

Eleventh Edition

Prehospital

Emergency Care



Joseph J. Mistovich | Keith J. Karren

Medical Editor **Howard A. Werman, MD**



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The background of the cover is a photograph of an emergency scene. In the upper right, a red fire truck is visible with the text "SARASOTA COUNTY RESCUE 13 FIRE DEPARTMENT" and "ADVANCED LIFE SUPPORT" on its side. Several paramedics in high-visibility yellow vests are working around a vehicle. In the foreground, a paramedic in a yellow vest is leaning over a stretcher, attending to a patient. Another paramedic in a yellow vest is standing nearby. A sheriff in a yellow vest with "SHERIFF" written on the back is also visible. The scene is outdoors on a paved area, possibly a road or parking lot, with trees and a building in the background.

PREHOSPITAL EMERGENCY CARE

11th Edition

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Dedication

To my best friend and beautiful wife, Andrea, for her unconditional love and inspiration to pursue my dreams. To my daughters Katie, Kristyn, Chelsea, Morgan, and Kara, who are my never-ending sources of love, laughter, and adventure and remind me why life is so precious. I love you all! In memory of my father, Paul, who was a continuous source of encouragement and the epitome of perseverance. I have come to realize that he is my hero.

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JJM

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KJK



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Preface

Congratulations on your decision to undertake an EMT education program. The field of emergency medical services is extremely rewarding and will provide you with experiences you will find both challenging and gratifying.

Be Prepared

As an EMT student, you have a few pressing concerns. You want to be prepared:

- To pass your course exams
- To pass the credentialing exam that allows you to practice as an EMT
- To treat patients to the best of your ability
- To do well in all aspects of your job

As the authors, we want to assure you that *Prehospital Emergency Care*, 11th Edition, is written to help you achieve those goals.

It All Makes Sense

The key to the above goals—passing your exams, providing excellent patient care, and doing well in your job—is understanding how everything fits together:

- A basic understanding of anatomy, physiology, and pathophysiology will allow you to better understand signs, symptoms, and emergency care.
- An anatomical and body systems approach to the physical exam will link conditions to assessment findings.
- Knowledge of the presentations of common medical conditions and traumatic injuries encountered in the prehospital environment will enable you to perform efficient and accurate assessments.
- A diagnostic-based approach to patient assessment will allow you to form a differential field impression of the condition or injury.
- An assessment-based approach to patient assessment will allow you to identify and provide immediate emergency care for life-threatening conditions or injuries.
- You will learn how to provide the most efficient and effective emergency care.

The good news is that—although what you have to learn may seem daunting in the beginning—it all makes sense. In fact, that is the philosophy behind this textbook. Our purpose has been to show you at every step of your EMT education program how:

It all makes sense!

Features

All of the features in this textbook are designed to help you navigate the anatomy, physiology, pathophysiology, assessment findings, medical conditions, traumatic injuries, and emergency care to best prepare you to provide excellent emergency medical services to the patient—beginning with the dispatch of the call, followed by assessment and management of the patient and delivery to the medical facility, through writing your prehospital care report. In addition to the many new photographs and illustrations, in the “clinical” chapters (on airway care, the medical chapters, and the trauma chapters) you will find:

- Assessment Tips
- Pathophysiology Pearls
- Drug Profiles
- Assessment Summaries
- Emergency Care Protocols
- Emergency Care Algorithms
- Pathophysiology notes within the Case Study Follow-Ups to explain the “why” of what you observe about the patient

And a special feature that appears throughout Chapter 13, “Patient Assessment”:

- Critical Findings,

which explains, at every step of the assessment, critical conditions/signs/symptoms you may find . . . what might be causing them . . . and specifically what you should do when your assessment of the patient reveals one of these critical findings.

