orders or protocols developed by your medical director for your EMS system.

It is always a good practice to keep written notes of what you do at the emergency scene. You may be called on to provide this information at a later date. If your EMS system requires you to complete forms, submit reports, or sign patient transfer forms, complete these forms thoroughly and in a timely manner. Your documentation must be able to show that you provided an appropriate standard of care.

Scope of Practice

Recall from Chapter 1 that the term *scope of practice* refers to what is legally permitted to be done by some or all individuals trained or licensed at a particular level, such as an Emergency Medical Responder, Emergency Medical Technician, or Paramedic. The scope of practice, however, does *not* define what must be done for a given patient or in a particular situation. That is more often defined by the standard of care.

The scope of practice for a layperson might be based on nothing more than common sense or an eight-hour first-aid class taken many years ago. However, the scope of practice for Emergency Medical Responders and other EMS personnel is based in part on the U.S. Department of Transportation's education standards for EMS and, in most cases, is more clearly defined by local and state statutes and regulations.

In short, scope of practice is what one is allowed to do by training and/or statute, and standard of care is what one is supposed to do for any given situation based on more local standards and expectations.

ethics ▸ the moral principles that define behavior as right, good, and proper.

OBJECTIVE

3. Explain the term *ethics* and how it relates to the Emergency Medical Responder.

Ethical Responsibilities

Ethics can be defined as the moral principles that guide our behavior. However, it is not just any behavior, but behavior that is right, good, and proper. As an Emergency Medical Responder, you have an ethical obligation to behave in a way that puts your patient's needs before your own, so long as it is safe to do so. You have a responsibility to see that your patient receives the most appropriate medical care possible, even when he or she does not think they need any care.