EMTs are often taught **WHAT** signs and symptoms they should expect to see in certain conditions and **WHAT** should be done; however, the **WHY** of assessment and emergency care is often not well addressed. Three of the features, “Pathophysiology Pearls,” “Assessment Tips,” and the new pathophysiology notes in the clinical-chapter Case Study Follow-Ups—in addition to expanded discussion within the chapters—provide you with a basic understanding so that you can better comprehend **WHY** you are seeing signs and symptoms and **WHY** you are providing specific emergency care.

The Assessment Summaries, Emergency Care Protocols, Emergency Care Algorithms, and Critical Thinking features provide the most up-to-date strategies for providing competent care. These features and the entire text have been updated to conform to the latest American Heart Association guidelines.

In Your EMS Career

In your EMS career, you will respond to a variety of calls in uncontrolled environments requiring confidence, compassion, and a high degree of competence. As an EMT, you will be put to the test to think critically and respond instantaneously. The foundation for these skills will be provided in your education program; you will learn further and gain better clinical insight through patient contact, continuing education, and experience. Once you have read this textbook and complete your EMT program, you will have only begun your educational experience as an EMT. Every day you should strive to learn something new that may enhance your emergency patient care. Because of the dynamic nature of emergency medical services, you will become a lifelong learner.

Pathophysiology

As an EMT, you will be required to learn about many patient conditions and injuries that you will encounter in the prehospital environment. Identifying these conditions and injuries is most often based on the recognition of specific signs and symptoms and history findings. Not only is it difficult to memorize the myriad of signs and symptoms for each condition or injury, it is not desirable, because not every patient presents with just one condition or injury or all of the same signs and symptoms. A good basic foundation of pathophysiology helps you to understand and explain the “why” behind the patient presentation. There is no need to memorize when you understand and can explain why each sign or symptom is occurring. Putting this together with a fundamental understanding of the pathophysiology of the conditions and a thorough approach to patient assessment will allow you to quickly recognize immediate life threats and provide excellent emergency care. Don’t memorize, but understand. This is the foundation to making “it all make sense!”

The Importance of Patient Assessment

Patient assessment is one of the most important skills that an EMT performs, requiring good practical ability and also the capability to think critically. You must take each finding from the assessment, determine if an immediate life-saving intervention is required, store the information learned in the back of your mind as you continue with the assessment, and finally put all the pieces of the assessment together to provide effective emergency medical care. The challenge is similar to putting a puzzle together. You start out with individual pieces of the puzzle that have to be connected to form a meaningful picture. The pieces of the puzzle correlate to signs, symptoms, and other findings of the assessment. You must take the findings, consider them individually, and then put them together to form a whole picture of

your patient. Specific findings are meaningless without fitting them into the entire picture.

Prehospital Emergency Care, 11th Edition, provides a strong, comprehensive approach to patient assessment, which is reinforced at several points in the chapters—in the Case Study, chapter text, Assessment-Based Approach, Assessment Summaries, and Algorithms. This approach reinforces assessment information and also provides an alternative learning method. You will find the necessary clinical information integrated into the assessment approach for each section, unlike other sources that integrate the assessment information into the clinical information.

This textbook uses a two-tiered approach to teaching emergency medical care: assessment based and diagnostic based. An assessment-based approach to patient injuries and illnesses teaches you to identify life-threatening conditions and provide immediate interventions to reverse those problems. An assessment-based approach to acute patient care is followed no matter what level of care is provided. Once you have managed life-threatening conditions, you will then move to the next level of assessment, the diagnostic-based approach. The diagnostic-based approach entails putting the signs, symptoms, and other assessment findings together to come to a probability of what conditions the patient may be suffering from. Many EMS providers refer to this as their “differential field impression.” *Prehospital Emergency Care*, 11th Edition, presents the necessary information to move naturally, successfully, and effectively from the assessment-based approach to the diagnostic-based approach.

Using Medical Terminology

As you progress through your education program, you will learn a new system of communication that involves the use of appropriate medical terminology. It is important to establish a basic understanding of medical terminology so that you may communicate effectively, both orally and in writing, with other members of the medical team. *Prehospital Emergency Care*, 11th Edition, addresses medical terminology in Chapter 7, “Anatomy, Physiology, and Medical Terminology,” and has integrated a basic foundation of medical terminology into each chapter (see the terms in bold type and the glossary at the end of the book) that will help you to enhance your professional image and communication skills. You should expand your medical terminology base as you continue your education.

As You Begin Your EMS Career

We wish you the best of luck as you begin your career in emergency medical services. Our best piece of advice to you is to provide the best emergency care possible and always do what is right for the patient. This will allow you to contribute to the mission of emergency medical services.

Good luck and best wishes!

Joseph J. Mistovich and Keith J. Karren



What's New in the 11th Edition?

Prehospital Emergency Care, 11th Edition, continues to meet the National EMS Education Standards published by the National Highway Traffic Safety Administration in 2009 and to reflect the latest and best medical knowledge and practices in emergency medical services in the United States. Recognizing, as well, that equipment, standards, and practices vary from one state and local EMS service to another, the statement “follow local protocols” appears in numerous places throughout the text.

The content of *Prehospital Emergency Care*, 11th Edition, is summarized here, with emphasis on “what’s new” in this edition. The text’s table of contents is organized to follow the National EMS Educational Standards.

Part 1: Preparatory and Public Health

The chapters that fall under the first two standards, “Preparatory” and “Public Health,” set the foundation for the chapters that follow with such basic topics as EMS systems; research; public health; workforce safety and wellness; medical, legal, and ethical issues; documentation; communication; and lifting and moving patients.

What's New?

- Chapter 1, “Emergency Medical Care Systems, Research, and Public Health,” includes new and updated information on **types of EMS services, medical oversight of EMS, and EMS research**. New sections on **evidence-based guidelines (EBG), mobile integrated healthcare (MIH), and community paramedicine (CP)** have been added.
- Chapter 2, “Workforce Safety and Wellness of the EMT,” includes new information on emergency infectious diseases (EID), including new sections on **Ebola virus** and **zika virus disease**. A new discussion of **clandestine drug labs** is included.
- Chapter 3, “Medical, Legal, and Ethical Issues,” regarding a patient’s ability to consent to or refuse care, includes a new explanation of the terms **competence** and **capacity** — noting that while EMS personnel cannot judge a patient’s *competence* (a legal judgment that can only be made in a court of law), EMS and other medical personnel can judge a patient’s *capacity* (a medical assessment) to understand and make rational decisions.
- Chapter 4, “Documentation,” has a new list of **documentation goals** and expanded information on **mandatory reporting**.
- Chapter 5, “Communication,” has a new information and new sections on new and advanced communications technology, including **FirstNet**, a nationwide public safety broadband, **land mobile radio systems (LMRS)**, as well as **telemetry** and **land mobile satellite communications**.
- Chapter 6, “Lifting and Moving Patients,” places new emphasis on **spine motion restriction** and **self restriction** to replace former emphasis on immobilization of patients with suspected spinal injury, on the basis that total “immobilization” of the spine is impossible, and that “immobilization” to a hard spine board has been found in

many instances to worsen injuries. (The complete explanation of spine motion restriction is in Chapter 32, “Spinal Trauma and Spine Motion Restriction.”)

Part 2: Anatomy, Physiology, and Medical Terminology

These standards are covered in a single chapter, Chapter 7, “Anatomy, Physiology, and Medical Terminology.” This chapter has no significant changes from the prior edition.

Part 3: Pathophysiology

This standard is covered in one chapter, Chapter 8, “Pathophysiology.” This chapter is largely unchanged from the prior edition.

Part 4: Life Span Development

This standard is covered in one chapter, Chapter 9, “Life Span Development.”

What's New?

- Chapter 9, “Life Span Development,” presents a table of **vital signs** revised from the prior edition in accordance with the values included **American Heart Association and American Academy of Pediatric Life Support Pediatric Advanced Life Support 2016**. (Vital signs values throughout the text have been revised to be consistent with these.)

Part 5: Airway Management, Artificial Ventilation, and Oxygenation

This standard is covered in one chapter, “Airway Management, Artificial Ventilation, and Oxygenation.”

What's New?

- Chapter 10, “Airway Management, Artificial Ventilation, and Oxygenation,” includes revised information on **cricoid pressure** to reflect contraindications and modified recommendations for its use. The **CPAP** section is revised to explain uses to overcome PEEP and auto-PEEP (exhalation difficulties) and possible uses of CPAP in children. Importantly, there are updated recommendations for **oxygen administration in medical patients** and **trauma patients** to reflect current recommendations of the **American Heart Association** and the **American College of Surgeons** (and revised throughout the text to be consistent with these).

Part 6: Assessment

The chapters that fall under the “Assessment” standard are those that detail vital signs, monitoring devices, and history taking as well as scene size-up and the process of patient assessment.

What's New?

- Chapter 11, “Vital Signs, Monitoring Devices, and History Taking,” has updated **vital signs** values as recommended by the AHA and American College of Surgeons (as was noted for Chapter 9). Chapter 11 includes an increased emphasis on **early pulse oximeter use**.
- Chapter 12, “Scene Size-Up,” has a new section, “**Violence Toward EMS Personnel**” (what to anticipate; how to protect yourself). Also included is new information on the dangers of calls to **clandestine drug labs** (and how to protect yourself).
- Chapter 13, “Patient Assessment,” includes new **spine motion restriction** recommendations (more fully explained in Chapter 32 “Spinal Trauma and Spine Motion Restriction”). There are updated guidelines for **oxygen therapy goals for medical patients** (as recommended by AHA) and for **trauma patients** (as recommended by the American College of Surgeons). A new section has been added on **naloxone (Narcan) administration for opioid overdose**.

Part 7: General Pharmacology and Medication Administration

This standard is covered in one chapter, “General Pharmacology and Medication Administration.”

What's New?

- Chapter 14, “General Pharmacology and Medication Administration,” contains several new elements, including distinguishing two ways EMTs may administer medication: **EMT medication administration** and **patient-assisted medication administration**. There are new **cautions regarding administration of oxygen** (which can be harmful in some circumstances). The chapter includes new information on **manual administration of epinephrine for anaphylactic reaction** (in lieu of expensive auto-injectors). There is also a new section on **intranasal administration of naloxone using a mucosal atomizer device (MAD)**.

Part 8: Shock and Resuscitation

This standard is covered in one chapter, “Shock and Resuscitation.”

What's New?

- Chapter 15, “Shock and Resuscitation,” now identifies just **two stages of shock: compensatory and decompensatory** (“irreversible shock” is no longer identified as a stage of shock). There is an extensive new section on **sepsis** and **septic shock**, a major cause of death in the United States. There is expanded information on **multiple organ dysfunction syndrome (MODS)**, and there are new sections on **cardiac arrest in the pregnant patient** and on **post resuscitation care after return of spontaneous circulation (ROSC)** from cardiac arrest.

Part 9: Medical

The chapters within the “Medical” standard are those on respiratory and cardiovascular emergencies; altered mental status, stroke, and headache; seizures and syncope; acute diabetic emergencies; allergic and anaphylactic reactions; toxicologic emergencies; abdominal, hematologic, gynecologic, genitourinary, and renal emergencies; and environmental, submersion (drowning and diving), and psychiatric emergencies.

What's New?

- Chapter 16, “Respiratory Emergencies,” has been extensively revised and updated. Included are expanded information on **respiratory distress, respiratory failure, and respiratory arrest**; on forms of obstructive pulmonary disease: **asthma, emphysema, and chronic bronchitis**; on **pulmonary embolism, pulmonary edema, and cystic fibrosis**; and on the use of **metered-dose inhalers and small-volume nebulizers**.
- Chapter 17, “Cardiovascular Emergencies,” features expanded information on **dangers of administering too much oxygen** and expanded information on evaluating **hypertension associated with a cardiac emergency**.
- Chapter 18, “Altered Mental Status, Stroke, and Headache” has been extensively revised and updated. New or expanded information is included on the **AHA Stroke Chain of Survival**; the **FAST mnemonic** (facial droop, arm drift, speech difficulty, time to call 911) for identifying a stroke; the **ischemic penumbra** (area of afflicted brain cells that can be restored to full function by prompt emergency care); new information on **atrial fibrillation** as a cause of stroke and on **atrioventricular malformation (AVM)**, a tangle of malformed vessels that can rupture and cause a stroke. There is expanded information on **transient ischemic attack (TIA)** and a new section on **cryptogenic stroke** (unidentifiable cause). New sections introduce two newer stroke screening tools: **MENDS (Miami Emergency Neurologic Deficit)** and **RACE (rapid arterial occlusion evaluation) scale** and associated information on **large vessel occlusion (LVO)** in addition to retaining information on the Los Angeles and Cincinnati stroke screening tools.
- Chapter 19, “Seizures and Syncope,” includes information on differentiating a **primary seizure** (unprovoked, as from a condition like epilepsy) from a **secondary seizure** (provoked; caused by an insult to the body such as infection, drug withdrawal, brain disease, or other). New definitions of **prolonged seizure** and **status epilepticus** from the American Epilepsy Society are included, and there is an updated classification and discussion of **generalized seizures** and **partial seizures**.
- Chapter 20, “Acute Diabetic Emergencies,” includes general updates throughout the chapter and a new section on **intranasal glucagon**.
- Chapter 21, “Allergic and Anaphylactic Reactions,” has expanded information on the causes of **anaphylactic** and **anaphylactoid reactions**. There is new information on the use of **manual epinephrine injection** to control an anaphylactic reaction and a new section on **biphasic anaphylactic reactions** (that seem normalized but then return in life-threatening form).

- Chapter 22, “Toxicologic Emergencies,” puts new emphasis on **opioid drug abuse and overdose** and on administration of **naloxone** to reverse an opioid overdose. Expanded information is included on **suicide bags** and **suicide by toxic gas inhalation**. There are new sections on the substances **methylenedioxymethamphetamine (MDMA)** and **tetrahydrocannabinol (THC)**. There is also a new section on **cannabinoid hyperemesis syndrome**.
- Chapter 23, “Abdominal, Hematologic, Gynecologic, Genitourinary, and Renal Emergencies,” introduces new sections on considerations regarding abdominal pain in **pediatric, geriatric, immunocompromised, and bariatric surgery patients**.
- Chapter 24, “Environmental Emergencies,” introduces the concept of **two systems, behavioral and physiologic, to regulate body temperature**. There is new information on **immersion hypothermia** to include **cold shock response, cold incapacitation, and nonfreezing cold injury**. A new term, **freezing cold injury** replaces the former term *local cold injury*. There is a new section on **exercise-associated hyponatremia (EAH)**.
- Chapter 25, “Submersion Incidents: Drowning and Diving Emergencies,” has general updates throughout but no major changes from the prior edition.
- Chapter 26, “Psychiatric Emergencies,” (formerly titled “Behavioral Emergencies”) has been extensively revised to emphasize **distinguishing psychiatric from physical causes** of behavior changes, including a **mental status exam** and a new section, “**Mini Assessment for Common Psychiatric Emergencies**.” There are updated definitions, based on the *Diagnostic and Statistical Manual (DSM-5)*, and **detailed discussion of psychiatric problems** including anxiety; bipolar disorder; depression; neurocognitive disorders; schizophrenia spectrum and other psychotic disorders; substance abuse and addictive disorders; trauma/stressor-related disorders; and extrapyramidal symptoms (involving involuntary movement). There is **expanded discussion of violence** (including suicide and violence to others), and there is an expanded and updated discussion of **principles, techniques, and legal considerations** in dealing with psychiatric emergencies.

Part 10: Trauma

The chapters within the “Trauma” standard include a trauma overview and chapters on bleeding and soft tissue trauma; burns; musculoskeletal trauma and nontraumatic fractures; trauma to the head, spinal column and spinal cord, eye, face, neck and chest; abdominal and genitourinary trauma; multi-system trauma; and trauma in special patient populations.

The chapters in the Trauma Section of this edition include many new photos of exceptional quality illustrating types of trauma and trauma care techniques.

What's New?

- Chapter 27, “Trauma Overview: The Trauma Patient and the Trauma System,” is largely unchanged from the prior edition but, in the Vehicle Collisions section, includes added information about **vehicle telemetry data predictive of injury**.
- Chapter 28, “Bleeding and Soft Tissue Trauma,” newly includes **The Prehospital External Hemorrhage Control Protocol** from the American College of Surgeons Committee on Trauma. There is new and expanded information on **tourniquet application** and **hemostatic impregnated gauze dressings**. There is a new section on **junctional bleeding control** (where extremities or the head meet torso or core body) and expanded information on emergency care for **nosebleed**.
- Chapter 29, “Burns,” includes new information on **fluid shifts from burns causing edema that occludes the airway**. There is a new section, “**Toxin-Induced Lung Injury**,” and the **Lund-Browder burn classification chart** is newly included. The chapter includes expanded information on **burn dressings, burn center referral criteria, and treatment of chemical burns**.
- Chapter 30, “Musculoskeletal Trauma and Nontraumatic Fractures,” has expanded information on assessment and care of **pelvic fracture** and new information on use of the **full-body vacuum mattress as a full-body splint**. Information on the pneumatic antishock garment (**PASG**) has been **deleted** from the chapter as this device is no longer recommended.
- Chapter 31, “Head Trauma,” includes a new discussion of the pathophysiology of **primary brain injury, secondary brain injury, and brain herniation**. There is new emphasis on **spine motion restriction** (rather than stabilization or immobilization) and expanded information on **establishing and maintaining adequate breathing in head trauma**.
- Chapter 32, “Spinal Trauma and Spine Motion Restriction,” (formerly titled Spinal Column and Spinal Cord Trauma) reflects a **critical change in care for spinal trauma: spine motion restriction** rather than immobilization. (This concept is discussed in some prior chapters, but the principal discussion is presented in this chapter.) The chapter recognizes that the neck and spine cannot truly be immobilized and that evidence has shown that immobilization can actually worsen an injury. Use of soft or rigid cervical collars (no longer called cervical spine immobilization collars) to remind the patient to restrict head motion as well as techniques of spine motion restriction by EMTs as well as self-restriction by the patient are discussed. **The emphasis on spine motion restriction rather than immobilization is a major change throughout the text whenever spinal (column or cord) injury is suspected or possible.**
Photo sequences in Chapter 32, many new to this edition, clearly illustrate techniques of assessment for spinal injury and techniques of spine motion restriction for supine, ambulatory, and seated patients—including self-extrication techniques and traditional techniques of extrication with a Kendrick Extrication Device and rapid extrication from a vehicle.
- Chapter 33, “Eye, Face, and Neck Trauma,” now includes emphasis on **spine motion restriction** and includes a new section on **corneal injury**.
- Chapter 34, “Chest Trauma,” introduces a new concept: **the cardiac box** – the rectangular area of the anterior chest to which any penetrating or blunt injury increases the likelihood of cardiac or great vessel injury. There is updated information on care of an **impaled object**, emphasis on **spine motion restriction** (noting that immobilizing a patient to a hard board can impede chest excursion), and expanded information on use of a **commercial vented occlusive dressing** such as Asherman, Halo, or Bolin.

- Chapter 35, “Abdominal and Genitourinary Trauma,” now emphasizes **spine motion restriction** in care of the abdominal trauma patient.
- Chapter 36, “Multisystem Trauma and Trauma in Special Patient Populations,” includes expanded information on assessment of **trauma in a pregnant patient**, new information on **cervical spine injury in the pediatric patient**, and emphasis on **spine motion restriction**.

Part 11: Special Patient Populations

The chapters that fall under the “Special Patient Populations” standard are chapters on obstetrics and newborn care, pediatrics, geriatrics, and patients with special challenges.

What's New?

- Chapter 37, “Obstetrics and Care of the Newborn,” has extensive revisions and updates throughout. There is new and expanded information on the effects of **abruptio placentae** on mother and fetus; **hypertensive emergencies**; assessing **contractions**; assessment for **prehospital delivery** and **delivery at the scene**; benefits of **delayed cord clamping**; **abnormal deliveries**; types of **breech presentation** and **breech delivery**; and **shoulder dystocia**. Included are the **AHA guidelines for newborn care**; obtaining the **Apgar score**; and **meconium present at birth**. New sections have been added on the predelivery emergency **hyperemesis gravidarum** (extreme and prolonged morning sickness); **estimating gestational age based on fundal height**; **face, chin, brow, and compound presentations**; and a new list of **assessment triggers and immediate interventions**.
- Chapter 38, “Pediatrics,” has a new section on “**Brief Resolved Unexplained Events**” – events in an infant or child that, though brief, concerned the parent or caregiver, such as a period of cyanosis or a change in breathing or level of consciousness. There is also a new discussion of **spine motion restriction in the pediatric patient**.
- Chapter 39, “Geriatrics,” has a new section on “**Cognitive Impairment**” and a new discussion of **spine motion restriction in the geriatric patient**.
- Chapter 40, “Patients with Special Challenges,” includes an extensive new section, “**Autism and EMS**,” based on facts for EMS personnel provided by the Autism Spectrum Disorder Foundation. There are extensive new sections on “**Human Trafficking**” and “**Domestic Violence**.” The section on **ventricular assist devices (VADs)** has been extensively revised, and there is a new section, “**Vagus Nerve Stimulator**” about an implanted device found in some patients with seizure disorder.
- Chapter 41, “The Combat Veteran,” has no significant changes from the prior edition.

Part 12: EMS Operations

The chapters within the “EMS Operations” standard are chapters on ambulance and air medical operations; gaining access and patient extrication; hazardous materials; multiple-casualty incidents and incident management; and EMS response to terrorist incidents.

- Chapter 42, “Ambulance Operations and Air Medical Rescue,” includes two new sections: “**Culture of Safety in EMS**” (based on recommendations of the National Emergency Medical Services Advisory Council) and “**Crew Resource Management**” (based on recommendations of the International Association of Fire Chiefs).
- Chapter 43, “Gaining Access and Patient Extrication,” has many updates and added details throughout the chapter and new information on **gaining access to a home through an unlocked upper story window**.
- Chapter 44, “Hazardous Materials,” has revised sections on **safety data sheets (SDS)** [no longer called material safety data sheets (MSDS)]; the **2016 Emergency Response Guidebook**; and **decontamination**. There is a new section on the Wireless Information System for Emergency Responders (**WIZER**) **app** from the National Library of Medicine providing access to extensive medical information. There is also a new section on “**Criminal Use of Hazardous Materials**” that includes information on **clandestine drug labs**.
- Chapter 45, “Multiple-Casualty Incidents and Incident Management,” provides a reference and URL/link to **training and certification in the incident command system, provided free of charge on the Federal Emergency Management Agency (FEMA) website**. A new section is included on the **SALT Field Triage System** formulated by the American College of Surgeons Committee on Trauma.
- Chapter 46, “EMS Response to Terrorist Incidents,” has new information and/or new sections on **improvised explosive devices (IED)**; **radiological exposure devices (RED)**; **improvised nuclear devices (IND)**; **active shooter incidents** and the use of **tactical EMS**; and **cyberterrorism**.

We Want to Hear from You

Many of the best ideas for improving our text books and training for future EMTs come from the instructors and students who use our books and ancillary materials. If you have ideas to offer us or questions to ask, you can reach us at the addresses listed below.

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